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# United States Department of the Interior
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**Environmental Assessment DOI-BLM-ID-B010-2010-0057-EA**

# Four Rivers Field Office
# Goodrich Seven Allotments Grazing Permit Renewal

U.S. Department of the Interior
Bureau of Land Management
Boise District
Four Rivers Field Office
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Boise, ID 83705

NATIONAL SYSTEM OF PUBLIC LANDS

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## 1.0 Introduction

The Bureau of Land Management (BLM) Four Rivers Field Office (FRFO) has prepared this Environmental Assessment (EA) consistent with BLM policy and relevant federal and state laws and regulations including the National Environmental Policy Act (NEPA). This EA discloses anticipated direct, indirect, and cumulative environmental impacts that would result from the various grazing systems presented in the alternatives (Section 2.2).

## 1.1 Need for and Purpose of Action

The 1988 Cascade Resource Management Plan (RMP) identifies the Armacost Individual, Boyd Individual, Deer Creek, East Pine Creek, Gambril Individual, West Pine Creek, and Cambridge allotments as available for domestic livestock grazing (USDI 1988, Map 1). Where consistent with the goals and objectives of RMP's, and Idaho's Standards for Rangeland Health and Conformance with the Guidelines for Livestock Grazing Management (Standards; Appendix 1; USDI 1997), it is BLM policy to authorize livestock grazing to qualified operators. The analysis and authorizations are needed here and now because:

1. On September 28, 2007, the BLM vacated seven grazing decisions that authorized grazing, as a result of a settlement negotiated between the U.S. Department of Justice and Western Watersheds Project (WWP) to resolve litigation (WWP v. Lane, Case No. 07-cv-394-BLW) challenging BLM's use of certain categorical exclusions to satisfy NEPA requirements. A court-ordered Stipulated Settlement Agreement (SSA), dated July 17, 2009, required the BLM to analyze renewal of the grazing permits in an EA. The allotments in the FRFO that relied on the grazing permit issuance CE are: Armacost Individual, Boyd Individual, Deer Creek, East Pine Creek, Gambril Individual, North Fork, and West Pine Creek. The North Fork Allotment was combined with the Thorn Creek Allotment in EA# ID-110-2005-EA-011; therefore, it will not be included in this assessment.

2. Recent analysis in the Payette National Forest (PNF) Final Supplemental Environmental Impact Statement (FSEIS) and Record of Decision found that bighorn sheep in close proximity to domestic sheep are at risk for disease transmission (USFS 2010a). There is a risk of contact and disease transmission that may occur when domestic sheep allotments overlap bighorn sheep source habitat or travel corridors between their source habitats. The grazing permit renewals need to address the risk of contact, potential of disease transmission, and population viability of bighorn sheep through the BLM grazing permit renewal process.

3. Two permittees have applied for grazing preference transfers. Tom Seid acquired the base property lease from Kenneth Seid and applied for transfer of the Deer Creek Allotment AUMs. Frank Shirts Jr. purchased the base property from Shirts Brothers and applied for transfer of the Cambridge Allotment AUMs. Due to Frank Shirts Jr.'s

transfer request and new resource issues identified through internal scoping (bighorn sheep), this allotment is also included in this assessment.

4. Rangeland Health Field Assessments were conducted in 2002 (following Technical Reference 1734-6, USDI 1997), and written Assessments were completed in 2005. In 2006 and 2007 the Evaluations and Determinations for Achieving Idaho's Standards for Rangeland Health and Conformance with the Guidelines for Livestock Grazing Management (Standards) were completed. The BLM determined that all seven allotments were meeting all applicable Standards. The Assessments, Evaluations and Determinations are on file/available for review in the project record. Site visits in 2011 confirmed these findings and the write-ups are also available.

Table 1. Summary of Applicable Standards for the Goodrich Seven Allotments, Idaho.

| **Allotment** | | **Standards for Health Rangeland**[1] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Number** | **Name** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| 00012 | Armacost Individual | M | M | M | M | n/a | n/a | M | M |
| 00040 | Boyd Individual | M | n/a | n/a | M | n/a | n/a | n/a | M |
| 00082 | Cambridge | M | n/a | n/a | M | n/a | n/a | n/a | M |
| 00090 | Gambril Individual | M | n/a | n/a | M | n/a | n/a | n/a | M |
| 00151 | Deer Creek | M | n/a | n/a | M | n/a | n/a | n/a | M |
| 00172 | East Pine Creek | M | n/a | n/a | M | n/a | n/a | n/a | M |
| 00268 | West Pine Creek | M | n/a | n/a | M | n/a | n/a | n/a | M |

[1]Standards for Rangeland Health: 1 - Watersheds; 2 - Riparian Areas and Wetlands; 3 - Stream Channel/Floodplain; 4 - Native Plant Communities; 5 – Seedings; 6 -Exotic Plant Communities, other than Seedings; 7 - Water Quality; 8 - Threatened and Endangered Plants and Animals;
M - Meeting Standards applicable to the allotment n/a - Standards not applicable to the allotment

Any permits authorizing livestock grazing would meet the following objectives:

- Maintain resource conditions where those conditions are meeting Standards;
- Ensure there is not an unacceptable risk of contact and disease transmission from BLM-authorized sheep to bighorn sheep.
- Protect resource values, including special status species and their habitat.
- Meet Guidelines and conform to BLM policy and objectives identified in the Cascade Resource Management Plan (CRMP).

## 1.2 Summary of Proposed Action

The BLM would renew seven livestock grazing permits in the Goodrich Management Area[1] (MA). Grazing in the Armacost Individual Allotment would continue as currently permitted. Permits would be modified for the remaining allotments as follows:

- Annual spring use would be initiated by meeting range readiness criteria with a later turnout date (Boyd Individual, Cambridge, Deer Creek, and West Pine Creek allotments)

[1] The Four Rivers Field Office grouped allotments into management areas primarily along major watershed boundaries. Allotments within a MA generally have similar issues and permittees often operate in more than one allotment in a MA.

and implementing a deferment system (Boyd Individual, Gambril Individual, Deer Creek, and East Pine Creek allotments);

- Continue to permit domestic sheep grazing (West Pine Creek, Cambridge, and Boyd Individual allotments); however, BLM would coordinate with Idaho and Oregon state wildlife agencies to ensure the livestock permits do not interfere with state goals for bighorn sheep populations; and
- Grazing preference AUMs would be transferred to operators (Shirts and Seid) due to transfers of the base properties and base property lease agreements (Cambridge and Deer Creek allotments).

## 1.3 Location and Setting

The Armacost Individual Allotment is located 10 miles northwest of Council, Idaho, in Adams County (Map 1). The remaining allotments are within two to nine miles of Cambridge, Idaho, in Washington County. The allotments include 2,492 acres of BLM-administered (public) lands, 905 acres of State lands, and 11,932 acres of private lands (Table 2).

Table 2. Ownership (acres) by allotment for the seven relevant allotments in Adams and Washington counties, Idaho.

| Allotment | | | Acres by Land Ownership | | | Total Acres |
|---|---|---|---|---|---|---|
| **Number** | **Name** | **County** | **BLM** | **State** | **Private** | |
| 00012 | Armacost Individual | Adams | 530 | 0 | 920 | 1,450 |
| 00040 | Boyd Individual | Washington | 330 | 0 | 1,710 | 2,040 |
| 00082 | Cambridge | Washington | 358 | 0 | 624 | 982 |
| 00090 | Gambril Individual | Washington | 121 | 590 | 300 | 1,011 |
| 00151 | Deer Creek | Washington | 80 | 0 | 528 | 608 |
| 00172 | East Pine Creek | Washington | 79 | 0 | 123 | 202 |
| 00268 | West Pine Creek | Washington | 994 | 315 | 7,727 | 9,036 |
| *Total* | | | 2,492 | 905 | 11,932 | 15,485 |

The allotments are characterized by gently rolling terrain with some steep slopes. Columbia River basalts are the main soil parent material. Annual precipitation ranges from 20 to 32 inches. Vegetation is primarily typified by xeric big sagebrush and rigid sagebrush communities, depending upon geologic and geographic features and precipitation zone. Antelope bitterbrush and an array of perennial grasses and forbs are common in both community types.

## 1.4 Conformance with Applicable Land Use Plan

The 1988 Cascade RMP is the current Land Use Plan that addresses the allotments (USDI 1988). The proposed action to renew seven livestock grazing permits would be in conformance with resource management guidelines and Rangeland Program Summary (RPS) objectives.

All seven allotments are in the "custodial" management category with M-1[2] moderate use goals and guidelines. The RMP defines custodial management as "management to prevent resource

[2] M-1-Moderate Use Class-Management intensities for lands in the Resource Area are assigned to one of the following multiple use or transfer classes: Moderate use class, limited use class, intensive use class, or transfer class. Management areas covered by the moderate use class and their goals and guidelines are located on p. 19 of the Cascade RMP.

deterioration." General goals and guidelines for M-1 moderate use areas are to provide production and use of forage, timber, minerals, energy, other consumptive resources and recreation while maintaining or enhancing natural systems. These lands provide wildlife habitat and livestock forage. Management actions should maintain or enhance forage production for livestock and wildlife while maintaining site productivity, water quality, stream stability, and providing for other uses.

The overall RMP objective is to improve soils, vegetation, watershed, wildlife habitat, and other resource values and conditions and to provide vegetation for livestock, wildlife, wild horses, and other consumptive and non-consumptive uses (RPS, Objectives pg. 1).

Objectives in the RPS indicate "forage production will be balanced with forage consumption to allow scheduled livestock use to occur in a manner that will maintain and/or improve vegetative condition." The range resource management guideline states that grazing preference will be at a level to ensure adequate forage is also available for wildlife and there are sufficient reserves to maintain plant vigor, to stabilize soils, and to provide cover for wildlife and other non-consumptive uses.

Additionally, the permit renewals would be in conformance with the following RMP objectives:

<u>Wildlife Resources</u>

- Manage 181,640 acres of elk habitat, 275,250 acres of deer habitat and 4,400 acres of antelope crucial winter habitat and provide forage to support proposed populations of these animals.
- Manage 185,860 acres of sage grouse habitat to improve brooding and nesting habitat.
- Maintain existing habitats for other wildlife species.

<u>Riparian and Aquatic Resources</u>

- Incorporate riparian pastures, grazing systems, and/or special measures in allotment management plans to improve all riparian and aquatic habitat.

## 1.5 Relationship to Statutes, Regulations, and Other Requirements

Federal regulations authorize BLM to issue grazing permits to qualified applicants (43 CFR 4110 and 4130). Permittees may graze livestock on public lands that are designated as available for livestock grazing through the RMP. In addition, the following laws, regulations, manuals, and policies provide the foundation for managing livestock use on public lands.

<u>Livestock Management</u>

*The Taylor Grazing Act (TGA) of 1934 as amended:* Provides for the orderly use of public land. The goals of the TGA were to stop injury to the public grazing lands by preventing overgrazing and soil deterioration; to provide for their orderly use, improvement, and development; to stabilize the livestock industry dependent upon the public range; and for other purposes.

*The Federal Land Policy and Management Act (FLPMA) of 1976*: Authorized the following: inventory and identification of public lands, land use planning, and public involvement and

participation. FLPMA also provides BLM with broad management authority under principles of multiple use and sustained yield. Land use planning resulted in the preparation of the 1988 Cascade Resource Management Plan, which covers the 7 allotments addressed in this EA.

*The Public Rangelands Improvement Act (PRIA) of 1978:* Mandates that livestock grazing be managed to improve range condition and maintain the highest level of productivity on the public rangelands.

*Title 43 CFR, Subpart 4100 – Grazing Administration, Exclusive of Alaska*: The regulations embody the Acts, as amended, listed above. Specifically, 43 CFR 4180.2 is the regulatory requirement that implements Idaho's Standards for Rangeland Health and Guidelines for Livestock Grazing Management (USDI 1997).

Fish and Wildlife

*Endangered Species Act (ESA) of 1973, as amended* (16 USC 1531): Section 7 of the ESA outlines the procedure for federal interagency cooperation to conserve federally listed species and their designated habitats. Section 7(a) (4) of the ESA states that "Each Federal agency shall confer with the Secretary on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under section 4 or result in the destruction or adverse modification of critical habitat proposed to be designated for such species." Greater sage-grouse are a candidate species under the ESA and are discussed in Section 3.2.

*Special Status Species Management Manual for the Bureau of Land Management* (BLM Manual 6840): National policy directs BLM State Directors to designate sensitive species in cooperation with the state fish and wildlife agency. This manual establishes policy for management of species listed or proposed for listing pursuant to the ESA and Bureau sensitive species that are found on public lands; this policy is to conserve and to mitigate adverse impacts to sensitive species and their habitats. Special status plant species are not present in the allotments. Special status wildlife species are discussed in Section 3.2.

*Bighorn Sheep/Domestic Sheep Management Policies* (BLM Instruction Memorandum ID-IM-2010-059): It is BLM policy to complete separation response plans (SRPs) on all grazing allotments and other areas where bighorn sheep may come into contact with domestic sheep and goats on public lands. This is a cooperative agreement between the BLM, IDFG, and the permittee with a protocol that ensures a timely and appropriate response when bighorn sheep/domestic sheep are likely to or have come into contact. BLM IM-1998-140 provided guidelines for management of domestic sheep and goats in native wild sheep habitats including the recommendation of a 9-mile buffer between domestic sheep allotments and bighorn sheep habitat; however, the IM has expired.

*National Sage-grouse Habitat Conservation Strategy* (BLM Instruction Memorandum IM-2005-024): This document provides a framework to address the conservation of sage-grouse and risk to sagebrush habitats on lands and activities administered by the BLM. It provides suggested management practices (SMP) to address a variety of issues including livestock grazing. Alternative C includes measures that maintain good habitat quality (SMP 35 and 42) and would

implement grazing practices that promote growth and persistence of native shrubs, grasses, and forbs (SMP 36).

*Greater Sage-grouse Interim Management Policies and Procedures* (BLM Instruction Memorandum IM-2012-043): This document provides conservation policies and procedures to maintain and restore habitat for sage-grouse while the agency determines how to incorporate long-term measures into Land Use Plans. These interim measures include direction for grazing management practices that will minimize adverse effects on greater sage-grouse and its habitat. Preliminary priority and general sage-grouse habitat is present in all allotments except the Armacost Individual Allotment. Alternative C includes measures to meet sage-grouse habitat requirements through modifications in season of use, stocking rates, and rangeland management projects that adhere to the direction in this IM.

*Migratory Bird Treaty Act*, *Executive Order 13186*, and *BLM Memorandum of Understanding WO-230-2010-04* (between BLM and U.S. Fish and Wildlife Service [USFWS]): Federal agencies are required to evaluate the effects of proposed actions on migratory birds (including eagles) pursuant to the *National Environmental Policy Act of 1969* (NEPA) "or other established environmental review process" and restore and enhance the habitat of migratory birds, as practicable. Federal agencies are also required to identify where unintentional take reasonably attributable to agency actions is having, or is likely to have, a measurable negative effect on migratory bird populations. With respect to those actions so identified, the agency shall develop and use principles, standards, and practices that will lessen the amount of unintentional take, developing any such conservation efforts in cooperation with the Service. Effects to migratory birds are discussed in Section 3.2.

*Bald and Golden Eagle Protection Act of 1940 as amended* (16 USC 668-668d): This act provides for the protection of bald and golden eagles by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds. Agencies are required to evaluate: 1) whether take is likely to occur from activities associated with the proposed activity and 2) the direct, indirect, and cumulative impacts the proposal may have on the ability to meet the preservation standard of the Act, which the USFWS has interpreted to mean "compatible with the goal of stable or increasing breeding populations." Effects to bald and golden eagles are analyzed in this EA.

<u>Cultural Resources</u>
Idaho BLM has the responsibility to manage cultural resources on public lands pursuant to the National Historic Preservation Act of 1966 (as amended), the 2012 Programmatic Agreement Among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers and the State Protocol Agreement Between the Idaho State Director of the BLM and the Idaho State Historic Preservation Officer (1998) and other internal policies.

## 1.6 Scoping and Development of Issues

The scoping process started when BLM informed six permittees about the SSA, in which BLM vacated the September 28, 2007 grazing decisions. Correspondence was mailed to all involved permittees on August 6, 2009, with a copy of the SSA and previous grazing permits to authorize

livestock grazing. Between January 10, 2011 and March 23, 2011, letters were mailed to inform permittees that BLM had started the process of preparing an EA and Proposed and Final Grazing Decisions to issue new ten-year livestock grazing permits.

On May 23, 2011, an EA Scoping Information Package was sent to all affected parties, interested publics, and agencies to inform the public of the proposal and solicit comments regarding the NEPA review of proposed alternatives. Comments received in response to this solicitation were used to identify potential environmental issues related to the proposed action, and to identify alternatives that meet the purpose of and need. Two letters were received in response to the scoping package.

In March 2013, a scoping letter was sent to groups with an interest in bighorn sheep management. The letter presented results of the potential rate of contact between the Upper Hells Canyon bighorn sheep population and allotments currently permitted for domestic sheep (Boyd Individual, Cambridge, and West Pine Creek) based on the Bighorn Sheep Risk of Contact Tool (Section 3.2.2.1). Frank Shirts (Cambridge Allotment permittee), the Nez Perce Tribe, Hells Canyon Preservation Council, The Wilderness Society, Idaho Conservation League, Oregon Department of Fish and Wildlife, and IDFG responded to the scoping letter.

Internal and external scoping identified the following issues:

*Uplands* – Livestock grazing could affect vegetative conditions by changing species composition from deep-rooted perennial grasses to short-stature perennial grasses or exotic annuals. Utilization levels could adversely affect watershed protection and wildlife cover requirements.

*Noxious Weeds* - Idaho Fish and Game (IDFG) staff has observed an expansion of leafy spurge in the Deer Creek Allotment. The Department recommends that control of noxious and invasive weeds in these allotments be addressed in the decisions.

*Rocky Mountain Bighorn Sheep* – Domestic sheep that come into contact with bighorn sheep may transmit diseases that can result in bighorn sheep population die-offs. The following issues will be addressed in the EA:

- Proximity of allotments to core herd home range (CHHR);
- Amount of summer source habitat in an allotment;
- Connectivity of source habitat with CHHR;
- Health of existing populations;
- Management goals of wildlife agencies; and
- Management actions currently in place.

*Northern Idaho Ground Squirrel (NIDGS)* – IDFG data indicate that NIDGS, a federally listed threatened species, have been documented adjacent to the Armacost Individual Allotment. Livestock grazing could adversely affect habitat conditions necessary to support NIDGS. However, the area has not been surveyed for several years. IDFG recommends the current status and trend of NIDGS be determined with subsequent information in BLM management decisions.

*Greater Sage-grouse* – Livestock can adversely affect the type and amount of vegetation required to support sage-grouse. IDFG data indicate that an occupied greater sage-grouse lek exists immediately south of the Boyd Individual Allotment. IDFG observations indicated that current livestock management in the Deer Creek, Gambril Individual, and Boyd Individual allotments is not likely adversely impacting sage-grouse habitat. The IDFG recommends the BLM take steps necessary to prevent adverse effects to sage-grouse habitat that may result from management actions considered in this EA.

*Columbian Sharp-tailed Grouse* - IDFG data does not indicate that Columbian sharp-tailed grouse occupy habitats in or near the allotments considered in the BLM decision. IDFG requests that BLM assess the potential for sharp-tailed grouse use of these allotments as part of the environmental review.

*Cultural Resources* – Livestock grazing could affect historic properties in the allotments. An assessment of grazing impacts on historic properties in these allotments was completed by the FRFO archaeologist in December 2004. The assessment noted that cultural resources had been recorded on BLM lands and on private property, but no adverse impacts from grazing actions had been recorded. The Idaho SHPO reviewed the assessment report and concurred in late December 2004. The FRFO archaeologist reviewed the seven grazing permits and this EA and determined that the previous assessments are still valid for cultural resources management. Standard stipulations attached to the grazing permits allow for additional protection and preservation of cultural resources over the terms of the grazing permits. Therefore, potential effects of livestock grazing on cultural resources will not be addressed in this EA.

## 2.0 Description of the Alternatives

This chapter describes and compares the alternatives considered for the management of the allotments. This section presents the alternatives in comparative form, in order to define the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Design criteria and monitoring measures incorporated into the alternatives are also described.

### 2.1 Alternative Development Process

Alternatives were developed based on issues and resource concerns that were identified through internal and external scoping. The focus of alternative development was to respond to resource issues identified (Section 1.6). These issues included: 1) reducing the potential for interactions and disease transmission between bighorn sheep/domestic sheep on public lands, 2) protect resource values, including special status species and their habitat, 3) implement grazing management decisions that maintain and improve rangeland health conditions, and still meet objectives identified in the Cascade RMP.

### 2.2 Description of Permittee Applications and Alternatives

The following alternatives were developed after the scoping process:

Alternative A –No Grazing for a ten year term

Alternative B – Continue Current Use (No change to existing grazing permit, permittee's initial application)
Alternative C – BLM Proposed Action (Permit modifications primarily to address bighorn sheep, vegetation, and sage-grouse issues)

### 2.2.1 Alternative A – No Grazing

The BLM would not authorize livestock to use public lands within the seven allotments for the next 10 years. The BLM would deny the application for permit renewal (i.e., not reissue the permit) and for the next 10 years not approve any applications to graze public lands in these allotments. The BLM would not cancel the existing preference for grazing use of these allotment's public lands as part of this action and would continue to administer it under applicable laws and regulations. Rangeland management projects would remain in place, but normal maintenance would not be expected to occur. After 10 years, the BLM would reevaluate whether to again authorize grazing on the public lands in the allotments, considering such factors as rangeland health and other resource objectives. The BLM would grant first priority for receipt of a future authorization, if any, to graze public lands within the seven allotments to the qualified applicants who hold the associated preference.

### 2.2.2 Alternative B - Continue Current Use

Seven permits would authorize livestock use for a 10-year period based on existing mandatory (Table 3) and other (Appendix 2) terms and conditions (T&Cs). A total of 112 AUMs of spring use (April-June) and 25 AUMs of fall use (November) would be authorized for cattle and 292 AUMs of spring use would be authorized for sheep. Cattle would be authorized in the Armacost, Boyd Individual, Gambril Individual, Deer Creek, and East Pine Creek allotments; sheep would be authorized in the Cambridge and West Pine Creek allotments; and cattle, horses, and sheep would be authorized in the Boyd Individual Allotment. In the Boyd Individual and East Pine Creek allotments, livestock numbers would not be restricted and grazing could occur at any time of the year, providing overuse and deterioration of public lands does not occur.

Table 3. Mandatory terms and conditions (livestock kind and number, season of use, percent public land, and preference) for seven allotments, Alternative B, Goodrich, Idaho.

| Operator (Authorization #) | Allotment (Number) | Livestock | | Season of Use | | %PL | Grazing Preference AUMs[1] | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Kind | # Head | Start | End | | Active | Sus-pended | Total |
| John C. Brown (#1101006) | Armacost Individual (00012) | C | 50 | 4/1 | 4/30 | 50 | 25 | 0 | 50 |
| | | | 50 | 11/1 | 11/30 | 50 | 25 | | |
| Hague Road Ranch (#1101029) | Boyd Individual (00040) | C[2] | 62 | 4/16 | 5/15 | 100 | 62 | 0 | 62 |
| Frank Shirts Jr. (#1104132) | Cambridge (00082) | S | 1,050 | 4/15 | 5/15 | 36 | 81 | 0 | 81 |
| Kim L. Braun (#1101106) | Gambril Individual (00090) | C | 50 | 4/10 | 5/31 | 11 | 9 | 0 | 9 |
| Tom Seid (#1101134) | Deer Creek (00151) | C | 40 | 4/16 | 5/30 | 14 | 8 | 0 | 8 |
| Randy Noah (#1101191) | East Pine Creek (00172) | C | 20 | 5/15 | 7/15 | 20 | 8 | 0 | 8 |
| Robert and Sharon Woody (#1101262) | West Pine Creek (00268) | S | 4,700 | 4/1 | 6/15 | 9 | 211 | 0 | 211 |

[1] AUM = animal unit month; used to determine stocking rate. An AUM is the approximate amount of forage a 1,000 pound cow plus one calf will eat in one month; other classes of livestock are converted to an animal unit equivalent based on their metabolic requirements.

[2] Kind of livestock are not restricted and numbers of livestock would vary by kind (e.g., 310 sheep, or 62 cattle or horses could be permitted).

Between 2001 and 2010, median stocking rates varied between 4.4 and 22.1 acres/AUM (Table 4). The following allotment specific descriptions are based on the permittee's submitted actual use reports (AURs), BLM billing statements, and current grazing permits.

Table 4. Permitted, mean, and median stocking rates for seven Goodrich allotments, Washington County, Idaho.

| Allotment | | Stocking Rate - Acres/AUM | | |
|---|---|---|---|---|
| Number | Name | Permitted[1] | Mean | Median |
| 00012 | Armacost Individual | 10.6 | 10.6 | 10.6 |
| 00040 | Boyd Individual | 6.6 | 6.8 | 6.6 |
| 00082 | Cambridge | 4.4 | 6.2 | 4.4 |
| 00090 | Gambril Individual | 22.1 | 47.1 | 22.1 |
| 00151 | Deer Creek | 10 | 10.1 | 10 |
| 00172 | East Pine Creek | 9.8 | 10.7 | 8.2 |
| 00268 | West Pine Creek | 4.7 | 4.7 | 4.7 |

[1] Permitted stocking rate-refers to the acres/AUM allocated to the allotment. A stocking rate (lower value) than the permitted acres/AUM amount, would constitute a higher intensity of use.

**Armacost Individual (00012)**
Based on submitted AURs, use would occur during both April and November.

**Boyd Individual (00040)**
Based on submitted AURs, use would occur as early as April 1 and as late as October 22, primarily during the spring and fall. Of the 10 years of data recorded/reported, five years were from AURs (three years non-use) and five years from billing statements. The permittee actually used the allotment twice in the last 10 years. Domestic sheep have not grazed the allotment since 1989. The allotment specific T&C would not restrict season, numbers, and class provided overuse and deterioration does not occur to the federal range.

**Cambridge (00082)**
Based on submitted AURs, use would occur from April 15 to May 15. Two years of grazing use were recorded/reported on AURs and eight years of use were determined from billing statements. The allotment is accessed through private land. The permittee grazes primarily a buck sheep herd consisting of 200-250 bucks, or occasionally one band of ewes/lambs (900 ewes). The buck herd normally stays on the allotment for full use of AUMs, up to 30 days. If they run ewes/lambs, the allotment is used for a shorter time frame, typically 14-20 days. The only water source is located on private lands.

The allotment is surrounded with woven wire to help keep the sheep contained. The bucks are grazed and accompanied by one herder and three dogs. The bucks are contained at night in a 40-acre pasture on private land and are counted in and out of the pasture. The ewes/lambs are grazed with two herders and up to five dogs, usually two guard dogs and three working/herding dogs. The ewes/lambs bed down at night, and stay bedded down all night. The ewes/lambs are counted continually through-out the day with marker sheep. The herders have cell phones if they encounter problems or need to call for help in finding strays. A Separation Response Plan (SRP) was signed May 11, 2011 per BLM Instruction Memorandum ID-IM-2010-059 between BLM and Frank Shirts Jr. to address bighorn sheep sightings near the allotment, and the potential and actual contact between bighorn sheep/domestic sheep. Topography in the allotment is conducive to reducing stray domestic sheep. The allotment specific T&C would provide for trailing in the Horse Flat Allotment. Based on clarification from the permittee, the three day trailing actually occurs across the Rocky Slope (00231), Rush Peak (00223), Horse Flat (00095), and Cambridge (00154) allotments with bedding occurring in Rush Peak, Horse Flat, and Cambridge (00154) allotments.

**Gambril Individual (00090)**
Based on submitted AURs, use would occur April 10 through May 31. Five years of use were recorded/reported on AURs and five years of use were taken from billing statements.

**Deer Creek (00151)**
Based on submitted AURs, use would occur April 16 through May 30. One year (2009) of actual use was recorded/reported on an AUR and nine years of use were taken from billing statements. An allotment specific T&C providing for a base property lease with an indefinite expiration date would apply.

**East Pine Creek (00172)**
Based on submitted AURs, use would occur primarily in the fall (October and November), with occasional spring (May) and summer use.

**West Pine Creek (00268)**
Based on submitted AURs, use would occur from April to June 15. One AUR was recorded in ten years. Currently (2012-2013), the permittee is not using the 994 acres of public lands in the allotment. On private lands, the permittee grazes two to three bands of sheep (900 dry yearling ewes/band). When they use the public lands, they graze one band of dry yearlings. They use two herders, four to five dogs (three guard dogs and two to three herding dogs) per band of sheep. If they run ewes/lambs, they leave the allotment in the middle of June; if they run yearlings, they leave the private lands before August. The sheep bed down for the night and are not contained. Currently there is no SRP for this allotment. The herders use marker sheep to count continually throughout the day. There is no history of strays in or from this allotment.

### 2.2.3 Alternative C – BLM Proposed Action-Livestock Grazing by Cattle Only

Livestock grazing authorizations and mandatory T&Cs would be as described in Alternative B for the Armacost Individual Allotment. Mandatory T&Cs (i.e., kind, number of livestock, and season of use) and allotment specific T&Cs would be modified for the Boyd Individual, Cambridge, Gambril Individual, Deer Creek, East Pine Creek, and West Pine Creek allotments (Allotment specific T&Cs would be modified to address a variety of issues (Table 6):
To address bighorn sheep/domestic sheep issues, class of livestock would be changed from sheep to cattle on the West Pine Creek and Cambridge allotments and from unrestricted (cattle/sheep/goats/horses) to cattle on the Boyd Individual Allotment.

- To provide flexibility, livestock numbers could vary on the Cambridge, East Pine Creek and West Pine Creek allotments as long as AUMs were not exceeded.
- To help ensure that range readiness criteria were met prior to turn-out, turnout dates would occur later in the spring on the Boyd, Cambridge, Deer Creek and West Pine Creek allotments.
- To account for annual variations in range readiness, turnout could occur earlier or later than the mandatory T&C for the Boyd, Cambridge, Gambril Individual, Deer Creek, East Pine Creek, and West Pine Creek allotments and off dates would be adjusted accordingly (e.g., if turnout occurred one week earlier than permitted, then the off date would also be one week earlier).
- To reduce consistent/repeated use during the critical growth period of perennial grasses and address sage-grouse nesting cover requirements, some form of deferment would be implemented on the Boyd Individual, Gambril Individual, Deer Creek, and East Pine Creek allotments.
- To address grazing preference transfer requests, preference would be transferred on the Cambridge (from Shirts Brothers, Inc. to Frank Shirts Jr.) and Deer Creek (from Kenneth Seid to Tom Seid) allotments.

Table **5**). Standard Other T&Cs (Appendix 3) would apply to all permits.

Allotment specific T&Cs would be modified to address a variety of issues (Table 6):
To address bighorn sheep/domestic sheep issues, class of livestock would be changed from sheep to cattle on the West Pine Creek and Cambridge allotments and from unrestricted (cattle/sheep/goats/horses) to cattle on the Boyd Individual Allotment.

- To provide flexibility, livestock numbers could vary on the Cambridge, East Pine Creek and West Pine Creek allotments as long as AUMs were not exceeded.
- To help ensure that range readiness criteria were met prior to turn-out, turnout dates would occur later in the spring on the Boyd, Cambridge, Deer Creek and West Pine Creek allotments.
- To account for annual variations in range readiness, turnout could occur earlier or later than the mandatory T&C for the Boyd, Cambridge, Gambril Individual, Deer Creek, East Pine Creek, and West Pine Creek allotments and off dates would be adjusted accordingly (e.g., if turnout occurred one week earlier than permitted, then the off date would also be one week earlier).
- To reduce consistent/repeated use during the critical growth period of perennial grasses and address sage-grouse nesting cover requirements, some form of deferment would be implemented on the Boyd Individual, Gambril Individual, Deer Creek, and East Pine Creek allotments.
- To address grazing preference transfer requests, preference would be transferred on the Cambridge (from Shirts Brothers, Inc. to Frank Shirts Jr.) and Deer Creek (from Kenneth Seid to Tom Seid) allotments.

Table 5. Mandatory terms and conditions (livestock kind and number, season of use, percent public land, and preference) for seven allotments, Alternative C, Washington County, Idaho.

| Operator (Authorization #) | Allotment (Number) | Livestock | | Season of Use | | %PL | Grazing Preference AUMs | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Kind | # Head | Start | End | | Active | Sus-pended | Total |
| John C. Brown (#1101006) | Armacost Individual (00012) | Same as Alternative B | | | | | | | |
| Hague Road Ranch (#1101029) | Boyd Individual (00040) | C | 61 | 5/1-5/30 even Yr.[1] | | 100 | 61 | 0 | 61 |
| | | | 1 | 5/1-5/30 even Yr. | | | 1 | 0 | 1 |
| | | | 61 | 6/15-7/14 odd Yr. | | | 61 | 0 | 61 |
| | | | 1 | 6/15-7/14 odd Yr. | | | 1 | 0 | 1 |
| Frank Shirts Jr. (#1104132) | Cambridge (00082) | C | 79 | 5/1 | 5/31 | 100 | 81 | 0 | 81 |
| Kim L. Braun (#1101106) | Gambril Individual (00090) | C | 50 | 4/10 | 5/31 | 11 | 9 | 0 | 9 |
| Tom Seid (#1101134) | Deer Creek (00151) | C | 40 | 5/1 | 6/15 | 14 | 8 | 0 | 8 |
| | | | | 10/1 | 11/15 | | | | |
| Randy Noah (#1101191) | East Pine Creek (00172) | C | 20 | 5/15 | 7/15 | 20 | 8 | 0 | 8 |
| | | | 13 | 9/1 | 11/30 | | | | |
| Robert and Sharon Woody (#1101262) | West Pine Creek (00268) | C | 84 | 5/1 | 7/15 | 100 | 210 | 0 | 211 |

[1] Because of the adjustment in dates from Alternative B, separate lines on the permit would allow correct total AUM calculations in the Rangeland Administration System.

Table 6. Summary of proposed terms and conditions modifications for six allotments, Alternative C, Washington County, Idaho.

| Permit Modification | Boyd Individual | Cambridge | Gambril Individual | Deer Creek | East Pine Creek | West Pine Creek |
|---|---|---|---|---|---|---|
| Class of livestock | X | X | | | | X |
| Livestock numbers | | X | | | X | X |
| Later turnout date | X | X | | X | | X |
| Range readiness flexibility | X | X | X | X | X | X |
| Deferment | X | | X | X | X | |
| Preference transfer | | X | | X | | |

The following allotment specific T&Cs would apply.

**Boyd Individual**

1. Turnout would occur May 1 during odd years and June 16 during even years, but the annual use period would not exceed 30 days.
2. During odd years, start date could occur up to one week earlier (April 24) or end date could occur up to one week later (June 6) to account for annual variations in range readiness, but livestock numbers, period of use (30 days), and AUMs would not be exceeded.

**Cambridge**

1. Livestock numbers would be coordinated between BLM and the permittee/lessee and may vary within the permitted use period; however, AUMs would not be exceeded and no more than 210 cattle could be permitted at any time.
2. Start date could occur up to one week earlier (April 24) or end date could occur up to one week later (June 7) to account for annual variations in range readiness, but period of use (31 days) and AUMs would not be exceeded.
3. An approved application and crossing permit must be obtained prior to trailing through the Rocky Slope (00231), Rush Peak (00223), Horse Flat (00095), and Cambridge (00154) allotments. Crossing dates would coincide with permitted use dates for the Cambridge Allotment (00082). Three bedding sites for domestic sheep would be authorized on public lands in the Rush Peak, Horse Flat, and Cambridge (00154) allotments. Livestock numbers allowed to trail would not exceed 950 head of sheep. Trailing activities would be temporary and could be cancelled at any time at the discretion of the authorized officer if deemed detrimental to resources in the allotments.

**Gambril Individual**

1. If range readiness is met and turnout occurs on April 10, the next year's turnout would be deferred by two weeks after Range Readiness criteria are met to ensure plants are not grazed during early spring growth stages every year.
2. End date could occur up to two weeks later (June 14) if turnout was delayed to meet range readiness, or due to deferment, but livestock numbers, period of use (52 days), and AUMs would not be exceeded.

**Deer Creek**

1. During the spring use period, start date could occur up to one week earlier (April 24) or end date could occur up to one week later (June 22) to account for annual variations in range readiness, but livestock numbers, period of use (46 days), and AUMs would not be exceeded.
2. Annual use could occur in either the spring or fall, but not both.
3. Your base property lease for the Deer Creek and Hopper Creek allotments has an indefinite expiration date. You must notify BLM in writing, if there are any changes to or cancellation of your lease agreement with the base property owner.

**East Pine Creek**

1. Start date could occur up to one week earlier (May 8) or end date could occur up to one week later (July 22) to account for annual variations in range readiness. If range readiness is met and turnout occurs between May 8 and May 15, then the next year's turnout would be deferred until May 15 or one week after range readiness criteria are met (whichever is later) to ensure plants are not grazed during early spring growth stages every year.
2. Permittee would only graze full AUMs (8) during the spring period (May 15 – July 15) every other year. Fall use would be available during any year, except in years where full use has already occurred during the spring.

3. Livestock numbers would be coordinated between BLM and the permittee/lessee and may vary; however, no more than 75 cattle could be permitted at any time. Period of use (61 days) and AUMs (eight) would not be exceeded in any grazing year.

**West Pine Creek**

1. Livestock numbers would be coordinated between BLM and the permittee/lessee and may vary within the permitted use period; however, AUMs may not be exceeded and no more than 770 cattle could be permitted at any time.
2. Start date could occur up to two weeks earlier (April 17) or end date could occur up to one week later (July 22) to account for annual variations in range readiness, but maximum livestock numbers, period of use (76 days), and AUMs would not be exceeded.

## 3.0 Affected Environment and Environmental Consequences

This section provides a view of the resources pertinent to the allotments and potential impacts to those resources. Some resources (and standards) which are closely related and have overlapping issues and impacts are grouped for discussion. Uplands include watersheds (Standard 1) and native plant communities (Standard 4) (Table 1). Riparian Areas cover riparian plant communities (Standard 2), stream channel and floodplain (Standard 3), water quality (Standard 7), and special status fish (Standard 8); however, Riparian Areas resources apply only to the Armacost Allotment (Table 1). Wildlife includes game and non-game (Standards 2 and 4) and special status species (Standards 2 and 8). Unless otherwise specified, acreages and impact considerations apply to public lands within the allotments.

**Impact Descriptors**

Effects can be temporary (short-term) or long lasting/permanent (long-term). Generally speaking:

- **Short-term** effects are changes to the environment during and following ground-disturbing activities that revert to pre-disturbance conditions, or nearly so, immediately or within a few years following the disturbance.
- **Long-term** effects are those that would remain beyond short-term ground disturbing activities. These terms may vary somewhat depending on the resource; therefore, each would be quantified by resource where applicable.

The magnitude of potential effects is described as being major, moderate, minor, negligible, or no effect and is interpreted as follows:

- **Major** effects have the potential to cause substantial change or stress to an environmental resource or resource use. Effects generally would be long-term and/or extend over a wide area.
- **Moderate** effects are apparent and/or would be detectable by casual observers, ranging from insubstantial to substantial. Potential changes to or effects on the resource or resource use would generally be localized and short-term.
- **Minor** effects could be slight but detectable and/or would result in small but measurable changes to an environmental resource or resource use.
- **Negligible** effects have the potential to cause an indiscernible and insignificant change or stress to an environmental resource or use.
- **No effects** have no discernible effect.

Livestock Utilization

Utilization as it relates to ingestion or removal of biomass of herbaceous plants is as follows:

- Light utilization = 21% to 40%
- Moderate utilization = 41% to 60%
- Heavy utilization = 61% to 80%
- Severe utilization = >80%

Stocking rates (acres per AUM) are considered as follows:

- Low (>8 ac/AUM)
- Moderate (5-8 ac/AUM)
- High (<5 ac/AUM)

## 3.1 Uplands (Watershed/Vegetation)

### 3.1.1 Affected Environment – Uplands (Watershed/Vegetation)

The following Standards were evaluated to determine rangeland health in upland portions (i.e. non-riparian areas) of the allotments (Appendix 1).

- Standard 1 (Watersheds) addresses the soil stability (ability to withstand erosional processes, i.e. water and wind events) of a site, and the site's ability to perform ecological processes such as cycle nutrients and water based on the amount and type of plants and other ground cover (e.g. biological soil crusts) present.
- Standard 4 (Native Plant Communities) addresses the maintenance and promotion of productive, diverse native plant populations. Productive and diverse native plant communities, in turn, provide habitat better suited for sensitive plant and wildlife species (Standard 8).

**Watershed**

The allotments range in elevation from 3,000 to 5,500 feet, but are predominantly between 3,000 and 4,000 feet. Annual precipitation ranges from 8 (low elevations) to 22 (upper elevations) inches. Between 1990 and 2007, 41% to 71% of precipitation occurred December through March primarily in the form of snow and 18% to 49% occurred April through June. The topography is characterized by toe slopes and foothills which consist of soils ranging from shallow and rocky to deep and loamy. For simplicity, soils have been categorized as deeper (loams 20 to 40 inches to lithic bedrock) and shallow (loams, stony loams, and stony soils 10 to 20 inches to lithic bedrock).

The seven allotments are meeting Standard 1 (Watersheds, Table 1). Watersheds are stable because of adequate vegetative, rock, and litter cover. Indicators of active erosion (e.g., rills, gullies, or active pedestalling) are not present or occur in isolated areas. Factors that can affect watershed conditions include vegetative cover (discussed in Vegetation section below), soil erodibility, areas of concentrated livestock use (influenced by percent slope and distance to water), and presence of biological soil crusts.

*Soil Erodibility* - Soil erosion potential from water is based on the soil Erosion Susceptibility Factor (K-factor) and slope. Soils high in clay have low K-factor values, about 0.05 to 0.15,

because they are resistant to detachment. Coarse textured soils, such as sandy soils, have low K-factor values (0.05-0.2), because of low runoff even though these soils are easily detached. Medium textured soils, such as the silt loam soils, have moderate K-factor values (0.25-0.4), because they are moderately susceptible to detachment and they produce moderate runoff. Soils with a K-factor ≥0.4 or on slopes >30% are classified as high water erosion potential. Soils having high silt content are most erodible of all soils because they are easily detached and tend to crust which can produce high rates of runoff. Soil structures affect both susceptibility to detachment and infiltration. Permeability of the soil profile affects K-factor because it affects runoff (USDA-NRCS 2012). Vegetative community structure (species composition/diversity, distribution, and stature of plants) and other ground cover including biological soil crusts, gravel/rock, and plant litter also play a key role in watershed stability and function.

The allotments are characterized by low to moderate soil erodibility (K-factor, Table 7). Because vegetation in the allotments is characterized primarily by perennial species, areas susceptible to erosion are limited to isolated concentrated use areas dominated by annuals.

Table 7: Soil erodibility (K-factor), percent slope, distance to water, and percent biological soil crust cover for public lands, Goodrich Seven Allotments, Idaho.

| **Allotment** | **Lvstk Class** | **Soil Erodibility**[1] | | | **Slope**[2] | | | **Distance to Water** | **% Biolog -ical Soil Crust Cover**[3] |
|---|---|---|---|---|---|---|---|---|---|
| | | Low | Moderate | High | Gentle | Moderate | Steep | | |
| Armacost Individual | C | 182 (36%) | 330 (64%) | | 186 (37%) | 302 (60%) | 17 (3%) | 0-2.25 miles from perennial/inter mittent streams | <1% |
| Boyd Individual | C/S | 9 (3%) | 320 (97%) | | 276 (85%) | 50 (15%) | | 0.3-1.2 miles from reservoir | 0-2% |
| Cambridge | S | 351 (98%) | 7 (2%) | | 182 (51%) | 173 (49%) | | 0.75-1.8 miles to trough | - |
| Gambril Ind. | C | | 42 (35%) | 79 (65%) | 39 (33%) | 71 (60%) | 9 (8%) | 1.0-1.6 miles to reservoir | 0-2% |
| Deer Creek | C | 74 (92%) | 6 (8%) | | 74 (94%) | 5 (6%) | | 0-0.3 miles from reservoir | 0% |
| East Pine Creek | C | 5 (6%) | 74 (94%) | | 36 (46%) | 42 (53%) | 1 (1%) | 0.2-0.6 miles from perennial stream | 0% |
| West Pine Creek | S | 153 (15%) | 841 (85%) | | 476 (48%) | 459 (46%) | 56 (6%) | 0-1.2 miles from intermittent streams | 0-5% |
| Totals | | 774 | 1,620 | 79 | 1,269 | 1,102 | 83 | | |

[1] low - K-factor ≤0.15; moderate = K-factor = 0.16-0.40; high – K-factor >0.40
[2] gentle – 0-20% slope; moderate – 21-60% slope; steep - >60% slope
[3] as measured at rangeland health assessment sites

*Percent Slope* - The allotments have predominantly gentle (0-20%) to moderate (21-60%) slopes (Table 7). Cattle distribution typically is more influenced by slope than domestic sheep distribution, with a general preference for slopes <20% (Ganskopp and Varva 1987). Private and

State lands generally have a higher percentage of gentle and moderate slope lands than public lands.

*Distance to Water* - Three allotments (Armacost Individual, Deer Creek, and West Pine Creek) have water sources on public lands (Table 7). In the remaining allotments, public lands are between 0.2 miles to 2.25 miles from water. Standard 1 was met even in areas within 0.25 miles of water sources, the typical area of concentrated livestock use (Adler and Hall 2005).

*Biological Soil Crusts* - Biological soil crusts are an important component of watershed health. They are complex mosaics of cyanobacteria, green algae, mosses, lichens, and microfungi that are concentrated in the top 1 to 4 mm of the soil, binding soil particles together. Biological soil crusts commonly occupy areas under and between larger plants and help stabilize soils (thus, watersheds) protecting them from erosive forces (i.e. wind and water). They also enhance soil moisture retention and infiltration, and play a role in site fertility by fixing atmospheric nitrogen and contributing to organic matter (Eldridge and Greene 1994; Belnap and Gillette 1997; McKenna-Neumann et al.1996). Biological soil crusts function as living mulch by retaining soil moisture and discouraging annual weed growth.

Presence of biological soil crusts in the allotments is variable (Table 7). Field assessments provided ocular estimates of crust cover ranging from 0-5%. However, these estimates were made only for 'open canopy' and did not take into account crusts which may be present on the ground beneath vegetation. Cover was low, especially on moderately deep to deep soils, because of moderate to high vegetative cover which is typical for sites in higher precipitation zones (primarily 16-22"; Belnap et al. 2001).

**Vegetation**

The seven allotments are meeting Standard 4 (Native Plant Communities, Table 1). Only minor shifts in vegetative attributes have taken place, or issues are localized and small in scale. Overall, native plant diversity is being maintained and native plants are vigorous and productive.

Based on satellite imagery, nine general upland vegetative cover types could be affected by livestock grazing (Table 8, Map 2). In the seven allotments combined, Big Sagebrush/Big Sagebrush Mix (26%) is the most common vegetative cover type, followed by Bunchgrass (18%), Conifer (13%), Exotic Annuals (12%), Mountain Shrub (12%), and Stiff Sagebrush (11%). Plants typically associated with upland vegetative cover types are provided in Table 8, followed by a discussion of the more characteristic plant communities comprising the Deeper and Shallow soil categories. Wet Meadow (riparian areas) and unclassified (unknown) cover types total 56 acres (2%) are not discussed further in this section.

Perennial cover types range from >99% to 50% within each allotment (Table 8). Conversely, the Exotic Annual cover type ranges from <1% to 50%. However, nearly half and often greater than half of the acres which make up the Exotic Annual cover type maintain a native perennial herbaceous species (i.e., bunchgrasses and forbs) and/or shrub component; therefore, no areas were evaluated under Standard 6 (Exotic Plant Communities) and current livestock use was not considered to be a factor in the amount and distribution of exotic annual species (USDI 2005).

Table 8. Total acres and proportion of all vegetative cover types, based on Pacific Northwest National Laboratories (PNNL) 2002 satellite imagery classification, in the seven Goodrich allotments, Idaho.

| Soil Category | Cover Type | Characteristic Vegetation[1] | Armacost Individual[2] | Boyd Individual[2] | Cambridge[2] | Gambril Individual[2] | Deer Creek[2] | East Pine Creek[2] | West Pine Creek[2] | Total Acres |
|---|---|---|---|---|---|---|---|---|---|---|
| Shallow - Deeper | Big Sagebrush/ Big Sagebrush Mix | Xeric big sagebrush, Bunchgrass, Exotic Annuals (occ) | 63 acres (12%) | 149 acres (45%) | 155 acres (43%) | 41 acres (37%) | 13 acres (16%) | 1 acre (1%) | 211 acres (21%) | 633 (26%) |
| Deeper | Mountain Shrub | Mountain mahogany, Ceanothus | 102 acres (20%) | 0 | 3 acres (1%) | <1 acre (<1%) | 0 | 7 acres (9%) | 194 acres (20%) | 307 (12%) |
| Deeper | Bitterbrush | Antelope bitterbrush, Bunchgrass, Exotic Annuals (occ) | 41 acres (8%) | 5 acres (2%) | 4 acres (1%) | 0 | 0 | 14 (18%) | 25 acre (3%) | 89 (4%) |
| Deeper | Mountain Big Sagebrush | Mountain big sagebrush, Bunchgrass | 25 acres (5%) | <1 acre (<1%) | 5 acres (1%) | 0 | 0 | 0 | 22 acres (2%) | 53 (2%) |
| Shallow | Stiff Sagebrush | Stiff sagebrush, Bunchgrass | 107 acres (21%) | 50 acres (15%) | 27 acres (8%) | 15 acres (13%) | 11 acres (14%) | <1 acre (1%) | 55 acres (6%) | 266 (11%) |
| Shallow - Deeper | Bunchgrass | Idaho fescue, Bluebunch wheatgrass, Sandberg bluegrass, Shrubs (occ), Exotic Annuals (occ) | 31 acres (6%) | 48 acres (14%) | 129 acres (36%) | 31 acres (28%) | 53 acres (68%) | 17 acres (21%) | 126 acres (13%) | 435 (18%) |
| Shallow - Deeper | Exotic Annuals | Cheatgrass, Bulbous bluegrass[3], Japanese brome, Exotic annual forbs, Bunchgrass (occ) Shrubs (occ) | 130 acres (25%) | 75 acres (23%) | 31 acres (9%) | 23 acres (21%) | <1 acre (<1%) | 39 acres (49%) | 8 acres (1%) | 307 (12%) |
| NA | Conifer | Douglas-fir, Ponderosa pine | 12 acres (2%) | 0 | 1 acre (<1%) | 0 | 0 | <1 acre (<1%) | 317 acres (32%) | 330 (13%) |
| Shallow - Deeper | Other[4] | Rabbitbrush, Aspen, Salt desert shrubs | 3 acres (1%) | 4 acres (1%) | 3 acres (1%) | 1 acre (<1%) | 1 acre (1%) | <1 acre (1%) | 27 acres (3%) | 40 (2%) |
| *TOTAL* | | | 514 acres | 332 acres | 358 acres | 112 acres | 79 acres | 80 acres | 985 acres | 2,460 |

[1] Occ = occasionally present. Perennial forbs are also present in most cover types but are not included in the PNNL data; refer to discussion below.
[2] Acres within the allotment and percentage within the allotment.
[3] Bulbous bluegrass is an exotic, short-lived species occupying similar niches as annual exotic species.
[4] 'Other' was created to combine PNNL Cover Types (Rabbitbrush, Aspen, Salt Desert shrubs,) which compose less than 1% each of upland vegetation in the allotments.

*Deeper Soils* - Approximately 53% of public lands are in the deeper soil category (Table 8). Xeric big sagebrush communities with bluebunch wheatgrass, Idaho fescue, and an array of native perennial forbs including arrowleaf balsamroot, lupine, and biscuitroot, typically occupy these soils. Shrubs including antelope bitterbrush, green and grey rabbitbrush, snowberry, and chokecherry are also occasionally present.

*Shallow Soils* - Approximately 33% of public lands are in the shallow soil category (Table 8). They support a mosaic of stiff and xeric big sagebrush communities, with antelope bitterbrush scattered throughout. Sandberg bluegrass and bluebunch wheatgrass are the more common native perennial grasses. Native perennial forb species include arrowleaf balsamroot, yarrow, wild onion, and biscuitroot. Livestock tend to avoid these areas because of the amount of rock cover.

The remaining soils (15%) support conifers (e.g., Douglas-fir, ponderosa pine), aspen, rabbitbrush, or salt desert shrubs. Bulbous bluegrass (an introduced, short-lived perennial grass), cheatgrass, and other weedy or invasive species are present to varying degrees in all soils (Table 8). Vegetative communities are within acceptable ranges of variability based on soil, landform, weather, and climate.

*Phenology* – Growth periods for vegetation depend on elevation, aspect, and precipitation. They vary by year and species. Phenology transects were conducted in the Goodrich MA between 2003 and 2006 to determine dates when different growth phases of perennial grasses occurred. The mid-vegetative phase (i.e., multiple leaves showing, prior to flower stalk emergence) varied between March 3 and May 8 for bluebunch wheatgrass, March 3 and April 22 for Sandberg bluegrass, and March 16 and May 8 for squirreltail. The boot stage (i.e., flower heads are beginning to show) varied between April 6 and May 11 for bluebunch wheatgrass, April 8 to May 21 for Sandberg bluegrass, and April 22 to May 7 for squirreltail. The critical growth period, when plants are most susceptible to grazing impacts, occurs between boot stage and seed dissemination (generally about 60 days).

*Special Status Plants* - There are no known populations of federally threatened, endangered, or BLM special status plant species in the allotments. Therefore, discussion of impacts to special status plants is unnecessary and the topic will not be carried forward.

*Noxious Weeds* - Noxious is a legal designation given by the Director of the Idaho State Department of Agriculture (ISDA) to any plant having the potential to cause injury to public health, crops, livestock, land or other property (Idaho Statute 22-2402). The ISDA is responsible for administering the State Noxious Weed Law in Idaho and maintains a list of noxious species.

The Boise District BLM has an active weed control program that annually updates the locations of noxious weeds and treats known weed infestations utilizing chemical, mechanical, and biological control techniques. Infestations of noxious weeds are treated contingent upon the BLM annual weed budget, employee availability, and noxious weed priority. The BLM has developed partnerships known as Cooperative Weed Management Areas (CWMAs) with state, county, and private organizations to cooperatively combat noxious weeds across ownership boundaries. Washington County, Adams County, and the ISDA are among these partners.

Noxious weeds are present, but not in large enough quantities to detract from the overall ecological condition or preclude allotments from meeting rangeland health standards. Leafy spurge, rush skeletonweed, and Scotch thistle have been recorded on public lands in the Boyd Individual, Cambridge, Gambril Individual, Deer Creek, East Pine Creek, and West Pine Creek allotments, and adjacent to public lands the other allotments (Table 9, Map 3). While BLM records and in many cases treats these noxious species, the database is incomplete. Five of fourteen known weed infestations have been treated, and numerous others in surrounding areas have also been treated. Weed treatments are ongoing and would continue as new infestations of these species are discovered.

Table 9. Noxious weed occurrences recorded in the Goodrich Allotments from 2001 to 2010.

| **Species** | **Treated** | **Allotment (Number)** |
|---|---|---|
| Leafy Spurge (2) | No | Boyd Individual (00040) |
| Rush Skeletonweed | No | |
| Scotch Thistle (3) | No | |
| Leafy Spurge | No | Cambridge (00082) |
| Rush Skeletonweed (2) | No | Gambril Individual (00090) |
| Scotch Thistle (2) | No | |
| Leafy Spurge[1] | Biological (2005) | Deer Creek (00151) |
| Scotch Thistle[1] | No | |
| Scotch Thistle | No | East Pine Creek (00172) |
| Leafy Spurge (2) | Chemical (2010) | West Pine Creek (00268) |
| Rush Skeletonweed | Chemical (2004) | |
| Rush Skeletonweed (2) | Chemical (2010) | |

[1] Not recorded on BLM-administered lands.

### 3.1.2 Environmental Consequences – Uplands (Watershed/Vegetation)

A general discussion of how watersheds and vegetation respond to livestock grazing and trampling precedes the discussion of consequences specific to each alternative.

The following assumptions apply for analysis purposes:

Duration of Impacts

- Short-term effects to upland vegetation would be <1 year; and
- Long-term effects would be ≥1 year.

Phenology of Herbaceous Perennial Vegetation (i.e. preferred forage)

Factors such as elevation, aspect, and temperature will influence how early or late herbaceous perennials initiate and terminate growth, but these broad dates capture that spectrum.

- Growing season is generally between March 1 and July 15; and
- Dormant season is generally between July 16 and February 28.

#### 3.1.2.1 General Discussion of Impacts

**Watershed**

Impacts to soils from livestock grazing that are considered include a loss of ground cover such as biological soil crusts, litter, and vegetation. Trampling causes soil compaction and pedestals,

especially where ground cover has been reduced or removed. Soil disturbance reduces surface soil resiliency to wind and water erosion. For discussion, general impacts have been grouped into mechanical and biological categories.

Effects of Mechanical Disturbance

- Soil surface degradation reduces water infiltration and increases surface runoff which can cause accelerated erosion.
- Decreased soil roughness that affects soil texture, microtopography, and soil temperature.
- Biological soil crust degradation can dramatically reduce site fertility and further reduce soil surface stability (Garcia-Pichel and Belnap 1996).

Effects of Biological Disturbance

- Decreased plant carbon and nitrogen fixation.
- Decrease in available nutrients for plants (e.g. magnesium, potassium, iron, and others) (Harper and Belnap in press).
- Decreased spatial distribution of nutrients.

Timing of disturbance can affect the degree to which the cover and species richness of a biological crust is reduced. Soils have different intrinsic soil strengths that vary with moisture content. Soils with little tendency to form aggregates, such as sands, are more susceptible to mechanical damage compression stresses when dry. Crust components are brittle when dry, and the connections they make between soil particles are easily crushed. Thus, compressional disturbances can severely affect the crust's ability to stabilize soils, especially in dry sandy and silty soils (Belnap et al. 2001). As crustal species are only metabolically active when wet and are brittle when dry, disturbance in dry seasons is generally more destructive, and organisms are less able to recover, than when disturbed in wet seasons (Harper and Marble 1988; Marble and Harper 1989).

**Vegetation**

Direct impacts to vegetation include reductions in biomass via ingestion (grazing) and breakage (injury, deformity) via trampling. Indirect effects include changes in vegetative community conditions associated with livestock grazing activities, and the potential spread of weedy species passively and/or by livestock transport (vectors). Effects to vegetation are grouped by source (grazing, trampling, and vectors). These sources are addressed where appropriate for broad vegetative types potentially affected which include: perennial herbaceous vegetation, annual vegetation, and woody vegetation. Perennial herbaceous vegetation includes native and introduced perennial grasses and forbs. Annual vegetation includes native and introduced grasses and forbs. Woody vegetation includes shrubs and trees.

Effects of Grazing

*Perennial Herbaceous Vegetation* - Livestock would graze preferentially on herbaceous components of the plant community to the extent that they are actively growing, non-toxic, and non-piercing. Perennial grasses are most susceptible to grazing impacts during their critical growth periods. Utilization during periods when plants are withdrawing reserves from roots for

growth, during re-growth, or during seed formation would impact herbaceous species greater than the same level of utilization when the plant is not actively growing or dormant.

Generally, the vigor of perennial grasses can be sustained with repeated light utilization, while repeated moderate to severe utilization reduces photosynthetic tissue and can diminish plant vigor. Areas which undergo repeated moderate to heavy utilization would maintain fewer perennial grasses and those remaining would be smaller and less vigorous (than lightly utilized plants), or would be found mainly under shrub canopies where they are difficult to reach.

*Annual Vegetation* - Grazing would remove biomass and could kill plants, but these impacts would be short-term due to the high fecundity and short life cycles of this group, particularly cheatgrass. Palatability and rapid growth of cheatgrass is typically earlier than the rapid growth phase for most perennial native grasses (cold-season perennials such as Sandberg bluegrass are an exception). Grazing in these communities during the winter or early spring could result in some minor short-term indirect benefit for perennial native species by potentially relieving some of the grazing pressure on perennial native grasses. However, the window of time to realize this benefit can be narrow and unpredictable. Grazing cheatgrass in the spring may also lead to greater seed production. Some clipping studies suggest that grazing cheatgrass in the spring stimulates flowering stalks and increases seed production (Clements et al. 2008). However, little change to annual vegetation would be anticipated regardless of use level.

*Woody Vegetation* - Livestock prefer herbaceous vegetation, but would increasingly utilize woody species (e.g. bitterbrush and mountain mahogany) for browse as herbaceous vegetation goes dormant in late summer (Stuth and Winward 1977, Ganskopp et al. 1999, Ganskopp et al. 2004). Reductions in biomass of browse species would be greatest mid-summer through fall when herbaceous vegetation is dormant.

Effects of Trampling

*Perennial Herbaceous Vegetation* - Trampling perennial herbaceous plants could reduce plant productivity but would be unlikely to result in mortality of established plants. Trampling could uproot perennial plant seedlings and young plants, resulting in mortality to those plants. This group is generally more resilient to trampling than shrubs or annual plants due to its more flexible tissues and more extensive root systems. A simulated study of hoof action on total shoot biomass and detached material in short grass sod vegetation types suggests moderate levels of trampling (i.e. four footfalls) removes approximately 5% of living biomass (Abdel-Magid et al. 1987). Level of utilization is a reasonable correlation for amount of trampling perennial herbaceous vegetation may incur. Similar to grazing, repeated light use would have less of an effect on perennial plants than repeated moderate to severe utilization.

Trampling of perennial vegetation would generally produce less of an impact during dormancy than during growth. Injury or removal of dormant above-ground vegetation would reduce protective winter cover, which could affect subsequent growth. Nutrient availability would not be affected because nutrients are in the roots when plants are dormant. Soil compaction from trampling also affects vegetation by reducing water and oxygen infiltration and restricting root growth.

*Annual Vegetation* - Trampling of annual plants could result in injury or mortality, and/or seed bank reductions if trampled during their growing season (before seed set/dissemination). Seedbank reductions would be short-term and negligible to minor due to abbreviated life cycles and generally high fecundity, particularly for introduced and/or invasive species (e.g. cheatgrass).

*Woody Vegetation* - Trampling of shrubs could deform mature individuals and could kill immature shrubs (Owens and Norton 1990). Similarly, trees could be deformed by livestock breaking limbs of mature plants, or killed by trampling of seedlings or immature plants. Brittle shrubs, such as bitterbrush, are more sensitive to trampling than more flexible shrubs, such as rabbitbrush. Shrub seedlings are more sensitive to trampling and dislodgement than older plants. Woody species would generally display more deformities and fewer young plants where utilization levels are repeatedly moderate to severe.

Effects of Vectors

Livestock may transport weed seeds that adhere to their bodies or drop undigested weed seeds in their manure. Cheatgrass has been known to spread in this manner (Young and Longland 1996). Livestock grazing could indirectly elevate competition for limited resources between existing native and imported exotic species if livestock import and deposit exotic plant materials (Laycock and Conrad 1981). Livestock grazing could also have indirect minor short-term benefits for upland vegetation by dispersing native seeds and creating microhabitats for native species through localized soil disturbance (Burkhardt 1996).

A combination of impacts (i.e. disturbance, preferential grazing of herbaceous perennials, and weed seed transport) could increase invasive species, especially where livestock tend to congregate (e.g. watering facilities and mineral licks). Damage to native plants and soils can reduce plants' overall productivity and competitiveness creating niches for invasive species to occupy. Moist conditions and openings in ground cover created by hoof action provide opportunities for germination and spread of noxious and/or invasive plants.

Magnitude of Effects

Grazing intensity (e.g., utilization, stocking rate) and timing dictate the magnitude of impacts to upland vegetation. Generally speaking, with increased intensity, the degree that plant communities would be directly affected increases. Greater utilization levels would increase potential to trample or ingest vegetation. Generally, the greater the stocking rate (the number of livestock for a period of time in a given area or acres/AUM), the greater the degree watersheds and vegetation could be directly affected. High stocking rates could cause increased sediment production, reduced infiltration rates, and increased susceptibility to erosion, whereas moderate or low stocking rates could allow for maintenance of conditions and recovery from drought conditions (Warren et al. 1986, Thurow 1988). Higher stocking rates would increase potential to trample or ingest vegetation compared to lower stocking rates. Greater site productivity can help reduce stocking rate impacts. Grazing when plants are initiating growth or actively growing (typically in spring) would impact them more than when they are dormant (perennials) or have completed their life cycle (annuals).

#### 3.1.2.2 **Alternative A**

**Watershed**

Removal of livestock use would result in minor to moderate improvements in watershed conditions over the long term. Mechanical disturbance from livestock, especially when soils are wet, would not occur on 2,648 acres. Improvements would be most noticeable on gentle slopes (up to 1,269 acres) and areas within 0.25 miles of water sources (Table 7). Where present, biological soil crust cover would increase slowly (>2 years, Belnap et al. 2001). Biological soil crust recovery would be negligible in areas where annuals dominate, areas that experienced historic concentrated use, or areas that don't typically support coil crusts. Increased plant vigor and density would improve soil stability and nutrient cycling over the short and long term, especially on 1,699 acres of moderate and highly erodible soils. Standard 1 would continue to be met over the long term on 2,492 acres.

**Vegetation**

Removal of livestock related grazing and trampling impacts would result in negligible to moderate improvements in vegetation conditions. Perennial grasses and forbs would complete growth and set seed annually, improving root reserves and reproductive potential resulting in increased vigor and density. In the absence of fire, there could be minor increase in shrubs in the bunchgrass cover type. Exotic annual communities (307 acres) would not change over the long term in the absence of grazing. Remnant perennials in these areas would still be at a competitive disadvantage (Monsen 1994). Rate of spread for noxious weeds that depend on livestock to disperse seeds or plant materials would be reduced; however, other methods (e.g. wind, wildlife, recreational users) could establish and spread weeds. The potential for invasive and noxious weeds to expand beyond current distributions would be reduced over the long term where perennial plant community health improves (2,185 acres). Standard 4 would continue to be met over the long term.

#### 3.1.2.3 **Alternative B**

**Watershed**

Standard 1 would continue to be met on the seven allotments (2,492 acres) for the 10-year permit period. Although annual mechanical and biological disturbances would occur, their intensity and distribution across the landscape would be at levels that would maintain conditions that meet Standard 1. Adequate vegetative cover currently exists and the prevalence of low (31%) or moderate (65%) K-factor soils would help minimize watershed impacts from livestock.

Affects from livestock use would be most apparent on gentle slopes (1,269 acres in portions of seven allotments) and areas within 0.25 miles of water sources (Table 7). Mechanical damage would occur in these areas, especially during early spring use periods (i.e., April use in all but the East Pine Creek Allotment; Table 3) when soils are moist or saturated. Biological soil crusts could recover from trampling damage in areas where adequate soil moisture still exists when livestock are removed by mid-May (i.e., Armacost Individual, Boyd Individual, and Cambridge); however, the amount of crust cover (0-5%; Table 7), which is a minor watershed protection component in all allotments, would remain static over the long term because of annual disturbances and site limitations. Because cattle disproportionately use gentle slopes (Ganskopp and Varva 1987), minor mechanical and biological disturbance would occur on moderate slopes (470 acres) and negligible disturbance would occur on steep slopes (27 acres) in the Armacost

Individual, Boyd Individual, Gambril Individual, Deer Creek and East Pine Creek allotments (Table 7). Negligible to minor mechanical and biological damage from sheep would occur on all slope classes (up to 1,682 acres in the Boyd Individual, Cambridge, and West Pine Creek allotments); however, because sheep are smaller and, with herding, tend to spend less time in a particular area, impacts would be less than for cattle. Moderate to major mechanical and biological impacts would occur in isolated areas (generally 1 acre/1,000 head of sheep; Seefeldt and Leytem 2011) where sheep are consistently bedded in the West Pine Creek, Cambridge, Boyd Individual, and Horse Flat allotments. Trailing sheep cross-country through the Horse Flat Allotment would have minor to moderate mechanical impacts annually along the trailing route.

**Vegetation**

Standard 4 would continue to be met on the seven allotments (2,492 acres) for the 10-year permit period. Spring grazing and trampling effects would occur in all allotments; however, the current diversity and abundance of native species indicates these impacts would be negligible to minor over the long term. Use would coincide with the critical growth period; however, grazing impacts would be limited over the long term because of annual variations in when the critical growth period occurs relative to the livestock use period.

Low stocking rates (>8 acres/AUM, Table 4) in the Armacost Individual, Gambril Individual, Deer Creek, and East Pine Creek allotments (810 acres) would help minimize grazing and trampling impacts over the short and long term. Grazing and trampling in the Boyd Individual, Cambridge, and West Pine Creek allotments (up to 1,682 acres) could have minor to moderate long term effects; however, widespread distribution of sheep would help reduce concentrated use impacts in the Cambridge and West Pine Creek allotments. Moderate trampling impacts would occur in isolated bedding areas and perennial grasses and forbs would be reduced over the long term (Seefeldt and Leytem 2011). Distance from water (≥0.3 miles) would help minimize grazing and trampling impacts in the Boyd Individual Allotment. Deep-rooted perennial grasses and forbs would persist in areas with slight to light use (1,185 acres of moderate to steep slopes in all allotments). Shrubs would be maintained; however, minor bitterbrush hedging would occur in the Armacost Allotment (41 acres) during the fall use period.

The distribution of exotic annuals and noxious weeds would remain static or increase slightly over the long term. Areas that receive consistent concentrated use (i.e., gentle slopes within 0.25 miles of water sources) would remain susceptible to exotic annuals and noxious weeds. Exotic annuals and short stature perennials would predominate where cattle use these areas throughout the active growth period of native perennial grasses. Use in all allotments would occur when perennials are actively growing; therefore, grazing as a potential annual grass control would not occur. Livestock could transport seeds throughout use areas. Maintaining current levels of native perennials and noxious weed treatments would help minimize the opportunity for invasive and noxious species to expand. Cross-country sheep trailing through the Horse Flat Allotment would have minor to moderate trampling and vector impacts annually (USDI 2012).

#### 3.1.2.4 **Alternative C**

**Watershed**

Impacts would be as described in Alternative B for the Armacost Individual Allotment. Standard 1 would be met in the Boyd Individual, Cambridge, and West Pine Creek allotments

where cattle use would occur and in the remaining allotments where use periods would be altered and some deferment would occur. Where kind of livestock is changing from sheep to cattle (Boyd Individual, Cambridge, and West Pine Creek), moderate (732 acres) and steep (56 acres) slopes would receive no to light use which would help minimize cattle impacts and maintain Standard 1 in these areas. Moderate mechanical and biological impacts would occur on up to 476 acres of gentle slopes in the West Pine Creek Allotment and long term impacts would be greater than in Alternative B because cattle would congregate near water sources more than sheep. Mechanical and biological impacts on gentle slopes in the Boyd Individual (276 acres) and Cambridge (182 acres) allotments would be similar to Alternative B because public lands are >0.3 miles from water and concentrated use would not occur. Standard 1 was met in the Boyd Individual Allotment during the previous 10-year period when cattle use occurred.

Changes in turn-out dates to accommodate seasonally variable range readiness (two weeks later than Alternative B for Boyd Individual, Cambridge, Gambril Individual, Deer Creek, and East Pine Creek allotments and one month later in the West Pine Creek Allotment) would reduce mechanical impacts relative to Alternative B. Moisture levels within 4" of the soil surface would be reduced, resulting in firmer soils that would be less susceptible to mechanical damage. Biological impacts would be similar to those described in Alternative B; however, biological soil crusts would have less or no (where use period extends to July 15) time to recover before they enter dormancy. A minor reduction in biological soil crusts would occur in the Boyd Individual, East Pine Creek, and West Pine Creek allotments where use would extend into the dormant period; however, biological soil crusts are a minor component in the allotments. Soils would be moist during fall use in the Deer Creek Allotment and biological soil crust cover would be maintained. Biological soil crust cover would be similar to Alternative B in the remaining allotments over the long term.

**Vegetation**

Impacts would be as described in Alternative B for the Armacost Individual Allotment. Standard 4 would continue to be met in the remaining allotments over the long term. Periodic deferment in the Boyd Individual (use would occur after the critical growth period in alternate years), Gambril Individual (use would be deferred by two weeks in alternate years), Deer Creek (spring or fall use would occur, but not both), and East Pine Creek (spring or fall use would occur, but not both) allotments (610 acres) would result in minor long-term increases in perennial grasses and forbs when use occurs primarily outside critical growth periods. Plants would have an increased opportunity to set seed in alternate years, but use would still occur annually during the growth period in the Gambril Individual Allotment and potentially in the Deer Creek and East Pine Creek allotments. Plant vigor and species diversity would be maintained or increase in allotments with low stocking rates (280 acres in Gambril Individual, Deer Creek, and East Pine Creek) and/or where use during the critical growth period is consistently ≤40%. Minor to moderate decreases in perennial grasses and forbs would occur in concentrated use areas in the West Pine Creek Allotment where moderate to heavy use occurs. Perennials would be maintained in the Boyd Individual and Cambridge allotments because cattle use levels would not be different than Alternative B (i.e., public lands are not associated with concentrated use because water sources are > 0.25 miles away). Grazing impacts on shrubs would be as described in Alternative B.

Trampling impacts would be reduced in the four allotments with later turnout (1,762 acres in the Boyd Individual, Cambridge, Deer Creek, and West Pine Creek allotments). Turnout would occur when soils are firm; therefore, less root-zone disturbance would occur. Moderate trampling impacts could occur in concentrated cattle use areas (up to 182 acres of gentle slopes) of the Cambridge Allotment; however, these impacts would be limited because they occur ≥ 0.75 miles from water sources. Trampling impacts in the remaining allotments would be as described in Alternative B.

Trends in exotic annuals and noxious weeds would be similar to Alternative B. Concentrated use areas in the West Pine Creek Allotment (up to 476 acres of gentle slopes) would be more susceptible to increases in exotic annuals and noxious weeds over the long term if perennial grasses decrease. Public lands in the Cambridge Allotment would receive less use and disturbance because of distance to water; therefore, cattle would have a minor role as seed vectors. Fall use in the Deer Creek and East Pine Creek allotments (159 acres) and periodic deferment in the Boyd Individual Allotment (330 acres) could have minor long-term exotic annual control benefits by removing exotic annual litter and avoiding growing season impacts on perennial grasses. Exotic annual control would not occur in the Gambril Allotment (121 acres) because use would occur annually during some portion of the growing season.

### 3.1.3 Cumulative Impacts – Uplands (Watershed/Vegetation)

#### 3.1.3.1 **Scope of Analysis**

The 120,000-acre Goodrich MA will serve as the cumulative impacts assessment area (CIAA; Map 4). The MA is in the upper Weiser River watershed and includes 66 grazing allotments. Vegetative cover types, management objectives for the grazing allotments, and land uses are similar to those occurring in the seven allotments. Because of their proximity, watershed and vegetative processes that occur in either group of allotments could affect the other group. The analysis timeframe covers the permit period (present to 2023) which coincides with the duration of impacts identified above.

#### 3.1.3.2 **Current Conditions and Present Effects of Past, Present, and Foreseeable Future Actions**

Past actions that were considered include livestock grazing and range management projects, road construction and maintenance, wildfire, OHV use, agriculture, and development. The collective effects of past actions have contributed to the existing conditions described below.

**Watershed**

Soils in the CIAA are characterized predominantly by low or moderate erodibility. Standard 1 was being met in 78% of the allotments when they were evaluated in 2002. Conditions are expected to be maintained in those allotments and improving in the remaining allotments based on management changes incorporated when permits were renewed.

**Vegetation**

Vegetative cover types and relative composition in the analysis area are similar to the seven allotments (Table 8). Big Sagebrush, Bunchgrass, Stiff Sagebrush, and Exotic Annuals are the predominant types. Conifers make up a smaller proportion and approximately 3% of the area is

agricultural lands. Between 1961 and 1991, 11 fires burned 14,590 acres in and adjacent to the MA. In 2000 and 2007, two fires burned 20,060 acres of primarily private and National Forest lands. Vegetative cover types in the historic burns (prior to 1992) have generally recovered to pre-fire conditions; however, Exotic Annuals have increased and shrubs have not become reestablished in more recently burned areas. There are 679 identified occurrences of 12 noxious weed species. Leafy spurge, rush skeletonweed, Scotch thistle and yellow starthistle are the primary species. Private lands in the counties are primarily undeveloped and are characterized by the cover types described above. Permanent pasture and rangeland account for a substantial portion of private lands in Adams (37%) and Washington (61%) counties (Headwaters Economics 2012). Exurban (lot size ≥1.7 acres) development grew 230% (Adams County) and 400% (Washington County) between 1980 and 2000, but represented small proportions of Adams (4%) and Washington (3%) counties. Croplands represented 10% (Adams County) and 18% (Washington County) of private land cover types.

Livestock grazing, noxious weed management, recreation, and private land uses are the primary activities that would have similar impacts to watershed and vegetative resources as described for livestock grazing in the seven allotments (sections 3.1.2.2, 3.1.2.3, and 3.1.2.4).

- Permitted grazing use in the CIAA affects watershed and vegetation conditions. In addition to the seven allotments analyzed above, 62 permits authorize 5,196 AUMs of livestock use on 41,439 acres of public lands. Rangeland health assessments and subsequent evaluations and determinations on meeting Standards were completed on the allotments in 2002 and permits were issued in 2006 and 2008 (USDI 2006, 2008). Permits were modified on the 11 allotments that were not meeting Standards. Future livestock grazing is projected to maintain or improve watershed and vegetation conditions in the majority of the CIAA due to implementation of the Standards and associated changes in mangement. However, livestock grazing would likely continue to result in plant community alterations, particularly in localized areas of concentrated use adjacent to fences, gates, and livestock facilities (e.g. troughs and supplement sites). Private and State lands in the CIAA are not affected by implementation of Standards except where they are part of a BLM-administered allotment.

- The BLM and the Adams County and Lower Weiser River CWMAs have been working together to identify, monitor, and treat noxious weeds for several years. These cooperative efforts are expected to continue into the foreseeable future. Weed treatments consisting of mechanical, biological, and chemical methods would be applied to priority species (USDI 2007). Native species in noxious weed treatment areas could be killed by overspray or have reduced fitness during treatments; however, control of noxious weeds would have long-term benefits to native plant communities by reducing competition. The distribution and abundance of target species could be contained or reduced over the 10-year period; however, non-target species would be expected to maintain or increase.

- The spatial and temporal extent of authorized and unauthorized cross-country OHV activities is difficult to quantify, but generally this use would affect upland vegetation directly by causing breakage, mortality, and removal of plants. Indirectly, cross-country OHV use would affect upland vegetation by disrupting surface soils and biological

crusts, creating bare areas susceptible to weed invasion and/or spreading of invasive or noxious species.

- Agricultural uses would be expected to remain stable during the next 10 years because the amount of arable land and available irrigation water would not change. Some conversion to exurban development could occur resulting in a minor loss of rangeland vegetative cover types.

#### 3.1.3.3 **Cumulative Impacts - Alternative A**

**Watershed**

Removing livestock use on 2,648 acres (2% of the analysis area) would result in negligible additional cumulative watershed condition improvements. Mechanical and biological impacts from livestock grazing would occur annually on 41,439 acres of public lands and the majority of private and State lands. On public lands where grazing is still permitted, Standard 1 would be expected to be maintained (32,322 acres) or make significant progress toward meeting the standard (9,117 acres) over the 10-year period. Improvements on 9,117 acres would have greater benefits than the minor to moderate improvements on 2,648 acres described in Section 3.1.2.2.

**Vegetation**

Removing livestock use on 2,648 acres would result in negligible additional cumulative changes in vegetative cover and conditions. Grazing and trampling impacts would occur on the majority of the remaining lands; however, Standard 4 would be expected to be met on public lands (37% of analysis area) and minor livestock impacts would be expected on the majority of private and State lands. Livestock, OHV use, and natural sources (e.g., wind, wildlife) would be potential vectors for the spread of invasive and noxious species. Other activities that disturb vegetative cover (e.g., development, wildfire) could affect considerably larger areas than the allotments closed to grazing.

#### 3.1.3.4 **Cumulative Impacts - Alternatives B and C**

**Watershed**

Continued livestock grazing, even with modifications to address resource concerns (Alternative C), would have negligible to minor additional cumulative impacts to watershed conditions. Minor mechanical and biological impacts from livestock grazing and OHV uses would occur on private and public rangelands in the CIAA. Moderate impacts would occur in concentrated livestock use areas around water sources which are more commonly associated with private lands in the MA. Standard 1 would be expected to be met on public lands over the 10-year period.

**Vegetation**

Livestock grazing under either alternative would have negligible to minor additional cumulative impacts to vegetation conditions and noxious weeds. Standard 4 would be expected to be met on public lands (37% of analysis area). Activities on private lands (e.g., trampling and grazing impacts from livestock, agricultural uses, development, and weed treatments) would occur over 63% of the analysis area and would be substantially more noticeable than the grazing proposals for 2,648 acres.

## 3.2 Wildlife

### 3.2.1 Affected Environment – Wildlife and Special Status Species

Many wildlife species utilize a variety of habitats in the seven allotments. These habitats provide forage, nesting substrate, and cover for a variety of bird, mammal, amphibian, and reptile species common to west-central Idaho and the Northern Great Basin region. Although all of the species are important members of native communities and ecosystems, most are common and have wide distributions within the allotments, state, and region. Consequently, the relationship of most of these species to the permit renewal is not discussed here in the same depth as species upon which the BLM places management emphasis.

One threatened species listed under the Endangered Species Act (ESA) (northern Idaho ground squirrel) and one candidate species (greater sage-grouse) occur in portions of the seven allotments (USFWS 2011). BLM, USFWS, and Idaho Department of Fish and Game (IDFG) maintain an active interest in other special status species that have no legal protection under the ESA. BLM special status species are: 1) species listed or proposed for listing under the ESA or 2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA (USDI 2008), which are designated as sensitive by BLM State Directors. Special status wildlife species discussed in this document include those listed on the Idaho BLM State Sensitive Species List (USDI 2003) and those afforded protection under the Bald and Golden Eagle Protection Act with potential to occur in the allotments and whose habitat may be affected by the proposed actions.

Standards 2, 4, and 8 provide measures of wildlife habitat quality. Standard 2 applies to riparian and wetland dependent species. Standard 4 applies to non-special status wildlife species that depend on grassland, shrubsteppe, or forested habitats (e.g., red-tailed hawk, horned lark, and mule deer). Standard 8 applies to special status wildlife species regardless of what habitat they use (e.g., sage-grouse use both uplands and wet meadows). This section will discuss key characteristics of general habitat types (i.e., upland and riparian), representative species that use those habitats (i.e., greater sage-grouse, Rocky Mountain bighorn sheep, ground squirrels, and migratory birds), and the key habitat components those species utilize that could be affected by livestock grazing.

#### 3.2.1.1 Upland Habitat

All allotments are meeting Standards (4 and 8) associated with upland wildlife habitat. Native shrub, grassland, and forested communities make up the majority (98%) of upland habitats (Section 3.1.1; Table 8; Map2).

**Shrubland**

Shrub-dominated communities are present in all allotments and account for 55% of cover types, with 39% dominated by sagebrush species (Table 8; Map 2). These shrubland plant communities are vital components of wildlife habitat as they provide essential food sources and cover needed by animals for survival, growth, and reproduction. Exotic annual and perennial species are present; however, their presence does not detract from overall wildlife habitat quality.

*Grassland* – Grassland communities are present in all allotments and account for 30% of cover types (Table 8; Map 2). Perennial grasslands provide nesting and foraging habitat for a variety of species including horned lark, western meadowlark, long-billed curlew, vesper sparrow, short-eared owls, and small mammals. Elk generally depend on grasses for forage, but also eat shrubs, including big sagebrush and antelope bitterbrush, especially during fall and winter (Kufeld 1973). Annual grasslands function similarly; however, because their productivity fluctuates with annual precipitation and plant species diversity is reduced, annual-dominated communities provide marginal habitat for most wildlife. Annual grasslands are generally characterized by small stands (<1-5 acres) interspersed with perennial communities.

*Forest* – Conifer-dominated stringers (ponderosa pine, Douglas-fir), interspersed with other communities (aspen), account for 13% of cover types (primarily in the West Pine Creek Allotment; Table 8; Map 2) and provide habitat for edge-tolerant species as well as potential breeding habitat for migratory birds. Ground and lower canopy foraging species (e.g., chipping sparrow, dark-eyed junco, Townsend's solitaire) depend on structurally diverse vegetative communities. Such understory communities are generally characterized by a diversity of native and introduced grasses, forbs, and shrubs.

#### 3.2.1.2 **Riparian Habitat**

There are 0.7 miles of riparian habitat (Left Fork Creek and Badger Gulch) in the Armacost Individual Allotment. There are no springs, wetlands, or perennial streams on public lands in the remaining allotments. The riparian habitat is rated in proper functioning condition (PFC) and is characterized by diverse native plant species at appropriate densities and vigor (Section 3.3.1). Streams in PFC provide nesting and foraging habitat for neotropical migratory birds (e.g., yellow warbler) and cover for resident species (e.g., fawning habitat for mule deer).

#### 3.2.1.3 **Selected Species**

**Greater Sage-grouse**

The greater sage-grouse (sage-grouse) is a sagebrush-obligate species that requires large areas of relatively undisturbed sagebrush steppe habitat. Sage-grouse were once abundant and concomitant with sagebrush steppe ecosystems across western North America (Schroeder et al. 1999); however, their current distribution has been reduced to nearly half their historic range (Schroeder et al. 2004). Despite long-term population declines, sage-grouse persist across more than 250,000 square miles of the sagebrush ecosystem (Schroeder et al. 2004). Within this requisite sagebrush landscape, important seasonal habitats (e.g., wet meadows, higher elevation mesic shrublands) are also necessary (Connelly et al. 2000).

Because sage-grouse are still broadly distributed, dependent on a diversity of heterogeneous seasonal habitats, and some populations are wide-ranging, they are expected to be vulnerable to changes to the sagebrush ecosystem. In addition, the maintenance of viable sage-grouse populations is of special concern to state and federal resource managers across the species' range and their persistence is important in the socio-political, economic, and environmental realms (Sands and Smurthwaite 1992). On March 23, 2010 the USFWS published a finding to the Federal Register which found that listing the greater sage-grouse was warranted but precluded by the need to take action on other species facing more immediate and severe extinction threats. The finding changed the status of sage-grouse from a BLM Type 2 sensitive species to a

candidate species under the ESA. Due to these factors, the focal species concept (Mills 2007) is applicable to sage-grouse because they can serve as an umbrella species for broader conservation of sagebrush habitats (Rowland et al. 2006; Hanser and Knick 2011).

The Goodrich allotments are located in the Western Association of Fish and Wildlife Management Agencies (WAFWA) Snake River Plain Management Zone (Stiver et al. 2006), and overlap the Weiser population or the West-Central Sage-grouse Planning Area (SGPA; ISAC 2006). This population is largely isolated from other Idaho populations by extensive areas that no longer function as sage-grouse habitat. The population is made up of relatively few birds and 14 occupied leks (IDFG 2011). The area includes the largest proportion of private land of any WAFWA planning area in Idaho. The Weiser population is considered at risk with the greatest threats being habitat fragmentation through human encroachment and infrastructure development, wildfire, and the presence of annual grasslands (IDFG 2011).

The BLM characterizes sage-grouse habitat based on population levels, movements, connectivity, and habitat components (Preliminary Priority and General Habitats [PPH, PGH]) or primary vegetation components (Key – intact sagebrush, Restoration Type I [RI] - perennial grassland, and Restoration Type II [RII] - annual grassland). PPH are areas that have been identified as having the highest conservation value to maintaining sage-grouse populations and PGH is defined as areas of occupied seasonal or year-round habitat outside of "priority" habitat (Makela and Major 2012). Six allotments provide PPH, PGH, Key, and RI habitats (Table 10; Map 5). These habitats overlap and the BLM emphasizes the maintenance and enhancement of PPH and key habitat types. Grass and forb components will be discussed below as they pertain to breeding habitat.

Table 10: Acres of sage-grouse habitat on public lands (within the FRFO and seven Goodrich allotments) and the cumulative effects analysis area (lands within 14.5 miles of the West Central Sage-grouse Planning Area), Idaho.

| Habitat Type | Description | Goodrich Allotments and Acreage of Habitat (Public Land) | | | | | | | | Cumulative |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Arma-cost Ind. | Boyd Ind. | Cam-bridge | Gambril Ind. | Deer Cr. | East Pine Cr. | West Pine Cr. | Total | |
| Priority (PPH)[1] | Sagebrush | 0 | 317 | 0 | 121 | 80 | 0 | 509 | 1,027 | 208,210 |
| | Perennial Grassland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53,744 |
| General (PGH) | Sagebrush | 0 | 13 | 0 | 0 | 0 | 79 | 0 | 92 | 124.350 |
| | Persistence ≥25%[2] | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 21 | 11,451 |
| | Perennial Grassland | 0 | 0 | 358 | 0 | 0 | 0 | 0 | 358 | 204,726 |
| Key | Sagebrush | 0 | 331 | 0 | 121 | 80 | 79 | 509 | 1,120 | 332,278 |
| RI | Perennial Grassland | 0 | 0 | 358 | 0 | 0 | 0 | 0 | 358 | 258,470 |

[1] Other subsets include perennial grassland and conifer encroachment types, neither of which occur in the allotments.
[2] Low (25-65%) and high (>65%) sage-grouse population persistence over the long term.

General Sage-grouse Habitat

The primary components of sage-grouse habitat include breeding (lekking, nesting, and early brood-rearing), late brood-rearing/summer, and winter. Sage-grouse traditionally congregate on communal strutting grounds (i.e., leks) from April to early May. The nesting season occurs soon after, extending from May to early June. Broods remain with females for several more months, and as seasonal changes occur, they move from early brood-rearing areas (e.g., forb- and insect-rich upland areas surrounding nest sites) to late brood-rearing and summer habitats (e.g., wet meadows and riparian areas) from June to August. Based on information about locations acquired through lek surveys, telemetry studies, and incidental observations, sage-grouse seasonal habitats occur within the Goodrich allotments to varying degrees, with the exception of wet meadows and riparian habitats.

While no sage-grouse habitat assessments have been recently completed for the Goodrich allotments, field visits (spring 2011) confirmed the presence of intact, ecologically functional vegetative communities. Information from BLM Rangeland Health Standard 4 (Native Plant Communities) was also used to determine the current condition of sage-grouse breeding habitat. Overall, tall stature perennial grasses are present and provide adequate horizontal nesting cover and a diversity of perennial forbs is also present in allotments (USDI 2005, 2012; Table 11). Moderately disturbed areas occur in varying degrees in the allotments. These areas generally support reduced stands of perennial bunchgrasses and forbs and increased amounts of bulbous bluegrass, cheatgrass, and weeds. Leafy spurge, rush skeletonweed, and scotch thistle have been observed in the Boyd individual, Deer Creek, and Gambril allotments (USDI 2005, 2012). Currently, exotic annuals and weeds do not occur in large enough quantities to detract from overall conditions of sage-grouse breeding habitat.

Sage-grouse Breeding Habitat

*Leks*- Sage-grouse in the Weiser population begin breeding in early March at display grounds (leks). Female lek attendance peaked between 10 March and 24 March, which is earlier and shorter in duration by 15 days than males (IDFG 2011). The location of leks can vary, but they are typically found in open areas adjacent to sagebrush communities that provide escape, thermal, and feeding cover. The availability of lekking habitat is generally not limited and leks can often be located in areas that are heavily used by livestock; however, disturbance factors and changes in surrounding habitats (e.g., loss of habitat due to fire) affect lek attendance and long term use.

The nearest active leks are located on private lands one and four miles from public lands in the Boyd Individual Allotment. One lek, located in the Boyd Individual Allotment on private land has not been surveyed since 2001. Between 2000 and 2011, male sage-grouse attendance varied between three and 16 birds at the Shoepeg lek (one mile from allotment) and between 13 and 30 birds at the Sagebrush Flat lek (four miles from allotment). Sage-grouse in the Weiser population generally nest within 2.2 miles of their breeding lek (IDFG 2011). Because no leks occur on public lands in the allotments, livestock impacts to lekking habitat will not be analyzed in the EA.

*Nesting and Early Brood-rearing* - Productive nesting habitat consists of sagebrush canopy cover ranging from 5-25% and perennial grass and forb canopy cover ≥15% with perennial grass

heights >7 inches (Crawford et al. 2004). Important perennial bunchgrasses include bluebunch wheatgrass, bottlebrush squirreltail, Idaho fescue, and Thurber's needlegrass. Important components for pre-laying and nesting hens are an understory composed of healthy perennial grasses and forbs with horizontal and vertical structural diversity that provides an insect prey base, herbaceous forage, and cover. The availability of a diversity of forbs rich in calcium, phosphorus, and protein are important for pre-laying hens. Egg laying (3-14 days after copulation, 12-15 days to lay clutch), incubation (20-30 days), and hatching generally occurs between April 7 and June 30.

*Late Brood-rearing* – This habitat type is characterized by a diverse herbaceous understory that provides succulent vegetation and habitat for insects. Upland summer and wet meadow/riparian habitats are important for brood-rearing. Insects are a vital component of sage-grouse brood-rearing habitat, as a high protein diet of insects including ants, beetles, and grasshoppers is essential during the first month of life (Johnson and Boyce 1990). Wet meadows and extensive riparian habitat provide diverse cover and food sources for late brood-rearing. Deer Creek, an intermittent stream in the West Pine Creek Allotment, is the only public lands water source in sage-grouse habitat. Brood rearing (10-12 weeks, primarily May 15 through September 15) takes place until early fall when sage-grouse group into flocks for the winter.

Allotment Specific Sage-grouse Breeding Habitat Conditions

*Armacost Individual* **-** The allotment is beyond the distribution range of the Weiser sage-grouse and Columbian sharp-tailed populations; therefore, the condition of breeding habitat will not be discussed. Overall the allotment provides suitable habitat for upland sagebrush steppe dependent special status species. The allotment supports a sparse to moderate canopy cover of big sagebrush, bitterbrush, and stiff sagebrush. The understory is composed of bluebunch wheatgrass, Sandberg bluegrass, arrowleaf balsamroot, and yarrow. Exotic grasses were present in low quantities (~5%) across the majority of the allotment (USDI 2005). Riparian areas were in proper functioning condition with a diversity of plant age-classes which provides quality habitat for riparian dependent special status animal species as well as nesting neo-tropical migrant birds (USDI 2005).

*Boyd Individual* **-** Breeding habitat was rated as marginal, primarily due to a lack of desirable big sagebrush cover for nesting. Bitterbrush, rabbit brush, and chokecherry are also present in the shrub over-story. Shallow soils support stiff sagebrush, a species of dwarf sagebrush that is not typically selected as nest a site. However, stiff sagebrush is associated with diverse forb communities. The diversity and abundance of preferred forbs (e.g., buckwheat, desert parsley, wild onion, western yarrow, and penstemon) and perennial grasses (e.g., bluebunch wheatgrass and bottlebrush squirreltail) is at site potential (Table 11, USDI 2005). While nesting sites may be limiting, perennial grass cover and the diversity and availability of desirable forb species provides potential brood-rearing habitat for grouse. Recent telemetry data documented grouse using the allotment during the summer.

Table 11. Nesting and brood-rearing habitat characteristics in six allotments, Goodrich, Idaho.

| Allotment | Shrub Cover | Shrub Species | Grass Cover | Grass Species | Forb Cover | Forb Species |
|---|---|---|---|---|---|---|
| Boyd Individual | 5-15% | stiff sagebrush, xeric sagebrush, bitterbrush | 20-40% | bluebunch wheatgrass, bulbous bluegrass, squirreltail | 6-15 | Wyeth's buckwheat, lupine, biscuitroot, penstemon, desert-parsley, yarrow |
| Cambridge[1] | | xeric big sagebrush, bitterbrush | | bluebunch wheatgrass, bulbous bluegrass | | biscuitroot |
| Gambril Individual | 5-10% | xeric big sagebrush, bitterbrush, chokecherry, serviceberry | 6-32% | bluebunch wheatgrass, squirreltail | 1-5% | biscuitroot, lupine, and yarrow |
| Deer Creek | 4-10% | low-stature subshrubs represented by slenderleaf buckwheat and thyme buckwheat | 16-35% | squirreltail, Sandberg bluegrass, bulbous bluegrass | 6-15% | biscuitroot, balsamroot |
| East Pine Creek and West Pine Creek | 5-10% | xeric big sagebrush, bitterbrush, chokecherry, ceanothus, bittercherry, serviceberry and snowberry | 1-60% | bluebunch wheatgrass, Great Basin wildrye, blue wildrye, Idaho fescue | 15-20% | arrowleaf balsamroot, hawksbeard, penstemon, yarrow, biscuitroot |

[1] The Cambridge Allotment is delineated as PGH habitat; therefore, vegetation characteristics are not described.

*Cambridge* **-** Breeding habitat was rated as unsuitable due to sparse amounts of big sagebrush canopy cover (field observations/photos 2011). Sagebrush and other shrubs including cherry and bitterbrush were typically found in drainage bottoms. Scattered conifers are also found in areas with deeper soil profiles. The understory is composed of exotic annual grasses, bluebunch wheatgrass, bottlebrush squirreltail, buckwheat, desert parsley, and arrowleaf balsamroot. Perennial grasses and forb cover was rated as marginal, providing marginal to unsuitable brood-rearing habitat.

*Gambril Individual* **-** Breeding habitat was rated as marginal due to low amounts of big sagebrush (USDI 2005). Bluebunch wheatgrass, bottle brush squirreltail, and Sandberg bluegrass were present in desirable amounts (Table 11). Desirable forb species are present including desert parsley, western yarrow, and lupine. However, forb cover is too sparse to support suitable brood-rearing habitat (Table 11).

*Deer Creek* **–** Overall, the allotment does not support suitable nesting habitat as the soil types are very shallow and do not support big sagebrush species (USDI 2005). The understory is sparse and dominated by bottlebrush squirreltail, Sandberg bluegrass, thyme leaf and Wyeth's buckwheat, desert parsley, wild onion, bighead clover, and arrowleaf balsamroot. The allotment

may be used as brood-rearing habitat, as desirable vegetation is present that supports an abundance of insect life and succulent vegetation (Table 11).

*East Pine Creek* – The allotment is on the northern edge of the Weiser sage-grouse population's range (Map 5). The allotment supports a moderate canopy cover of big sagebrush, bitterbrush, chokecherry, bittercherry, serviceberry, and snowberry (Table 11). The understory is composed of bluebunch wheatgrass, Wyeth's buckwheat, arrowleaf balsamroot, and western stoneseed (USDI 2005). Although the allotment is not occupied by sage-grouse, the area could potentially support brood-rearing habitat.

*West Pine Creek* - The allotment is on the northern edge of the Weiser sage-grouse population's range (Map 5). Big sagebrush cover varies throughout the allotment; it is most prominent on north facing slopes (USDI 2005). Other shrubs include bitterbrush, bitter cherry, choke cherry, ceanothus, snowberry, Oregon grape, and elderberry, typical of higher precipitation zones. Conifers are a minor component in areas with deeper soils. While sagebrush cover is suitable for nesting (Table 11), grouse may not prefer these areas for nesting due to the presence of mountain shrub species and conifers. This ecotone supports suitable nesting habitat for migratory bird species. Bluebunch wheatgrass, Idaho fescue, bottlebrush squirreltail, and Sandberg bluegrass occur in desirable amounts (Table 11). Perennial forbs including Wyeth's buckwheat, arrowleaf balsamroot, western yarrow, bighead clover, desert parsley, and western stoneseed also occur in desirable amounts (Table 11). Perennial grass and forb cover provide suitable brood-rearing habitat.

Sage-grouse Winter Habitat

During winters with deep snow, sage-grouse associated with the Goodrich allotments typically occupy southeast and southwest facing slopes where winds displace snow exposing shrubs for cover and food. Mixes of bitterbrush, stiff sagebrush, and big sagebrush typically occupy these wind swept ridges. Birds from Shoepeg lek are also known to occasionally winter near Hells Canyon breaks (IDFG 2011). Livestock use potentially reduces sagebrush cover through trampling damage, primarily in concentrated use areas. However, reduced sagebrush cover as a result of livestock trampling represents a minor impact to sage-grouse winter habitat; therefore, this habitat component will not be discussed further.

**Columbian Sharp-tailed Grouse**

Columbian sharp-tailed grouse were once widespread and abundant in mesic shrub-steppe and grasslands throughout the northwest (Marks and Marks 1988). They have been extirpated from most of their historic range in Oregon, California, and Nevada, and have been reduced to remnant populations in their remaining range (Marks and Marks 1988). Isolated populations in western Idaho are small and limited to Washington and Adams counties. The largest known population in western Idaho is found within the vicinity of the Columbian Sharp-tailed Grouse Habitat Area of Critical Environmental Concern, 3-13 miles southwest of the allotments. The area supports big sagebrush, serviceberry, chokecherry, bittercherry, rose, and hawthorn shrubs and perennial grasses which provide nesting habitat. Active sharp-tailed leks occur in PPH and PGA sage-grouse habitats and within 3-14 miles of the allotments. As Columbian sharp-tailed grouse are habitat generalists and occupy habitat synonymous with sage-grouse habitat, the analysis for sage-grouse will serve as a surrogate analysis for sharp-tailed grouse.

**Rocky Mountain Bighorn Sheep**

Background

In the FRFO, Rocky Mountain bighorn sheep primarily occur in and adjacent to Hells Canyon on the Snake River. Bighorn sheep were native to Hells Canyon, but were extirpated in the early part of the 20th century due to over-hunting and disease outbreaks associated with domestic sheep contact (IDFG 2010). Reintroduction of bighorn sheep into Hells Canyon began in 1975 with a translocation from the upper Salmon River; the last translocation of bighorn sheep occurred in 2002. Currently, four bighorn sheep herds occur in Idaho and Oregon within foray distance of the allotments (Map 6). The herds are considered part of the Hells Canyon Management Area by the Hells Canyon Initiative Committee; however, the Lookout Mountain herd is not known to interact with the other herds at this point and is considered separately below.

Idaho bighorn sheep in this region are part of the Hells Canyon Population Management Unit (PMU). Disease is the greatest issue facing bighorn sheep in the Hells Canyon PMU. All herds within the PMU are limited by disease. Outbreaks of pneumonia have resulted in very low recruitment because of sporadic lamb die-offs and pneumonia in adults (IDFG 2011, Cassirer et al. 2013, Plowright et al. 2013). High rates of reproduction and horn size suggest forage is not limited; therefore, forage competition between bighorn sheep and livestock is not being considered an impact of livestock grazing. IDFG considers reducing disease risk, specifically transmission from domestic sheep and goat to bighorn sheep, and population growth as the most important issues driving bighorn sheep management (IDFG 2010).

Habitat

Bighorn sheep habitat is classified in three broad categories: occupied, core herd home range (CHHR), and summer source (Map 6). Key habitat features include steep, rugged "escape" terrain; grasses and forbs for forage; and a limited amount of tall vegetation. Occupied habitat is identified by IDFG as areas known to be regularly or periodically occupied by bighorn sheep and priority areas for bighorn management (IDFG 2010). CHHR delineate bighorn sheep herd (population) ranges and represent areas on the landscape where herds spend the majority of their time throughout the year. Several CHHR ranges were used in the analysis and the development of each CHHR is described further in Section 3.2.2.1. Source habitats are those characteristics of key habitat features that contribute to population maintenance and growth for a species in a specified area and time (USFS 2010a, pages 3-22-26). Summer source habitat represents areas that could support bighorn sheep April through October. This period include the majority of foray movements and overlaps the allotment use periods. Winter source habitat is a subset of summer source habitat (USDA 2010a); therefore, only summer source habit will be considered in this document.

Six allotments have summer source habitat; however, only the Boyd Individual, Cambridge, and West Pine Creek allotments are authorized for domestic sheep grazing (Table 12, Map 6). Public lands in the allotments currently permitted for domestic sheep use are between 0 and 23 miles from bighorn sheep habitats.

Table 12. Public lands proximity (miles from) to bighorn sheep habitats for the three allotments authorized for domestic sheep grazing, Goodrich, Idaho.

| Allotment | Distance between Allotment and Bighorn Sheep Habitats | | | | Acres of Bighorn Sheep Summer Source Habitat | | |
|---|---|---|---|---|---|---|---|
| | Occupied | Idaho Core Herd Home Range | Oregon Core Herd Home Range | Summer Source | BLM | Private | Total |
| Boyd Individual | 8.3 | 6.5 | 20 | 0.25 | 0 | 91 | 91 |
| Cambridge | 2.7 | 3.4 | 23 | 0 | 99 | 418 | 517 |
| West Pine Creek | 4.0 | 0.8 | 13 | 0 | 245 | 3,441 | 3.686 |

Current Distribution, Population Dynamics, and Movements

*Hells Canyon PMU* - The most recent surveys estimate the Hells Canyon population size at 137 individuals (Table 13; IDFG 2012). The PMU consists of at least six interacting herds; the nearest herds to the Goodrich allotments are the Sheep Mountain herd (14 to 17 miles northwest of the West Pine Creek Allotment) and the Upper Hells Canyon Idaho and Oregon herds (~22-25 miles north of West Pine Creek). Herds in the northern portion of the PMU include the Redbird herd (91 animals, ~95 miles from West Pine Creek), Big Canyon herd (21 animals, ~73 miles from West Pine Creek), and Myers herd (3 animals, ~60 miles from West Pine Creek). Impacts to herds in the northern portion will not be analyzed because the distance between the Goodrich allotments and northern herd home ranges are beyond typical annual/seasonal movements of bighorn sheep. Sheep Mountain, Upper Hells Canyon Idaho, and two herds in Oregon are discussed further.

Table 13 .Populations and ram/ewe ratios of bighorn sheep within core habitat home ranges

| Population | Core Herd Home Range | State | Population | Ram/Ewe Ratio |
|---|---|---|---|---|
| Hells Canyon | Sheep Mountain | Idaho | 9 | 0:9 |
| | Upper Hells Canyon ID | Idaho | 5 | 1:1 |
| | Upper Hells Canyon OR[1] | Oregon | 8 | 3:5 |
| | Hells Canyon PMU | Idaho/Oregon | 137[2] | 28:72 |
| Oregon | Lookout Mountain | Oregon | 182 | 13:37 |

[1] Although not technically part of the Hells Canyon PMU as delineated by IDFG (2010), the animals interact with the Upper Hells Canyon herd and are considered as part of the PMU for this document.
[2] Includes Sheep Mountain, Upper Hells Canyon Idaho, Upper Hells Canyon Oregon, Redbird, Big Canyon, and Myers herds.

The Sheep Mountain herd was reintroduced in 1989 and grew to an estimated 90 individuals in 1999. Since that time, the herd has undergone a pneumonia outbreak reducing its numbers to approximately nine ewes and no rams (Table 13; pers. comm. IDFG 2013). The herd is no longer large enough to expect that surviving individuals will overcome this disease event and repopulate. The PNF FSEIS determined that the "population has a 100% probability of extirpation due to frequent, recurrent disease events and small initial population size" (USFS 2010a). Within the next five years these ewes are unlikely to make long-distance forays into the Weiser River watershed where the Goodrich allotments are located; bighorn sheep, especially ewes, rarely leave CHHR in most years (USFS 2010a, pers. comm. IDFG 2013). In addition to the Sheep Mountain herd, remnant herds occur in Upper Hells Canyon (between Brownlee Dam and Hells Canyon Dam) in both Idaho and Oregon (Table 13). As with the Sheep Mountain

herd, the Upper Hells Canyon herds are small, infected with pneumonia, and are not expected to survive or expand (pers. comm. IDFG 2013; pers. comm. ODFW 2013).

Of 59 bighorn telemetry locations (between 1999 and 2006) in the southern part of the Hells Canyon PMU CHHR (Map 6), 25 (42%) were ewe/lamb groups in the Sheep Mountain herd that remained in a relatively confined area during 2006. The remaining 34 (62%) observations, 33 of which were ram only groups, were from the McGraw herd (1999-2002). The majority (18 or 55%) of observations occurred during April-June 1999, shortly after the animals were released and are not necessarily representative of movements by an established herd. However, only one animal crossed into the Weiser River drainage and out of occupied habitat. On May 24 1999, a radio-collared bighorn ram (99L51) from the McGraw herd (located 30-45 miles north of the West Pine Creek Allotment) was observed in the West Pine Creek Allotment. In August 1999, the same ram was observed coughing and sneezing 35 miles north of the May observation. The ram was removed by IDFG and histologic diagnoses of organ samples indicated no evidence of infectious diseases including PI3. While this is the only documented observation and the foray occurred soon after a reintroduction, it is possible that other bighorn sheep have made forays into the allotment as the area supports summer source habitat and is in close proximity to the CHHR. Three other rams from the McGraw herd made foray movements to within 8 to 20 miles of the West Pine Creek and Cambridge allotments; however, only one crossed into the Weiser River drainage (one telemetry location within occupied habitat) and the herd was considered not to have established by 2003 because of low survival rates and dispersal to existing herds (IDFG 2004).

*Oregon Populations* - North of Huntington Oregon, the Lookout Mountain herd was reintroduced in 1993 and has grown to a current minimum estimated population of 182 animals (Table 13; pers. comm. ODFW 2013). This herd supports eight ram tags annually and is one of the most reproductively successful Rocky Mountain bighorn sheep herds in Oregon. Due to the large degree of spatial separation between this herd and domestic sheep and goats and Oregon Department of Fish and Wildlife's (ODFW) vigilance on monitoring and removing dispersing rams, this herd has remained the only disease free herd of Rocky Mountain bighorn sheep in Oregon. As of May 2013, 20 radio telemetry collars have been deployed on this herd to better document herd range, dispersing individuals, and help monitor for potential disease outbreaks. The western edges of the Goodrich allotments are approximately 12-23 miles from the Lookout Mountain herd (Table 12; Map 6). There have been unverified ram sightings by the public directly across the Snake River (in Idaho) from the Lookout Mountain herd (ODFW 2013).

*General Movements* - A healthy herd, composed of mixed age-classes that include young rams, would likely exhibit a higher frequency and probability of foray movements from home ranges and into the Goodrich allotments. Rams are known to make long distance exploratory forays, in particular during the fall rut, ranging from 30-40 miles beyond CHHR (Cahn et al. 2011, IDFG 2010). While both rams and ewes make annual foray movements from CHHRs, forays by ewes are typically less frequent and shorter distances traveled than rams. Approximately 14.1% of rams and 1.5% of ewes are known to make foray movements outside their CHHR on an annual basis (USFS 2010a). Twenty-five percent of foray movements by Hells Canyon rams reach a distance of at least 9.3 miles from CHHR (USFS 2010a).

Management
The current IDFG Bighorn Sheep Management Plan identifies issues such as population restoration and managing limiting factors including diseases and provides objectives by PMU (IDFG 2010). The plan's objective for the Hells Canyon PMU is "to maintain or increase bighorn sheep populations." Specific management actions for the Hells Canyon PMU include "implement management actions as possible to reduce impacts of disease" and "improve bighorn sheep habitat by working to reduce noxious weeds." Because of disease issues, the objective to maintain or increase populations cannot be met until diseased animals are eliminated and healthy animals are reintroduced (pers. comm. IDFG 2013).

The plan provides guidelines [per Idaho Code § 36-106(e)(5)(E)] for developing Best Management Practices (BMPs) agreements as a means to reduce the risk of contact between domestic and bighorn sheep in areas where bighorn sheep exist. BLM policy also provides for separation response plans (SRP; Section 1.5). A SRP is in place for the Cambridge Allotment, but not the West Pine Creek or Boyd Individual allotments; however, BMPs including herders with cell phones, extra dogs, and regular counting are employed in the Cambridge and West Pine Creek allotments (Section 2.2.2). However, there are no peer-reviewed studies that have addressed the effectiveness of BMP's for the separation of wild sheep and domestic sheep.

**Northern Idaho Ground Squirrel**
Listed as threatened under the ESA in April 2000, with a Recovery Plan published in 2003, northern Idaho ground squirrels (NIDGS) occupy northern regions of the FRFO in Adams County. NIDGS inhabit dry, montane open meadows usually surrounded by ponderosa pine or Douglas-fir woodlands. NIDGS population decline is primarily due to fire suppression which allowed forests to encroach into meadows, reducing the amount of habitat available for squirrels and subsequently closing off natural dispersal corridors and isolating populations. Land use changes and recreational shooting are also factors in the species' decline.

NIDGS have been documented by the IDFG, adjacent to the Armacost Individual Allotment. Surveys have not been conducted in this particular region for several years. A field visit was made to the site in July 2011 in order to identify NIDGS habitat. The documentation is most likely a historic NIDGS colony and at the present the private land it occurred on has been converted to an agricultural field (Weldon field observation 2011); therefore, NIDGS will not be discussed further.

**Migratory Birds**
Neotropical birds, which nest in North America and winter in Central and South America, have become a concern in recent years as populations have declined. The Idaho Bird Conservation Plan (IDBCP) identified the highest priority habitats for priority bird species in need of conservation and supports the long-term sustainability goal of Executive Order 13186 as it takes a habitat-based approach to conserving bird populations (IDPIF 2000). Priority habitats for migratory birds present in the Goodrich allotments are sagebrush steppe (intermixed with grasslands) and dry ponderosa pine/Douglas-fir/grand fir habitats (Paige and Ritter 1999).

Sagebrush-steppe Birds
Sagebrush dependent and obligate species require a range of sagebrush cover; but, like sage-grouse, generally utilize habitats with 10% and 30% sagebrush canopy cover. Although sage-grouse are only short-distance migrants, they will be used to describe effects to sagebrush-steppe neotropical migrants as these species rely on shrubs and perennial grasses for nesting, and consume seeds, insects, and succulent plant matter associated with functioning sage-grouse breeding habitats.

Forest Birds
Focal species identified by the IDBCP include white-headed woodpecker, pygmy nuthatch, flammulated owl, and Lewis's woodpecker. These species are typically cavity nesters and would not be impacted by sheep grazing in the West Pine Creek Allotment. Habitat for ground nesting forest and edge-tolerant species (e.g., dark-eyed junco) is present in the West Pine Creek Allotment.

Riparian Birds
Focal species include willow flycatcher, calliope hummingbird, and yellow warbler. Generally, streams that are in PFC (i.e., Left Fork Creek and Badger Gulch in the Armacost Individual Allotment) provide foraging, nesting, and hiding cover for non-disturbance associated species (e.g., calliope hummingbird, yellow-rumped warbler, dark-eyed junco).

### 3.2.2 Environmental Consequences – Wildlife and Special Status Species

#### 3.2.2.1 General Discussion of Impacts
The general effects of grazing on wildlife include changes in habitat quality and structure, competition for forage, nest destruction, and risk of contact between bighorn sheep and domestic sheep.

Short-term impacts - <1 year
Long -term impacts – 1-10 years (or 50 years for bighorn sheep)

**Changes in Habitat Quality/Structure**
Changes in wildlife habitat and structure can be both a direct and indirect impact of livestock grazing. Livestock-caused defoliation and trampling of palatable forage species could have short-term impacts on wildlife habitat by reducing plant populations and their ability to reproduce; thereby, limiting resources available to wildlife and the capacity of residual perennial plant communities to reestablish (Anderson and Holte 1981). In areas where invasive annual grasses or weeds are competing with native perennial plants, moderate to severe use during the spring could favor annuals. Ultimately, grazing could influence sagebrush-grass communities into lower successional stable states dominated by sagebrush with an inadequate herbaceous understory dominated by annual grasses, which would degrade wildlife habitat, most notably sage-grouse habitat. Conversely, grazing systems that help maintain perennial grasses (e.g., low stocking rates, <40% utilization during the growing period, periodic deferment) would help maintain or improve habitat quality over the long term.

Grazing during the spring nesting period may reduce cover of perennial grasses (new growth and residual cover) crucial in concealing nests from avian and mammalian predators, subsequently reducing nesting success and fecundity of sage-grouse (Gregg et al. 1994, DeLong et al. 1995) and dark-eyed junco (Walsberg 2005). Spring grazing can also affect food sources such as seeds (e.g., removing flowering portions of grasses or forbs prior to seed set), vegetation (e.g., annual utilization of desirable species or long term removal of preferred forage species that are also preferred by wildlife), or insects (e.g., annual removal of flowers or long-term loss of forb diversity that benefit insects). Rest-rotation and deferred grazing systems are most beneficial because they provide pastures or allotments free from disturbance during the nesting and brood-rearing seasons.

Stocking intensity and associated utilization rates can alter nest success. Utilization ≤40% is correlated with high sage-grouse nesting success (Gregg et al. 1994, Sveum et al. 1998). If livestock grazing approaches 40% utilization during the nesting season, there is not enough plant material to conceal nests from predators (France et al. 2008). Grazing activity that reduces forb cover could also adversely impact sage-grouse nesting success and chick survival, as forbs provide cover and an insect prey base (Johnson and Boyce 1990). Relatively light stocking rates (15.6 acres/AUM) can result in up to a 75% reduction in fledging success of ground-nesting forest species (Walsberg 2005).

**Nest Disturbance and Destruction**

Livestock grazing and associated husbandry practices (e.g., herders, dogs) could cause adult birds to flush off nests leaving them susceptible to predation. Repeated disturbances could cause nest abandonment. Trampling by livestock may destroy eggs. Birds that nest on the ground or lower portions of shrubs (e.g., sage-grouse, sage thrasher, sage sparrow) would be more susceptible to trampling impacts than shrub nesting birds (e.g., Brewer's sparrow) as ground nests tend to be larger and more conspicuous. The effects of trampling would be most evident in domestic sheep bedding areas. Spatially these bedding areas are small and likely have little overall effect to migratory bird nesting habitat. Grazing systems that reduce or avoid the nesting season (e.g., deferment or fall use) would reduce or eliminate direct impacts.

**West Nile Virus**

Sage-grouse are susceptible to West Nile Virus (WNV), so outbreaks of the disease can have deleterious impacts (Naugle et al. 2004). In 2006, WNV became epidemic in southwest Idaho and some sage-grouse populations in Owyhee County experienced substantial declines (IDFG 2008). During a follow up study conducted during 2007 and 2008, no infected birds were detected via blood sampling (IDFG 2008). *Culex* spp. comprise the primary mosquito genus responsible for WNV transmission (Zou et al. 2006), with *C. tarsalis* representing the primary carrier in Idaho (Ada County 2009). Although this species has been known to successfully utilize artificial containers as larval habitat, it is a colonizing species exhibiting its highest productivity in newly created aquatic habitats with vegetative decay (SDSU 2009). Vegetation along the edges of small bodies of water typify ideal larval habitat for this species (Zou et al. 2006). Consequently, grazing activity that increases trampling in riparian areas and adds to the amount of stagnant water where vegetation can persist could increase habitat for *C. tarsalis* and the likelihood of WNV outbreaks. However, riparian habitat and areas around range developments are primarily located on private lands in the allotments.

**Domestic Sheep Disease Transmission to Bighorn Sheep**
Domestic sheep contact could potentially impact bighorn sheep populations through disease transmission. How diseases are potentially transmitted, what diseases are potentially transmitted, how bighorns respond to those diseases, and conclusions based on those factors are discussed below, followed by a discussion about determining the potential risk of contact between domestic sheep and bighorn sheep in the three allotments.

How Diseases Are Potentially Transmitted
The transmission of disease from domestic sheep to bighorn sheep is a complex and controversial issue. Although the exact mechanism of how the disease is transmitted between the species in the wild is not fully understood, there is circumstantial evidence linking bighorn sheep die-offs in the wild to contact with domestic sheep, and controlled experiments where healthy bighorn sheep exposed to domestic sheep displayed subsequently high mortality (Besser et al. 2008; George et al. 2008; Lawrence, et al., 2010; Wehausen et al. 2011), there are opponents to this evidence that have argued that disease transmission from domestic sheep to bighorn sheep has not been indisputably proven in the wild, that the disease risk is exaggerated, and that grazing restrictions should be eased. Largely these discussions are driven by the economic consequences of restricting domestic grazing that have polarized the debate (O'Laughlin and Cook 2010). However, nearly all of the current research findings strongly suggest that the co-mingling and contact of domestic sheep and bighorn sheep is largely acknowledged to be the causal factor for the transmission of these bacteria and that separation of the two species is the only effective tool to prevent disease transmission (WAFWA 2012). Studies conducted by Dixon et al. (2002) in a controlled environment and summarized by Besser et al. (2012b) and Besser (2013) in pen trials demonstrated that there is the potential for selected strains of *Pasteurella* spp.to be transmitted aerially. This suggests that physical contact between the two species does not necessarily need to occur to transmit bacteria associated with pneumonia.

The prevailing theory for the susceptibility of bighorn sheep to pathogens transmitted by domestic sheep is attributed to the concept that New World sheep (bighorns) did not co-evolve with the same pathogens and have not developed an effective immunity against the bacteria. Old World sheep (domestics), through centuries of husbandry and natural selection, have developed a resistance against the bacteria but carry them within their blood. Both species are gregarious by nature and have a natural attraction for each other. Subsequently, when the two species come into contact and the pathogens are transmitted, the bighorns have little natural defense.

What Diseases Are Potentially Transmitted
Studies by Besser et al. (2012a, 2012b, and 2013) have shown that *Mycoplasma ovipneumonia* is a primary agent in pneumonic bighorn sheep die-offs and acts to induce secondary infection with other opportunistic pathogens such as *Pasteurella multocida*, *Mannheimia haemolytica*, and *Bibersteinia trehalosi*. Each of the latter three pathogens can also result in the mortality of BHS by themselves. These findings are consistent with the association of bighorn sheep disease outbreaks and contact with domestic sheep, although further research into the prevalence, infectivity, and virulence of *Mycoplasma ovipneumonia* will need to continue (Besser et al. 2012a). Research on this subject is ongoing, with the goal of further isolating and understanding

the bacterial agents and mechanisms associated with disease transmission and pneumonia outbreaks. Domestic sheep have evolved with these pathogens, are generally not susceptible to them, and do not display outward signs of carrying them (Foreyt et al. 1994; Dassanayake et al. 2009; Besser at al. 2012b).

How Diseases Affect Bighorn Sheep

Pneumonia caused by these bacteria is attributed to die-offs that can kill some, many, or all adult bighorn sheep in a herd. Once they have been introduced into bighorn sheep populations, it is speculated that the bacteria can become endemic and continue to cycle for decades (Besser et al. 2012a). A combination of factors including exposure to hosts (domestic sheep or infected bighorn sheep), the type/strain of bacteria, virulence of the pathogen, and seasonal behavioral movements and exposure to environmental stressors that can compromise the immune system, all play a role in how an infection of pneumonia bacteria can be transmitted, persist, and fade within a population (Cassirer and Sinclair 2007; Besser et al. 2008; Dassanayake et al. 2009; Wehausen et al. 2011; Cassirer, et al. 2013).

Cassirer et al. (2013) discussed that bighorn sheep exposed to pneumonia bacteria initially incurred large-die offs (Miller et al. 2012; Subramaniam et al. 2011) in naïve (non-infected) populations. Outbreaks of pneumonia are often followed by subsequent years or decades of sporadic cases of pneumonia in adult sheep and annual epizootics (rapid disease outbreak affecting the majority of animals) of pneumonia in lambs (Besser et al. 2012a). This results in reduced lamb recruitment and continued low populations of bighorn sheep, further impairing population recovery and stability. Bighorn sheep lambs are born healthy then subsequently sicken and die after several months, presumably after loss of protection via passive immunity from the mother's colostrum (first milk).

Infected bighorn sheep carrying pneumonia bacteria without showing clinical signs or becoming fatally sick does occur. A healthy bighorn sheep individual may be able to control a less virulent species of bacteria over a greater period of time, but could be re-infected with a more virulent strain of bacteria and could perish within days; therefore, even though healthy infected populations of bighorn sheep can exist, separation of domestic sheep and bighorn sheep still needs to occur (Dassanayake et al. 2009; Subramaniam et al. 2011; Wehausen et al. 2011; Besser et al. 2012a; Cassirer, et al. 2013). However, conclusive understanding of how pneumonia bacteria is introduced, persists, and fades in a population is still being studied.

Disease Transmission Conclusion

The assumption will be carried forward that the co-mingling of domestic sheep and bighorn sheep creates a risk to the viability[3] and sustainability of bighorn sheep populations. This assumption is based on:

1. The BLM's responsibility to provide habitats on public land that support viable and sustainable populations of bighorn sheep;

[3] Viable, as used in Standard 8 of the Standards (Appendix 1), is interpreted to mean "a population level that is self-sustaining without exhibiting genetic depression caused by inbreeding."

2. The extent of peer-reviewed and published science that in controlled settings has demonstrated that the transmission of disease from domestic sheep to bighorn sheep does occur (Foreyt et al. 1994b; Onerka and Wishart 1988; Dassanayake et al. 2009; Lawrence et al, 2010; Wehausen et al. 2011; Besser et al. 2012a; Besser et al. 2012b);
3. The results of comparative field investigations that have shown the presence and absence of pneumonic agents in infected vs. non-infected bighorn sheep herds (Cassirer and Sinclair 2007; Besser et al., 2008; George et al. 2008; Besser et al. 2012b;); and
4. The absence of evidence falsifying the hypothesis of disease transmission from domestic sheep to bighorn sheep and the magnitude of any interaction.

While there is some controversy regarding field evidence of specific pathogen transfer from domestic to bighorn sheep, the BLM concurs with the PNF FSEIS literature review supporting the role of domestic sheep contact resulting in bighorn sheep population die-offs and incorporates their review by reference (USFS 2010a).

Modeling Potential for Contact

This analysis of the Goodrich allotments relies on updated models originally designed for use in the 2010 PNF FSEIS, developed to address, among other issues, bighorn sheep viability and the potential for disease transmission on domestic sheep grazing allotments. In order to corroborate the analysis, we used the Bighorn Sheep Risk of Contact Tool (RCT; USFS 2013, O'Brien et al. *In press*); a geo-spatial application based on the concepts used in the PNF analyses for application on other National Forest and BLM lands. The 2013 tool calculates the probability and rates of contact between foraying bighorn sheep and domestic sheep grazing allotments. The model does not consider the attraction between domestic sheep and bighorn sheep, travel distances of stray domestic sheep and potential contact with bighorn sheep, transmission of disease after contact, or the overlap of bighorn sheep forays from multiple CHHRs. The RCT model user guide (USFS 2013a) and technical report (USDA 2013b) are available from the BLM Four Rivers Field Office upon request.

The tool provides a framework for addressing the potential of contact. While the model provides relevant information concerning the general risk of contact between bighorn sheep and domestic sheep allotments it is limited, and professional opinions and observations relevant to the analysis area were also considered and used to corroborate our analysis.

The summer source habitat and risk of contact models are incorporated into the Bighorn Sheep Risk of Contact Tool. The following is a brief description of each analysis component:

*CHHR* - Several bighorn sheep CHHR were developed for this analysis and were used as part of the RCT model analysis (Map 6).

- Sheep Mountain and Upper Hells Canyon (Idaho and Oregon) - Long-term bighorn population/herd data collected by the Hells Canyon Initiative (a coalition of state wildlife departments, federal agencies, and non-governmental organizations) provided the best CHHRs for the Sheep Mountain and Upper Hells Canyon populations.
- Lookout Mountain - The ODFW provided the best available CHHR based on monitoring data, site-specific observations, and the expert opinion of bighorn sheep biologists.

- Hells Canyon PMU - This CHHR was developed for the PNF FEIS, using a database of telemetry and observational data collected in Oregon, Idaho, and Washington between 1997 and 2006 (USFS 2010a). In our analysis, we used the CHHR to represent the broader home range of several interacting populations in the southern portion of the Hells Canyon PMU as delineated by IDFG.

*Foray Analysis* **-** This component calculates the probability that a foraying bighorn sheep will reach each point on the landscape surrounding the herd's CHHR.

*Contact Analysis* **-** This component returns the probability that bighorn sheep on a foray will come into contact with a domestic sheep allotment and the rate of contact for rams, ewes, and the entire herd (entire herd probability values were used in this analysis).

Two RCT model scenarios were run to determine risk of contact with allotments and domestic sheep trailing routes. The Current Herd scenario determines risk of contact to the nearest existing bighorn sheep herds that have the greatest potential to make contact with the allotments. These include the Sheep Mountain, Upper Hells Canyon Idaho, Upper Hells Canyon Oregon, and Lookout Mountain herds. The Potential Population scenario determines risk of contact with the Hells Canyon PMU (Map 6), assuming the PMU is at carrying capacity for bighorn sheep. The Hells Canyon PMU CHHR encompasses the current herd boundaries of the Sheep Mountain and Upper Hells Canyon herds (Map 6). IDFG has determined that the estimated carrying capacity for the entire PMU is approximately 1,550 bighorn sheep (IDFG 2011); a population size of 500 animals was used in the RCT to represent relatively healthy bighorn sheep populations in the southern portion of the PMU.

Quantifying disease transmission and disease outbreaks in bighorn sheep populations following contact with domestic sheep, and the subsequent ability of a population to recover are essential to interpreting the RCT model results. The BLM relied on the following assumptions to assist with data interpretation:

- One in four contacts between foraying bighorn sheep and a domestic sheep allotment would result in a disease outbreak in the bighorn sheep herd.
- If a bighorn herd/population suffers a disease outbreak more frequently than once every 50 years, the herd/population may not fully recover which may lead to extirpation.

The rate of disease transmission from domestic sheep to bighorn sheep depends on a variety of factors that cannot be easily predicted or modelled. In the PNF FSEIS (USFS 2010a), disease modeling was conducted assuming that disease outbreak would occur under the following range of probabilities: disease would be transmitted 0.05, 0.10, 0.25, 0.5, 0.75, or 1.0 times per contact between bighorn sheep and a domestic sheep allotment (USFS 2010a). Probabilities of a disease outbreak given contact are considered low (0.05 or 1 in 20 contacts leads to a disease outbreak), moderate (0.25 or 1 in 4 contacts lead to a disease outbreak), or high (1.0 or every contact results in a disease outbreak); however, these are relative terms.

Based on disease model runs at the 0.25 disease transmission probability level, bighorn herds could survive disease return intervals of once every 46 years or longer (USDA 2010a, pg 3-80).

Outbreaks more frequently than once every 46 years would mean that the population is consistently exposed to ongoing disease transmission and would likely be extirpated as a result of consistent exposure to interspecies contact. Although we still lack empirical data to make recommendations on the periodicity of outbreaks, and the effects on bighorn sheep, this is a good benchmark to ensure population persistence until better data is available (USFS 2013b).

The "moderate" disease outbreak (1 in 4 contacts leads to disease outbreak) and interval between outbreaks (46 years) were used in the PNF Record of Decision rationale (USFS 2010b). The Payette analyses incorporated a large amount of scientific literature, input from many bighorn sheep experts, and modeling that incorporates current best science analysis for interspecies contact (USFS 2010a, USFS 2010b, Carpenter et al. *In press,* O'Brien et al. *In press*). Recognizing the uncertainty regarding contact and disease outbreak, this threshold provides for low to very low risk to bighorn sheep populations not recovering from potential disease outbreak and provides for population persistence. The Payette assumptions and associated analyses are appropriate to use for this document because the three allotments are within 0-8 miles of the PNF lands evaluated. For this document, a rate of contact >4 contacts/50-year period would likely result in bighorn herd extirpation, whereas herds would remain viable over the long term with ≤4 contacts/50-year period.

Risk of Contact Tool Results

*Contact with Allotments* - The expected number of contacts (rate of contact) between Current Herds (Sheep Mountain, Lookout Mountain) and any of the allotments is very low, ranging from <1-2.5/50-year period (Table 14). The Sheep Mountain herd consists of ewes, which are less likely to make foray movements in comparison to long distance and more frequent foray behavior of rams (Table 13). The Lookout Mountain herd is a large population composed of rams and ewes (Table 13); therefore, the herd is more likely to make long distance foray movements.

Table 14. Annual risk of contact and expected number of contacts in a 50-year period for the Current Herd scenario (Sheep Mountain, Idaho and Lookout Mountain, Oregon herds) with three allotments, Washington County, Idaho.

| Allotment | Model | Annual Risk of Contact (%)[1] | Expected # of Contacts/50-year Period |
|---|---|---|---|
| West Pine Creek | Sheep Mountain Herd | 0.03 | <1 |
| | Lookout Mountain Herd | 5.0 | 2.5 |
| Cambridge | Sheep Mountain Herd | 0.007 | <1 |
| | Lookout Mountain Herd | 0.07 | <1 |
| Boyd Individual | Sheep Mountain Herd | 0.0002 | <1 |
| | Lookout Mountain Herd | 0.03 | <1 |

[1] These risk of contact values are for allotments that are grazed and therefore represent the probability of a bighorn sheep transecting a domestic sheep grazing allotment.

The Upper Hells Canyon Idaho and Oregon herds were analyzed using the RCT. West Pine Creek, Cambridge, and Boyd Individual allotments were determined to be beyond foray distances of these herds; therefore, a rate of contact value was not generated. These populations have been suppressed by past pneumonia outbreaks (first observed in 2000) and are not expected to survive in the long term. Impacts to these individual herds are not discussed further in the analysis.

Under the Potential Population scenario, the rate of contact between a bighorn sheep and any of the allotments would be substantially greater (Table 15). A large population (500 animals), composed of rams and ewes, and close proximity between the allotments and the Hells Canyon PMU are the primary factors influencing the annual risk of contact. A foraying bighorn sheep would be expected to contact the West Pine Creek Allotment annually, and approximately two contacts could occur every 10 years with the Cambridge Allotment.

Table 15. Annual risk of contact and expected number of contacts in a 50-year period for the Potential Population scenario (Hells Canyon PMU) with three allotments, Washington County, Idaho.

| Allotment | Model | Annual Risk of Contact (%)[1] | Expected # of Contacts/50-year Period |
|---|---|---|---|
| West Pine Creek | Hells Canyon PMU | 100.0 | 50 |
| Cambridge | Hells Canyon PMU | 24.0 | 12 |
| Boyd Individual | Hells Canyon PMU | 4.0 | 2 |

[1] These risk of contact values are for allotments that are grazed and therefore represent the probability of a bighorn sheep transecting a domestic sheep grazing allotment.

*Contact with Domestic Sheep Trailing Routes* - The rate of contact would be <1/50-year period with Current Herds (Sheep Mountain and Lookout Mountain) and 12.5/50-year period with the Potential Population (Hells Canyon PMU; Table 16). The trailing route was determined to be beyond foray distances of the Upper Hells Canyon (Idaho and Oregon) herds; therefore, a risk of contact value was not generated. The route is within 1 mile of the Hells Canyon PMU, 13 miles of the Sheep Mountain CHHR, and 18 miles from the Lookout Mountain CHHR.

Table 16. Annual risk of contact and expected number of contacts in a 50-year period for the Current Herd (Sheep Mountain, Idaho and Lookout Mountain, Oregon herds) and Potential Population (Hells Canyon PMU) scenarios with a domestic sheep trailing route., Washington County, Idaho.

| Trailing Route (number) | Model | Annual Risk of Contact (%) | Expected # of Contacts/50-year Period |
|---|---|---|---|
| Shirts Sheep Trailing Route (04-02) | Sheep Mountain Herd | 0.008 | <1 |
| | Lookout Mountain Herd | 0.6 | <1 |
| | Hells Canyon PMU | 25.0 | 12.5 |

### 3.2.2.2 **Alternative A**

Wildlife habitat components of standards 2, 4, and 8 would be met over the long term.

**Greater Sage-grouse**

Removal of livestock grazing would result in minor to moderate improvements in nesting and brood-rearing habitat quality and structure for up to 1,783 acres of shrub and perennial grass habitat and 1,498 acres of PPH and PGH. In general, tall-stature perennial grasses would reach cover heights >7 inches annually, and would increase in abundance and retain residual cover over the long term. Forb abundance and diversity would remain stable or increase over a 10-year period, especially in sheep grazing allotments. Sagebrush cover would remain stable over the long term. Increased forb abundance would also provide a reliable source of insect prey for sage-grouse chicks, and nutrition for pre-laying hens. Areas where exotic annuals and short stature perennials predominate (307 acres primarily in the Armacost Individual, Boyd Individual, Cambridge, Gambril Individual, and East Pine Creek allotments; Table 8) would provide

marginal brood-rearing habitat and would not provide nesting for sagebrush obligate species over the long term. The potential for livestock to flush nesting grouse from nests and the outright destruction of nests would be eliminated. Deer Creek in the West Pine Creek Allotment would not be subjected to livestock trampling resulting in a minor decrease in potential *C. tarsalis* habitat over the long term. Livestock would not introduce or spread noxious weeds, which would help maintain habitat quality over the long term. Impacts to sage-grouse and sagebrush steppe wildlife habitat for each allotment are described.

*Armacost Individual* - The allotment would continue to provide suitable breeding habitat for sagebrush steppe associated special status species, as well as migratory bird species associated with riparian habitat. Sagebrush cover would remain stable and perennial grasses and forbs would increase in vigor, providing quality cover and forage. Riparian habitats would remain stable and increase in vigor due the absence of concentrated livestock use.

*Boyd Individual* - The allotment would continue to provide marginal nesting and suitable brood-rearing habitat for sage-grouse and other sagebrush steppe associated wildlife species. Tall sagebrush would not increase because of soil limitations. Removal of sheep grazing would have long term benefits to sage-grouse breeding habitat. Vigor and density of forb species would be expected to improve as sheep typically select for forbs when browsing.

*Cambridge* – The allotment would continue to provide unsuitable breeding habitat for sage-grouse. Nesting cover would not improve in the absence of grazing over the long term. Perennial grasses and forbs would increase in vigor in the long term, as sheep typically select for forbs when feeding.

*Gambril Individual* - The allotment would continue to provide marginal breeding habitat for sage-grouse and other sagebrush steppe associated special status species. Perennial grasses would maintain or increase in vigor providing suitable cover for grouse and other special status wildlife species. There would be long term benefits to forb cover as plants are able to set seed annually.

*Deer Creek* - The allotment would continue to provide potential suitable brood-rearing habitat for sage-grouse and sagebrush steppe associated special status species, as perennial grasses and forbs would maintain or increase in vigor over the long term. Nesting cover would not improve in the absence of livestock grazing as soil types in the allotment do not support deep-rooted big sagebrush.

*East Pine Creek* - The allotment would continue to provide suitable breeding habitat for sage-grouse and other sagebrush steppe associated species. Sagebrush cover would remain stable and perennial grasses and forbs would increase in vigor over the long term.

*West Pine Creek* - The allotment would continue to provide suitable breeding habitat for sage-grouse and other sagebrush steppe associated species. Perennial grasses and forbs would increase in vigor in the long term, as sheep typically select for forbs when browsing.

**Rocky Mountain Bighorn Sheep**
Removing domestic sheep grazing (1,682 acres of public lands in the Boyd Individual, Cambridge, and West Pine Creek allotments) and trailing (Rocky Slope, Rush Peak, Horse Flat, and Cambridge [00154] allotments) would eliminate the risk of potential interaction and disease transmission between domestic and bighorn sheep in those allotments. Eliminating sheep grazing would conform to the IDFG Bighorn Sheep Management objectives for the Hells Canyon PMU, which is to implement management actions as possible to reduce impacts of disease and promote population growth (IDFG 2010, 2011).

**Migratory Birds**
Removal of livestock grazing would result in moderate improvements in understory nesting cover on 330 acres of conifer habitat in the West Pine Creek Allotment over the long term. Fledging success would improve because nesting cover would not be removed by grazing livestock. Nesting and brood-rearing habitat would be maintained for riparian-dependent species in the Armacost Individual Allotment where 0.7 miles of streams would remain in PFC over the long term.

#### 3.2.2.3 **Alternative B**
Wildlife habitat components of standards 2, 4, and 8 would be met over the long term for all species except Rocky Mountain bighorn sheep.

**Greater Sage-grouse**
Nesting and brood-rearing habitat for sage-grouse and associated sagebrush steppe special status species would be maintained over the long term. Impacts associated with spring grazing would have negligible to moderate effects on breeding habitat over the long term. In general, vegetative components of sage-grouse breeding habitat (perennial grasses and forbs) would be maintained due to the current diversity and abundance of native species (Section 3.1.2.3). Any increases in invasive annuals or noxious weeds would have minor adverse effects on nesting and brood-rearing habitat over the long term. Impacts to sage-grouse breeding and sagebrush steppe wildlife habitat for each allotment are described.

*Armacost Individual* – Sagebrush, perennial grass, and forb cover would remain stable over the long term, providing quality cover and forage. However, minor bitterbrush hedging would occur during the fall use period. Due to low stocking rates (10.6 acres/AUM) and livestock use periods (early spring and late fall), livestock impacts to riparian habitat would be negligible to minor. Impacts would occur in the fall, as livestock are expected to browse willow during the dormant stage. Riparian vegetation would have a full growing season to recover, which would maintain plant diversity and provide suitable riparian habitat for wildlife species over the long term.

*Boyd Individual* - Cattle or sheep grazing would have minor to moderate annual affects to nesting habitat where grass and forb cover is reduced, especially in concentrated use areas. Removal by May 15 would allow some regrowth that would help maintain brood-rearing habitat over the long term. Herding domestic sheep would result in wider distribution and overall utilization levels <40%, reducing impacts relative to concentrated cattle use areas. Sheep bedding would have minor to moderate long term effects to nesting and brood-rearing habitat at isolated areas, as perennial grass and forb cover would be reduced due to trampling.

*Cambridge* - Sheep grazing could have minor to moderate annual effects to brood-rearing habitat, as perennial grass and forb cover would be reduced where trampling occurs at isolated sheep bedding areas. Herding domestic sheep would result in wider distribution and overall utilization levels <40%; therefore, minor long-term impacts to brood-rearing habitat would occur.

*Gambril Individual* - The allotment would continue to provide marginal habitat for sage-grouse and other sagebrush steppe associated special status species. Low stocking rates (>8 acres/AUM; Table 4) would minimize annual grazing and trampling impacts to nesting and brood-rearing habitat. A minor long-term reduction of perennial grass and forb cover would occur as livestock grazing would occur during the critical growth period (April-May).

*Deer Creek* - Annual use during the nesting period would cause a minor reduction in perennial grass and forb cover; however, diversity would be maintained over the long term because low stocking rates (>8 acres/AUM, Table 4) would minimize livestock impacts to breeding and brood-rearing habitat. Nesting cover would not improve because soil types do not support deep-rooted big sagebrush.

*East Pine Creek* - Breeding and brood-rearing habitat would be maintained over the long term because livestock use generally occurs during the fall (October and November) when perennial vegetation is in the dormant stage. Perennial grass and forb growth and seed production would occur without livestock impacts during most years. Low stocking rates in the allotment (>8 acres/AUM, Table 4) would also minimize grazing and trampling impacts.

*West Pine Creek* - Sheep grazing could have minor to moderate annual effects to breeding and brood-rearing habitat, as perennial grass and forb cover would be reduced where trampling occurs at isolated sheep bedding areas. Herding domestic sheep would result in wider distribution and overall utilization levels <40% which would help maintain perennial grass and forb cover and diversity over the long term. Livestock trampling around water sources on public lands along Deer Creek could maintain small amounts of potential *C. tarsalis* habitat over the long term. Trampling impacts would be minor because sheep don't tend to congregate at water sources for extended periods. Therefore, there is not expected to be any increase in the potential for *C. tarsalis* habitat.

**Rocky Mountain Bighorn Sheep**

The rate of contact between current bighorn sheep herds and the allotments would be low enough to sustain the herds over the long term. Under the Potential Population scenario, the rate of contact would be too great to sustain a disease-free population in the Hells Canyon PMU over the long term.

Contact with Allotments

*Boyd Individual* - Domestic sheep grazing would have negligible to minor impacts to bighorn sheep over the short and long term. The expected number of contacts during a 50-year period with Current Herds (Sheep Mountain and Lookout Mountain) would be <1 (Table 14) which would allow long-term viability of those herds. Contact rates for the Sheep Mountain herd

would decrease over the long term as the all-ewe herd population continues to decline. Contact rates for the Lookout Mountain herd could increase over the long term as the bighorn sheep herd range and population numbers increase, especially if animals become established in Idaho. Approximately two contacts during a 50-year period would occur with the Potential Population (Hells Canyon PMU; Table 15), which would allow long-term viability of the population.

*Cambridge* - Domestic sheep grazing would have negligible (Current Herds) and major (Potential Population) impacts to bighorn sheep over the long term. The expected number of contacts during a 50-year period with Current Herds (Sheep Mountain and Lookout Mountain) would be <1 (Table 14) which would allow long-term viability of those herds. Changes in contact rates for the herds would be as described for the Boyd Individual Allotment. Approximately 12 contacts during a 50-year period would occur with the Potential Population (Hells Canyon PMU; Table 15). Disease transmission and subsequent outbreak would occur approximately three times during a 50-year period which would not allow long-term population viability. Implementation of the SRP would have minor benefits in addressing bighorn sheep that contact the allotment. It would help identify when potential problems arise including notification of bighorn sheep sightings in the allotment and increased awareness of domestic sheep health and locations. However, the time between identification of and response to a problem could be long enough that an appropriate response (e.g., removing sick domestic sheep, capturing a bighorn sheep that came into contact with the allotment) would not occur before disease was transmitted to a bighorn sheep herd.

*West Pine Creek* - Domestic sheep grazing would have minor (Current Herds) and major (Potential Population) impacts to bighorn sheep over the long term. The expected number of contacts during a 50-year period with the Sheep Mountain herd would be <1 (Table 14) which would allow long-term viability of the herd. The expected number of contacts during a 50-year period with the Lookout Mountain herd would be 2.5 (Table 14), which would be less than the four contact/50-year threshold for viability over the short term. Changes in contact rates for the herds would be as described for the Boyd Individual Allotment. Long-term viability of the Lookout Mountain herd would be adversely affected when the rate of contact exceeds four per 50-year period. Approximately 50 contacts during a 50-year period would occur with the Potential Population (Hells Canyon PMU; Table 15). Disease transmission would occur approximately 12.5 times during a 50-year period which would not allow long-term population viability.

<u>Contact with Domestic Sheep Trailing Routes</u>

Trailing sheep through the Rocky Slope, Rush Peak, Horse Flat, and Cambridge (00154) allotments would have negligible effects to current bighorn sheep herds because the separation between herds and the trailing route would result in a low risk of contact (Table 16), domestic sheep would be present ≤3 days annually, and bighorn sheep contact would be deterred by the disturbance (dogs, people) associated with trailing. The risk of contact would be low enough that the Lookout Mountain herd (the only disease-free herd) would not be exposed to disease from trailing domestic sheep during the 50-year period. Major impacts would occur under the Potential Population (Hells Canyon PMU) scenario where a high risk of contact would occur between the Hells Canyon CHHR and the trailing route (Table 16). Bighorns in the PMU would

be exposed to disease at least three times during the 50-year period which would not allow long-term population viability.

**Migratory Birds**
Livestock grazing would have minor to moderate effects on understory nesting cover on 317 acres of conifer habitat in the West Pine Creek Allotment over the long term. Because of herding, domestic sheep use would occur for a short period of time in any area. Impacts would be reduced when use of conifer habitats occurs before nest initiation or after fledging. Nesting and brood-rearing habitat would be maintained for riparian-dependent species in the Armacost Individual Allotment where 0.7 miles of streams would remain in PFC over the long term.

#### 3.2.2.4 **Alternative C**
Wildlife habitat components of standards 2, 4, and 8 would be met over the long term.

**Greater Sage-grouse**
Nesting and brood-rearing habitat would be maintained or improved over the long term. Low stocking rates, deferred and alternate year grazing, and changes in livestock class associated with Alternative C would collectively benefit sage-grouse breeding habitat and associated sagebrush steppe special status species. Alternate year use, outside the nesting and brood-rearing periods would result in moderate increases in nesting cover and food sources including seeds, forbs, and insects. Disturbance from livestock management activities would be reduced from Alternative B in allotments where cattle replace sheep (up to 1,682 acres in the Boyd Individual, Cambridge, and West Pine Creek). Impacts from invasive annuals and noxious weeds would be as described in Alternative B. Impacts to sage-grouse and sagebrush steppe wildlife habitat for each allotment are described.

*Armacost Individual* - Impacts would be as described in Alternative B.

*Boyd Individual* – Delaying turnout until June 15 during even years would have moderate benefits to nesting and brood-rearing habitat because adequate cover would be maintained throughout the nesting period and use would occur after perennial grass and forb growth periods allowing increased vigor and seed production. Delaying turnout two weeks (to May 1) during odd years would benefit nesting birds as utilization levels would not likely reach 40% until near the end of the nesting period. Cattle impacts (changes in habitat structure, nest disturbance and destruction), especially at concentrated use areas, would occur later during the nesting season in odd years than in Alternative B, or outside the breeding season in even years.

*Cambridge* - Delaying turnout two weeks (to May 1) would have minor benefits for nesting birds as utilization levels would not likely reach 40% until near the end of the nesting period. Changing livestock type to cattle would have minor to moderate long-term adverse impacts on habitat quality and structure and increased disturbance in concentrated use areas and gentle slopes (182 acres). These impacts would be less than in Alternative B on moderate slopes that would receive less cattle use than sheep use.

*Gambril Individual* – Deferring livestock use by two weeks during the critical growth period in alternate years would have minor long-term benefits to habitat quality. Livestock impacts would

occur at different times during the growth period which would help plants meet physiological needs in some years. Low stocking rates as described in Alternative B would not change. Breeding habitat would be maintained or improved over the long term.

*Deer Creek* - Delaying turnout two weeks (May 1) during the breeding period would have minor structure benefits as utilization levels would not likely reach 40% until near the end of the nesting period. Fall use would provide rest during the critical growth period, resulting in moderate benefits to habitat quality and structure because perennial grass and forb cover would be maintained or increase over the long term. Minor nest disturbance and destruction impacts would occur during spring use, but not during fall use.

*East Pine Creek* – Impacts would be similar to those described for the Deer Creek Allotment; however, spring nest disturbance and destruction impacts would be slightly reduced because the May 15 turnout date occurs later in the nesting period.

*West Pine Creek* - Changing type of livestock to cattle would have minor to moderate long-term adverse impacts to habitat quality and structure, especially at concentrated use areas and gentle slopes (476 acres). Use would occur during most of the growth period; however, because of different forage preferences between cattle and sheep, forb diversity and cover could increase and grass diversity and cover could decrease relative to Alternative B. Delaying turnout four weeks (May 1) would have negligible to minor benefits to nesting birds as utilization levels would not likely reach 40% until near the end of the nesting period. Because cattle tend to concentrate around water sources, the potential for pugging to create *C. tarsalis* habitat would increase over the long term relative to Alternative B. Sage-grouse typically avoid edge habitats found in the allotment and would not be at risk of disease transmission. However, migratory birds could still be at a negligible to minor increased risk of disease transmission.

**Rocky Mountain Bighorn Sheep**

Impacts would be as described in Alternative A because cattle represent a very minor risk for disease transmission. Cattle are known to carry pathogens similar to those carried by domestic sheep (*Pasteurellaceae*), and cattle have the potential to transmit these pathogens to bighorn sheep resulting in subsequent pneumonia die-off events (Wolfe et al. 2010). However disease events between cattle and free-ranging bighorn sheep herds would occur under rare conditions (e.g., extreme winter weather) that force the species to commingle (e.g., winter feeding troughs). Under normal conditions such as spring-fall livestock use periods, bighorn sheep and cattle do not associate in the same manner as bighorn sheep and domestic sheep. Impacts from domestic sheep trailing would be as described in Alternative B.

**Migratory Birds**

Livestock grazing would have minor to moderate effects on understory nesting cover on 317 acres of conifer habitat in the West Pine Creek Allotment over the long term. Relatively steep slopes (the majority of forested areas are >60% slopes) and proximity of forested areas to water sources (conifer stands are >0.25 miles from water) would limit cattle use and help maintain nesting cover. Impacts associated with riparian habitat in the Armacost Individual Allotment would be as described in Alternative B.

### 3.2.3 Cumulative Impacts – Wildlife and Special Status Species

#### 3.2.3.1 Scope of Analysis

**Greater Sage-grouse**

A buffer around the Weiser population of sage-grouse will be used as the CIAA to assess cumulative impacts for sage-grouse (Map 4). Telemetry data for sage-grouse in the Weiser population documented movements up to 33.6 miles between breeding and wintering habitats; however, the average distance travelled for males and females to winter locations was 14.5 miles (IDFG 2011). Therefore, the Weiser population was buffered by 14.5 miles to account for the majority of sage-grouse that may utilize the area. This analysis incorporates an 11.2 mile boundary suggested by Connelly et al. (2000) for migratory populations.

The CIAA encompasses 261,954 acres of priority habitat and 340,527 acres of general habitat (all ownerships) in Idaho; the majority of sage-grouse habitat falls on private (61%) and public (35%) lands. Weiser grouse tend to make long distance movements during the wintering season in northwestern regions of the SGPA near Hells Canyon and gene flow between Weiser-area and Oregon grouse may be occurring (IDFG 2011). Projects selected for cumulative effects analysis included those that could affect nesting and brood-rearing habitat. The analysis timeframe covers the permit period (present to 2023) which coincides with the duration of impacts identified above.

**Rocky Mountain Bighorn Sheep**

The bighorn sheep CIAA includes areas within 25 miles Current Herds and west of Highway 95, including Oregon, that support domestic sheep grazing (Map 7). The buffer would include the majority of bighorn foray movements and represent a moderate or greater risk of contact and potential for disease transmission. The Lookout Mountain sheep herd of Oregon is included in the analysis area as are areas within their foray distance. The analysis timeframe covers the permit period (present to 2063) which coincides with the duration of impacts identified above, although disease impacts on population viability could occur up to 100 years (USFS 2010a).

**Migratory Birds**

Forested habitat within 2 miles of the West Pine Creek Allotment will be used as the CIAA. The buffer represents areas that birds could interact with conspecifics or move to after nestlings have fledged. The analysis area includes approximately 11,000 acres of forested habitat on private, BLM-administered, and PNF lands. The analysis timeframe covers the permit period (present to 2023).

#### 3.2.3.2 Current Conditions and Present Effects of Past, Present, and Foreseeable Future Actions

Past actions to be considered include livestock grazing, range improvement projects, energy infrastructure, road construction and maintenance, wildfire and suppression, emergency stabilization and rehabilitation (ESR) of burned areas, habitat restoration projects, agricultural expansion, and OHV recreation. Collectively they have re-shaped natural ecosystems in the Great Basin, resulting in the current wildlife habitat conditions. Historic overgrazing during the late 1800's and early 1900's, along with severe drought, resulted in long-term effects including changes in native plant community structure and species diversity. Historic development and

agricultural expansion in lower elevation areas resulted in habitat fragmentation which is largely irreversible. Additionally, the expansion and spread of invasive non-native grasses throughout the CIAAs has degraded wildlife habitat, as native perennial grasses and forbs, which provide crucial cover and food, have been replaced. The spread of non-native invasive plant species has been exacerbated by increased wildfire frequency. Disease transmission and un-regulated hunting resulted in the extirpation of bighorn sheep from much of their historic range.

Actions that will continue into the foreseeable future include livestock grazing, wildfire and ESR, and OHV recreation.

- Current livestock grazing management practices and range improvements on public lands would be designed to maintain or meet Standards by either enhancing poor condition habitat for sage-grouse or other wildlife species or by maintaining good condition areas (Section 3.1.3.2). Sage-grouse local working groups in the West Central SGPA are continuing efforts to mitigate impacts to sage-grouse habitat on private lands.
    - SS Cattle Company Brush Management project will continue to reseed approximately 97 acres of sage-grouse nesting and early brood-rearing habitat on private land funded by the Idaho Governor's Office of Species Conservation.
    - Through the Natural Resource Conservation Service's Wildlife Habitat Incentives and Environmental Quality Incentives programs, projects have been initiated on private lands in West Central SGPA. Projects started in 2011 and could encompass approximately 24,980 acres of private land. Projects include fencing, obstruction removal, changes in grazing management, wildlife and livestock water developments, native seeding, range seeding, and brush management are being implemented to improve habitat conditions for sage-grouse.

- The Surdam Allotment in the PNF, adjacent to the West Pine Creek Allotment, was closed to domestic sheep grazing because it falls within the Upper Hells Canyon CHHR and puts bighorn sheep at risk of contact and disease transmission (USFS 2010a). Most sheep allotments in Upper Hells Canyon CHHR were deemed unsuitable for sheep grazing. In addition to closing the Surdam Allotment, the PNF designated fourteen allotments as entirely unsuitable for domestic sheep grazing, and the portions of four other allotments (two associated with Hells Canyon) as unsuitable for domestic sheep grazing. Portions of the Smith Mountain and Price Valley allotments east of the Hells Canyon divide are in CHHR and occupied habitat, but are open to sheep grazing. Overall, 346,696 acres (94%) of bighorn sheep summer source habitat on the PNF is protected from disease risk posed by domestic sheep grazing. Sheep grazing occurs on private and State lands adjacent to BLM and Forest Service allotments in Idaho and Oregon (Map 7). Current State of Idaho code (Section 36-106) limits IDFG's ability to augment bighorn sheep populations in areas with domestic sheep grazing.

- Three pastures (Lawrence, Upper East, and Upper West) in the Pritchard Creek Allotment (Vale District BLM, Oregon) are permitted for domestic sheep grazing (May 1 to June 15; 201 AUMs) and are located approximately 12 miles from the Lookout Mountain herd (Map 7). The pastures were analyzed separately as the use varies annually. Between 2011 and 2013, the Lawrence Pasture was used two years and Upper East and Upper West were used

one year. Sheep also graze on private lands in the town of Durkee Oregon, west of Interstate-84. A polygon was generated 0.5 miles around the town in order to delineate an "allotment" for analysis. The RCT tool was used to analyze the risk of contact between these allotments and the Lookout Mountain herd. The annual risk of contact with the Lookout Mountain herd and the Pritchard Creek Allotment is 10.5% (~1 contact in a 10-year period) and the risk is <1% for the private land within Durkee, Oregon (Table 18). Pritchard Creek pastures and Durkee Private were determined to be beyond foray distances of the Sheep Mountain, Upper Hells Canyon Idaho, Upper Hells Canyon Oregon, and Hells Canyon PMU herds; therefore, a rate of contact value was not generated for these herds.

Table 17. Annual risk of contact and expected number of contacts in a 50-year period for the Lookout Mountain herd with a BLM domestic sheep allotment and private land, Baker County, Oregon.

| **Allotment/Pasture** | | **Model** | **Annual Risk of Contact (%)** | **Expected # of Contacts/50-year Period** |
|---|---|---|---|---|
| Prichard Creek | East Upper | Lookout Mountain Herd | 0.54 | <1 |
| | Lawrence | Lookout Mountain Herd | 10.6 | 5.3 |
| | West Upper | Lookout Mountain Herd | 1.47 | <1 |
| Durkee Private | | Lookout Mountain Herd | 0.2 | <1 |

- Two BLM-administered allotments in the Goodrich MA, Rush Creek (00169) and Cow Creek (00046), are authorized for domestic sheep grazing (Map 7). The allotments are 16 (Cow Creek) to 17 (Rush Creek) miles from the Sheep Mountain herd CHHR. This EA would not amend any terms or conditions to those permits, but they are included in the cumulative effects analysis area and the RCT was used to analyze potential impacts to bighorn sheep for the allotments. The annual risk of contact with Current Herds (Sheep Mountain and Lookout Mountain) and the Cow Creek or Rush Creek allotments is <1% and 37% for the Potential Population (Hells Canyon PMU; Table 18).

Table 18. Annual risk of contact and expected number of contacts in a 50-year period for the Current Herd (Sheep Mountain, Idaho and Lookout Mountain, Oregon herds) and Potential Population (Hells Canyon PMU) with two BLM domestic sheep allotments and domestic sheep on private pastures, Adams and Washington counties, Idaho.

| **Allotment/Pasture** | | **Model** | **Annual Risk of Contact (%)** | **Expected # of Contacts/50-year Period** |
|---|---|---|---|---|
| Cow Creek | | Sheep Mountain Herd | 0.008 | <1 |
| | | Lookout Mountain Herd | N/A[1] | N/A[1] |
| | | Hells Canyon PMU | 26.8 | 13.4 |
| Rush Creek | | Sheep Mountain Herd | 0.0003 | <1 |
| | | Lookout Mountain Herd | 0.007 | <1 |
| | | Hells Canyon PMU | 10.3 | 5.2 |
| Private and State Pastures, Idaho[2] | Private Pasture 1 | Sheep Mountain Herd | 0.02 | <1 |
| | | Lookout Mountain Herd | N/A[1] | N/A[1] |
| | | Upper Hells Canyon Idaho | 0.12 | <1 |
| | | Upper Hells Canyon Oregon | 0.1 | <1 |
| | | Hells Canyon PMU | 100.0[3] | 50 |
| | Private Pasture 2 | Sheep Mountain Herd | 0.02 | <1 |
| | | Lookout Mountain Herd | N/A[1] | N/A[1] |
| | | Upper Hells Canyon Idaho | 100.0[3] | 50 |
| | | Upper Hells Canyon Oregon | 0.8 | <1 |
| | | Hells Canyon PMU | 100.0[3] | 50 |

| Allotment/Pasture | | Model | Annual Risk of Contact (%) | Expected # of Contacts/50-year Period |
|---|---|---|---|---|
| | Private Pasture 3 | Sheep Mountain Herd | 0.05 | <1 |
| | | Lookout Mountain Herd | N/A[1] | N/A[1] |
| | | Upper Hells Canyon Idaho | 0.2 | <1 |
| | | Upper Hells Canyon Oregon | 0.2 | <1 |
| | | Hells Canyon PMU | 100.0[3] | 50 |
| | State Pasture 1 | Sheep Mountain Herd | N/A[1] | N/A[1] |
| | | Lookout Mountain Herd | N/A[1] | N/A[1] |
| | | Upper Hells Canyon Idaho | 0.09 | <1 |
| | | Upper Hells Canyon Oregon | 0.006 | <1 |
| | | Hells Canyon PMU | 7.1 | 3.5 |
| | State Pasture 2 | Sheep Mountain Herd | 0.004 | <1 |
| | | Lookout Mountain Herd | N/A[1] | N/A[1] |
| | | Upper Hells Canyon Idaho | N/A[1] | N/A[1] |
| | | Upper Hells Canyon Oregon | N/A[1] | N/A[1] |
| | | Hells Canyon PMU | 14.4 | 7.2 |

[1] The allotment is beyond the typical foray distance of bighorn sheep, therefore the RCT did not calculate a risk of contact value.
[2] Private lands within the Boyd Individual, Cambridge, and West Pine Creek allotments are not included.
[3] Pasture falls within the CHHR; therefore, annual contact between bighorn sheep and the pasture would be expected.

- Three private and two State pastures occur within 25 miles of the CHHR (Map 7). The annual risk of contact with Current Herds (Sheep Mountain, Upper Hells Canyon Idaho, Upper Hells Canyon Oregon, and Lookout Mountain) and the private (except Pasture 2) and State pastures is <1% (Table 18). With the exception of the Upper Hells Canyon Idaho herd, the annual risk of contact with Current Herds would be <1% for Private Pasture 2. The Upper Hells Canyon Idaho CHHR overlaps the pasture; therefore, annual risk of contact would 100%. The annual risk of contact with the Potential Population (Hells Canyon PMU) ranges from <1% (Private Pasture 2) to 100% (private pastures 1 and 3; Table 18).

- Sheep grazing on private and State lands in the Boyd Individual, Cambridge, and West Pine Creek allotments would result in risk of contact values similar to those described in Alternative B for BLM-permitted grazing (Section 3.1.2.3, Table 14, Table 15).

- Within the migratory bird analysis area, domestic sheep grazing occurs on private lands in the West Pine Creek Allotment and cattle use occurs on public and private lands in the Reeds Grove Allotment and PNF lands in the Mann Creek/Sturgill C&H and West Pine/Brownlee allotments. The Reeds Grove Allotment was meeting standards in 2005 and a 10-year permit for spring (April 15 – June 3) use at a 9.6 ac/AUM stocking rate was issued in 2008. Although turnout in the PNF allotments can occur in early June, the pastures are generally operated in a rotation system where June use occurs one in three or four years in a particular pasture and is deferred to a later date in the remaining years. The Mann Creek/Sturgill C&H and West Pine/Brownlee allotments were stocked at between 17-31 acres/AUM and 8.9-10.7 acres/AUM respectively in 2012 and 2013.

- Since 2000, 25 fires have burned 81,665 acres of sage-grouse habitat (6,215 acres of PPH and 75,450 acres of PGH) in the West Central SGPA. Locations and amounts of impacted habitat are impossible to determine for future wildfires. Given the interim guidance that the BLM is currently under (IM 2012-043, which mandates compliance with IM 2011-138, Sage-grouse Conservation Related to Wildland Fire and Fuels Management), protection (suppression) and rehabilitation (ESR) of sage-grouse habitat is a priority. Protection of sage-grouse habitat will also benefit other wildlife species within the FRFO.

- Authorized and unauthorized cross-country OHV activities occur throughout the analysis areas, and although the spatial and temporal extent is difficult to quantify, the effects to wildlife would be short-term disturbance and short or long-term habitat modification.

#### 3.2.3.3 Cumulative Impacts - Alternative A

**Greater Sage-grouse**

The effects to sage-grouse as a result of past, present, and reasonably foreseeable future actions would be the same for all alternatives. The combined effects would generally result in long-term improvements in sage-grouse habitat quality. Grazing management on private lands would have a greater impact on sage-grouse populations in the West Central SGPA as the minority of sage-grouse habitat occurs on BLM-administered lands. Habitat improvement projects associated with private lands (25,077 acres) would have moderate long-term benefits for nesting and brood-rearing habitat structure and condition. Wildfires would have moderate to major short to long-term adverse impacts to structure where sagebrush communities are burned. Rehabilitation activities could have minor to major benefits to structure over the long term where deep-rooted perennial grasses, native perennial forbs, and sagebrush become reestablished. No grazing on seven allotments (including 1,498 acres of PPH and PGH) would have moderate additive benefits to nesting and brood-rearing habitat, but would affect <1% of PPH and PGH in the analysis area.

**Rocky Mountain Bighorn Sheep**

No domestic sheep grazing in the West Pine Creek, Cambridge, and Boyd Individual allotments or trailing through four allotments would have a minor additive benefit by eliminating potential interspecies contact and disease transmission between bighorn sheep and domestic sheep. However, domestic sheep grazing could continue on private lands, State lands, and three BLM-administered allotments in the CIAA (Map 7). Domestic sheep grazing would generally have a minor adverse effect on Current Herds, but would have a major adverse effect on the Potential Population.

*Current Herds* - Long-term viability of the Sheep Mountain herd would not be affected by domestic sheep use on private, State, or BLM lands in the CIAA because the total number of contacts would be <1/50-year period (Table 18). Long-term viability of the Lookout Mountain herd would not be affected by domestic sheep use on private, State, or Idaho BLM lands in the CIAA because the total number of contacts would be <1/50-year period (Table 18). However, long-term viability of the Lookout Mountain herd would be adversely affected by use in the Lawrence Pasture of the Pritchard Allotment where the rate of contact exceeds four per 50-year period (Table 18). Domestic sheep grazing in Private Pasture 2 would adversely affect the long-term viability of the Upper Hells Canyon Idaho herd because annual contact would occur (Table

18); however, the Upper Hells Canyon Oregon herd would not be affected. Long-term herd viability for the Upper Hells Canyon Idaho and Upper Hells Canyon Oregon herds would not be affected by domestic sheep use on private pastures 1 and 2, State pastures, or BLM allotments because the total number of contacts would be <1/50-year period (Table 18). Domestic sheep grazing on private lands in the Boyd Individual, Cambridge, and West Pine Creek allotments would have negligible impacts under the Current Herd scenario (<1 contact/50 years; Table 14).

*Potential Population* - Individually and collectively, domestic sheep grazing on private and State lands and Idaho BLM-administered allotments would have major adverse impacts to bighorn sheep over the long-term. Contact rates would range from 3.5/50-year period for State Pasture 1 to annually for private pastures 1, 2, and 3 and private lands in the West Pine Creek Allotment (Table 18). The total number of contacts (243.3) would result in approximately 61 disease transmissions in a 50-year period which would not allow long-term population viability.

**Migratory Birds**

Low stocking rates (8.9-31 acres/AUM) would help maintain adequate nesting cover over the long term in the majority of the 11,000 acre area. Utilization and disturbance impacts would overlap nesting periods in the Reeds Grove and West Pine Creek allotments annually, but would occur only one in three or four years on the PNF allotments. Removal of livestock grazing from 317 acres of conifer habitat in the West Pine Creek Allotment would have minor additive benefits to nesting cover.

#### 3.2.3.4 Cumulative Impacts - Alternative B

**Greater Sage-grouse**

Maintaining current habitat conditions on seven allotments, which meet standards 4 and 8, would have negligible additive benefits for nesting and brood-rearing habitat quality and structure over the long term. Impacts from other activities would be as described in Section 3.2.3.3.

**Rocky Mountain Bighorn Sheep**

Permitting domestic sheep grazing on three allotments and sheep trailing through four allotments would have negligible additive disease transmission impacts for the Sheep Mountain herd. The total rate of contact for all domestic sheep grazing in the CIAA would be <1/50-year period which would not affect long-term viability. The proposed actions would have minor to moderate additive disease transmission impacts for the Lookout Mountain Herd. The total rate of contact for all domestic sheep grazing in the CIAA would be 8.3 contacts/50-year period, of which the proposed actions (primarily West Pine Creek Allotment) would contribute approximately 3 contacts/50-year period. Disease transmission would occur approximately two times during a 50-year period which would not allow long-term population viability. Permitting domestic sheep grazing on three allotments and sheep trailing through four allotments would have minor to moderate additive disease transmission impacts for the Hells Canyon PMU. The overall rate of contact would be as described in Alternative A where domestic sheep grazing would occur on private and State lands in the allotments.

**Migratory Birds**
Maintaining current habitat conditions on 317 acres of conifer habitat, which meet standards 4 and 8, would have negligible additive impacts for nesting cover over the long term. Impacts from other activities would be as described in Section 3.2.3.3.

#### 3.2.3.5 Cumulative Impacts - Alternative C

**Greater Sage-grouse**
Minor to moderate improvements (2,492 acres including 1,498 acres of PPH and PGH) would have minor additive benefits for nesting and brood-rearing habitat quality and structure over the long term. Impacts from other activities would be as described in Section 3.2.3.3.

**Rocky Mountain Bighorn Sheep**
Impacts would be as described in Section 3.2.3.3.

**Migratory Birds**
Changing class of livestock to cattle would have minor additive impacts to nesting cover on 317 acres of conifer habitat. Impacts from other activities would be as described in Section 3.2.3.3.

## 3.3 Riparian Areas/Water Quality/Fisheries

### 3.3.1 Affected Environment - Riparian Areas/Water Quality/Fisheries

Standards 2, 3, 7, and 8 apply only to the Armacost Individual Allotment (Table 1), riparian, water quality, and fisheries resources are not present in the remaining allotments.

**Riparian Areas**
Standards 2 and 3 are being met in the Armacost Individual Allotment. Left Fork Creek (0.4 miles) and Badger Gulch (0.3 miles) were rated in proper functioning condition (PFC). Each stream had dense, deep-rooted riparian vegetation to provide streambank stability. Stream channels and floodplains were nearly 100% vegetated and stable.

**Water Quality**
Wherever attainable, cold water aquatic life and primary and secondary contact recreation are the designated beneficial uses for which perennial streams are to be protected (Idaho Administrative Procedures Act [IDAPA] 58.01.02.100 and 58.01.02.100.02). The cold water aquatic life beneficial use is given to waters that are suitable, or intended to be made suitable, for protection and maintenance of viable communities of aquatic organisms, and populations of significant aquatic species that have optimal growing temperatures <18°C. Water quality standards only apply to intermittent waters during optimum flow periods sufficient enough to support the beneficial uses for which the water body has been designated (IDAPA 58.01.02.070.07). The optimum flow for aquatic life is ≥1.0 cfs.

Standard 7 is being met in the Armacost Individual Allotment. Left Fork Creek fully supports Idaho Department of Environmental Quality (IDEQ) water quality standards for cold water biota (IDEQ 2010). Badger Gulch has intermittent stream flows which support IDEQ standards for seasonal cold water biota. Good water quality is synonymous with PFC streams. Left Fork Creek and Badger Gulch have: good stream shading (≥ 40%) to protect the stream from solar

radiation; good streambank stability (streambanks ≥80 % vegetated and stable, or are rock armored); natural sediment transport capability; and appropriate width/depth ratios.

**Fisheries**

*Bull Trout* - Listed as threatened under the ESA in 1999, bull trout are grouped with the char, within the salmonid family of fishes. They require the coldest water temperatures; among the cleanest stream substrates for spawning and rearing; complex habitats, including streams with riffles and deep pools, undercut banks and lots of large logs; and connection from river, lake, and ocean habitats to headwater streams for annual spawning and feeding migrations.

Critical habitat was designated throughout their U.S. range in December 2010 (75 FR 63898). Left Fork Creek and Badger Gulch (tributaries to North Fork Hornet Creek) were not designated as critical habitat. However, in the greater Hornet Creek fifth field Hydrologic Unit #1705012409 (Hornet Creek HUC), approximately 23-stream miles are designated as critical habitat, all which occur on State lands.

Although Left Fork has a viable population of redband trout, thermograph data indicate that water temperatures are unsuitable for season-long bull trout occupation. All metapopulations of bull trout in the greater Hornet Creek watershed are known to be resident populations, occurring within the Olive, North, Placer, and Disappointment creek's sixth field HUCs on State lands. These streams are tributaries to main stem Hornet Creek. It would not be expected that these fish are amphidromous (migratory) due to the stream's small sizes. The likelihood that bull trout would occupy Left Fork at any time of year is extremely remote; therefore, they will not be discussed further.

*Redband Trout* - Standard 8 is being met for redband trout. Left Fork Creek provides good aquatic habitat conditions (e.g., dense shading, low width/depth ratios, appropriate sediment levels, and complex aquatic habitat) that support a viable redband trout population. Badger Gulch does not support a fishery due to intermittent stream flows.

### 3.3.2 Environmental Consequences - Riparian Areas/Water Quality/Fisheries

#### 3.3.2.1 General Discussion of Impacts

Levels and seasons of livestock use are the primary factors affecting stream functioning condition and consequently water quality and fisheries habitat.

*Level of Use* - Livestock could reduce the amount of stream shading by trampling or consuming herbaceous or woody plants. Stream shading of <40% could result in extended periods (two or more weeks) of >18°C water temperatures. Annual streambank trampling damage of >10% would increase sediment inputs. Slight to light levels of livestock use generally leave adequate vegetation to stabilize streams and limit streambank damage. Moderate to severe use levels result in unstable streambanks because of reduced cover and increased damage.

*Season of Use* - Generally, livestock utilize riparian areas for foraging far less in the spring, as upland vegetation is still green and palatable. Between July 15 and September 15 when upland vegetation is cured, riparian areas are most susceptible to overuse and damage. Fall grazing can

maintain PFC if utilization levels are managed to leave protective vegetation cover for the following winter-spring high stream high low periods.

#### 3.3.2.2 **Alternative A**

Removing livestock grazing and trampling impacts from 0.7 miles of streams would result in the long-term maintenance of functioning condition and improvements in fisheries habitat quality. Standards 2, 3, 7, and 8 would continue to be met over the 10-year period. Vegetation components (e.g., cover, diversity, and density) that are suppressed by slight to moderate grazing levels would increase.

#### 3.3.2.3 **Alternatives B and C**

Standards 2, 3, 7, and 8 would be met over the 10-year period. Left Fork Creek (0.4 miles) and Badger Gulch (0.3 miles) would remain in PFC over the 10-year period. There would be negligible grazing and trampling impacts. Use would occur during periods (e.g., early spring, late fall) when livestock would not be attracted to riparian areas. The allotment has a low stocking rate (10.6 acres/AUM); therefore, slight to light use levels would be expected. Slight to moderate use of willows could occur during the fall; however, this use period would not adversely affect willows because they are dormant and have a full growing season to recover. Current levels of plant diversity, streambank stability, and water quality would be maintained over the long term.

### 3.3.3 Cumulative Impacts - Riparian Areas/Water Quality/Fisheries

The direct and indirect impacts described above would be negligible; therefore, there would be no cumulative impacts to riparian areas, water quality, and fisheries.

## 3.4 Livestock Management/Social and Economics

### 3.4.1 Affected Environment - Livestock Management/Social and Economics

The BLM does not have specific social and economic information on permittees; therefore, information and analyses are based on county data from the period 1970 through 2010. The following data were derived from the Economic Profile System-Human Dimensions Toolkit (EPS) developed by Headwaters Economics (Headwater Economics 2012). The EPS uses data from the Economic Analysis, Labor Statistics, and Census bureaus. Ranch related data is contained in the farm/agricultural datasets and is not presented separately. Data, in part, are presented for farm proprietors. “Proprietors” refers to employment and income from sole proprietorships, partnerships, and tax-except cooperatives and probably most closely describes permittees. Many permittee households may have income from wages and salaries, a separate category in the EPS which is not reported here except where proprietors are reported as a percent of the total.

The Adams and Washington counties’ agricultural sectors generate approximately 11% and 15.3% of personal income, respectively (Table 19). This represents all forms of agriculture production, including livestock operators. Some forms of ranching depend on public lands for grazing forage. Public lands comprise 63.3% of the total land in the county. The number of farm proprietors increased between 1970 and 2010, accounting for 11-12% of employment.

Table 19: Social and economic factors in Adams and Washington counties, Idaho.

| | | Adams County | Washington County |
|---|---|---|---|
| Population (2010) | | 9,533 | 10,198 |
| Number Employed (2010) | | 2,282 | 4,540 |
| Non-Farm Employment | | 2,027 (88%) | 3,844 (84.7%) |
| Percent unemployed (2010) | | 17.2% | 9.8% |
| Median Household Income (2010) | | $34,730 | $38,903 |
| Farm Proprietors | Number in 2010 | 242 | 550 |
| | Number in 2010 (Percent of Total) | 10.6% | 12.1% |
| | Change in Employment (1970 to 2010) | 75.3% | 48.7% |
| Farming and Ranching income and expenses | Cash receipts from marketing livestock & products (not crops) change 1995-2005 | $9,585,000 | $28,013,000 |
| | Realized net income 2010 | -$2,053,000 | $3,842,000 |

### 3.4.2 Environmental Consequences – Livestock Management/Social and Economics

#### 3.4.2.1 Alternative A

Permittees would not be able to graze livestock for the ten-year period and would need to potentially provide other forage. Hay and pasture costs vary annually according to their respective markets; however, an average of private pasture prices could be assumed to range between $15 and $22/AUM. This would result in a maximum annual cost ranging from $176 (Deer Creek or East Pine Creek allotments) to $4,642 (West Pine Creek Allotment) and a total annual cost of $9,438 for all allotments. Should this alternative not be feasible, a withdrawal from the livestock business could result in an undefinable net loss in income to the counties and permittees.

#### 3.4.2.2 Alternative B

Continuation of the current permitted use would result in the allotments meeting standards 1 and 4 (Section 3.1.2.3); therefore, current use patterns and levels could be maintained over the long term with no effect to permittees. There would be no change in the contribution of livestock grazing to the counties' economies.

#### 3.4.2.3 Alternative C

Operators would continue to graze with new mandatory T&Cs and later turnout dates, which would be expected to enhance/maintain resource conditions where standards are already being met. The conversion from sheep to cattle on three allotments would have undeterminable impacts. The impact could be temporary or long term, and range from negligible where sheep and cattle are permitted but sheep are not currently used (Boyd Individual), to an undefinable net loss where only sheep are permitted (West Pine Creek and Cambridge) and a change to cattle would not be financially sustainable given prices, markets, and changes in operational needs. These economic impacts, both positive and negative would be negligible as a factor in the Washington County economy.

### 3.4.3 Cumulative Impacts – Livestock Management/Social and Economic

Because negligible to undefinable impacts at the operator level would be negligible at the county level; there would be no cumulative impacts and they will not be addressed.

## 4.0 Consultation and Coordination

The Boise District Office NEPA database represents the primary method of notification and opportunity for involvement. This project was posted on the web at (https://www.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do).

## 4.1 List of Preparers

| Name | Position | Resource |
|---|---|---|
| Christina Handy/Martin Espil | Rangeland Management Specialist | Livestock Grazing |
| Lara Hannon | Ecologist | Uplands |
| Mark Steiger | Botanist | Special Status Plants |
| Joseph Weldon | Wildlife Biologist | Wildlife |
| Allen Tarter | Natural Resources Specialist | Riparian |
| Dean Shaw | Archaeologist | Cultural |
| Michele Porter | Geographic Information System Specialist | Geographical Information Resources |
| Seth Flanigan | NEPA Coordinator | Reviewer |
| Terry Humphrey | Field Office Manager, FRFO | Reviewer |
| Matt McCoy | Assistant Field Office Manager | Reviewer |

## 4.2 List of Agencies, Organizations, and Individuals Consulted

Affected Permittees (Table 3)
Hells Canyon Preservation Council
Idaho Conservation League
Idaho Department of Fish and Game
Idaho Department of Lands
Idaho Woolgrowers Association
Interested Publics
Nez Perce Tribe
Oregon Department of Fish and Wildlife
Shoshone-Paiute Tribe
Shoshone-Bannock Tribes
The Wilderness Society
United States Fish and Wildlife Service
Vale District, Bureau of Land Management
Washington and Adams County Commissioners
Western Watersheds Project
Wild Sheep Foundation

Native American Consultation

BLM is required to consult with Native American tribes to "help assure (1) that federally recognized tribal governments and Native American individuals, whose traditional uses of public land might be affected by a proposed action, will have sufficient opportunity to contribute to the decision, and (2) that the decision maker will give tribal concerns proper consideration" (U.S.

Department of the Interior, *BLM Manual Handbook H-8120-1*). Tribal coordination and consultation responsibilities are implemented under laws and executive orders that are specific to cultural resources which are referred to as "cultural resource authorities," and under regulations that are not specific which are termed "general authorities." Cultural resource authorities include: the *National Historic Preservation Act of 1966*, as amended (NHPA); the *Archaeological Resources Protection Act of 1979*; and the *Native American Graves Protection and Repatriation Act of 1990, as amended*. General authorities include: the *American Indian Religious Freedom Act of 1979*; the NEPA; the FLPMA; and *Executive Order 13007-Indian Sacred Sites*. The proposed action is in compliance with the aforementioned authorities.

Southwest Idaho is the homeland of two culturally and linguistically related tribes: the Northern Shoshone and the Northern Paiute. In the latter half of the 19th century, a reservation was established at Duck Valley on the Nevada/Idaho border west of the Bruneau River. Today, the Shoshone-Paiute Tribes residing on the Duck Valley Reservation actively practice their culture and retain aboriginal rights and/or interests in this area. The Shoshone-Paiute Tribes assert aboriginal rights to their traditional homelands as their treaties with the United States, the Boise Valley Treaty of 1864 and the Bruneau Valley Treaty of 1866, which would have extinguished aboriginal title to the lands now federally administered, were never ratified.

Other tribes that have ties to southwest Idaho include the Bannock Tribe and the Nez Perce Tribe. Southeast Idaho is the homeland of the Northern Shoshone Tribe and the Bannock Tribe. In 1867 a reservation was established at Fort Hall in southeastern Idaho. The Fort Bridger Treaty of 1868 applies to BLM's relationship with the Shoshone-Bannock Tribes. The northern part of the BLM's Boise District was also inhabited by the Nez Perce Tribe. The Nez Perce signed treaties in 1855, 1863 and 1868. BLM considers off-reservation treaty-reserved fishing, hunting, gathering, and similar rights of access and resource use on the public lands for all tribes that may be affected by a proposed action.

The Shoshone-Paiute Tribes were consulted during the April 16, 2012 Wings and Roots Program, Native American Campfire meeting. No concerns were raised at that meeting. The Shoshone-Bannock Tribes did not respond to a May 23, 2011 scoping letter.

A scoping letter was sent to the Nez Perce Tribe on March 15, 2013 with initial RCT model results corresponding to the Hells Canyon PMU results presented in Section 3.2.2.1. The Tribe provided comments on bighorn sheep, other wildlife, rangeland resource, and process considerations. Their comments are summarized below with references to the document on how they were addressed.

*Bighorn Sheep* – The Tribe supported use of the RCT and was concerned that the annual risk of contact would be too great to support long-term bighorn sheep sustainability. This document provides a more complete analysis that addresses risk of contact for current bighorn herds and the potential population when animals fully occupy the Hells Canyon PMU (sections 3.2.2.1 and 3.2.2.3). The annual risk of contact for current herds would be at a level that would ensure bighorn population viability. The Tribe also encouraged implementation of regular monitoring, planning, and modifications to address changes in bighorn sheep movements and populations. These issues will be addressed in the permit terms and conditions.

*Other Wildlife* – The Tribe indicated the importance of addressing all threatened, endangered, and special status animal species. Although the BLM does not have monitoring data for all special status species in the allotments, we used representative species including sage-grouse and redband trout to address potential impacts from livestock grazing (Section 3.2).

*Rangeland Resources* – The Tribe expressed concern that assessments conducted in 2002 would not accurately represent current conditions. In 2011, site visits were conducted in each allotment that determined conditions had not substantially changed from the 2002 assessments (Section 3.1.1).

*Process* – The Tribe suggested that the range of alternatives should include no permit renewal and elimination of domestic sheep where the annual risk of contact is >0.3. The No Grazing (Section 2.2.1) and BLM Proposed Action – Livestock Grazing by Cattle Only (Section 2.2.3) alternatives effectively address these suggestions.

## 4.3 Public Participation

Public comments were received from:
Frank Shirts Jr.
Hells Canyon Preservation Council
Idaho Conservation League
Idaho Department of Fish and Game
Nez Perce Tribe
Oregon Department of Fish and Wildlife
Shoshone-Paiute Tribes, Wings and Roots Program, Native American Campfire (April 16, 2012)
The Wilderness Society
Wild Sheep Foundation

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# 6.0 Appendices

## 6.1 Appendix 1. Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management

***Standards for Rangeland Health***

**Introduction**
The Standards for Rangeland Health, as applied in the State of Idaho, are to be used as the Bureau of Land Management's management goals for the betterment of the environment, protection of cultural resources, and sustained productivity of the range. They are developed with the specific intent of providing for the multiple uses of the public lands. Application of the standards should involve collaboration between the authorized officer, interested publics, and resource users.

Rangelands should be meeting the Standards for Rangeland Health or making significant progress toward meeting the standards. Meeting the standards provides for proper nutrient cycling, hydrologic cycling, and energy flow.

Monitoring of all uses is necessary to determine if the standards are being met. It is the primary tool for determining rangeland health, condition, and trend. It will be performed on representative sites.

Appropriate to soil type, climate, and landform, indicators are a list of typical physical and biological factors and processes that can be measured and/or observed (e.g., photographic monitoring). They are used in combination to provide information necessary to determine the health and condition of the rangelands. Usually, no single indicator provides sufficient information to determine rangeland health. Only those indicators appropriate to a particular site are to be used. The indicators listed below each standard are not intended to be all inclusive. The issue of scale must be kept in mind in evaluating the indicators listed after each standard. It is recognized that individual isolated sites within a landscape may not be meeting the standards; however, broader areas must be in proper functioning condition. Furthermore, fragmentation of habitat that reduces the effective size of large areas must also be evaluated for its consequences.

**Standard 1 (Watersheds)**
Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Indicators may include, but are not limited to, the following:

1. The amount and distribution of ground cover, including litter, for identified ecological site/s) or soil-plant associations are appropriate for site stability.
2. Evidence of accelerated erosion in the form of rills and/or gullies, erosional pedestals, flow patterns, physical soil crusts/surface sealing, and compaction layers below the soil surface is minimal for soil type and landform.

**Standard 2 (Riparian Areas and Wetlands)**
Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Indicators may include, but are not limited to, the following:

1. The riparian/wetland vegetation is controlling erosion, stabilizing streambanks, shading water areas to reduce water temperature, stabilizing shorelines, filtering sediment, aiding in floodplain development, dissipating energy, delaying flood water, and increasing recharge of groundwater appropriate to site potential.
2. Riparian/wetland vegetation with deep strong binding roots is sufficient to stabilize streambanks and shorelines. Invader and shallow rooted species are a minor component of the floodplain.
3. Age class and structural diversity of riparian/wetland vegetation is appropriate for the site.
4. Noxious weeds are not increasing.

**Standard 3 (Stream Channel/Floodplain)**

Stream channels and floodplains are properly functioning relative to the geomorphology (e.g., gradient, size, shape, roughness, confinement, and sinuosity) and climate to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Indicators may include, but are not limited to, the following:

1. Stream channels and floodplains dissipate energy of high water flows and transport sediment. Soils support appropriate riparian-wetland species, allowing water movement, sediment filtration, and water storage. Stream channels are not entrenching.
2. Stream width/depth ratio, gradient, sinuosity, and pool, riffle and run frequency are appropriate for the valley bottom type, geology, hydrology, and soils.
3. Streams have access to their floodplains and sediment deposition is evident.
4. There is little evidence of excessive soil compaction on the floodplain due to human activities.
5. Streambanks are within an appropriate range of stability according to site potential.
6. Noxious weeds are not increasing.

**Standard 4 (Native Plant Communities)**

Healthy, productive, and diverse native animal habitat and populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Indicators may include, but are not limited to, the following:

1. Native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species.
2. The diversity of native species is maintained.

3. Plant vigor (total plant production, seed and seedstalk production, cover, etc.) is adequate to enable reproduction and recruitment of plants when favorable climatic events occur.
4. Noxious weeds are not increasing.
5. Adequate litter and standing dead plant material are present for site protection and for decomposition to replenish soil nutrients relative to site potential.

**Standard 5 (Seedings)**
Rangelands seeded with mixtures, including predominately non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.

Indicators may include, but are not limited to, the following:
1. In established seedings, the diversity of perennial species is not diminishing over time.
2. Plant production, seed production, and cover are adequate to enable recruitment when favorable climatic events occur.
3. Noxious weeds are not increasing.
4. Adequate litter and standing dead plant material are present for site protection and for decomposition to replenish soil nutrients relative to site potential.

**Standard 6 (Exotic Plant Communities, other than Seedings)**
Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants. These communities will be rehabilitated to perennial communities when feasible cost effective methods are developed.

Indicators may include, but are not limited to, the following:
1. Noxious weeds are not increasing.
2. The number of perennial species is not diminishing over time.
3. Plant vigor (production, seed and seedstalk production, cover, etc.) of remnant native or seeded (introduced) plants is maintained to enable reproduction and recruitment when favorable climatic or other environmental events occur.
4. Adequate litter and standing dead plant material is present for site protection and for decomposition to replenish soil nutrients relative to site potential.

**Standard 7 (Water Quality)**
Surface and ground water on public lands comply with the Idaho Water Quality Standards.

Indicators may include, but are not limited to, the following:
1. Physical, chemical, and biologic parameters described in the Idaho Water Quality Standards.

**Standard 8 (Threatened and Endangered Plants and Animals)**
Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Indicators may include, but are not limited to the following:
1. Parameters described in the Idaho Water Quality Standards.

2. Riparian/wetland vegetation with deep, strong, binding roots is sufficient to stabilize streambanks and shorelines. Invader and shallow rooted species are a minor component of the floodplain.
3. Age class and structural diversity of riparian/wetland vegetation are appropriate for the site.
4. Native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species.
5. The diversity of native species is maintained.
6. The amount and distribution of ground cover, including litter, for identified ecological site(s) or soil-plant associations are appropriate for site stability.
7. Noxious weeds are not increasing.

***Guidelines for Livestock Grazing Management***

**Introduction**

Guidelines direct the selection of grazing management practices, and where appropriate, livestock management facilities to promote significant progress toward, or the attainment and maintenance of, the standards. Grazing management practices are livestock management techniques. They include the manipulation of season, duration (time), and intensity of use, as well as numbers, distribution, and kind of livestock. Livestock management facilities are structures such as fences, corrals, and water developments (ponds, springs, pipelines, troughs, etc.) used to facilitate the application of grazing management practices. Livestock grazing management practices and guidelines will be consistent with the Idaho Agricultural Pollution Abatement plan.

Grazing management practices and facilities are implemented locally, usually on an allotment or watershed basis. Grazing management programs are based on a combination of appropriate grazing management practices and facilities developed through consultation, coordination, and cooperation with the Bureau of Land Management, permittees, other agencies, Indian tribes, and interested publics.

These guidelines were prepared under the assumption that regulations and policies regarding grazing on the public lands will be implemented and will be adhered to by the grazing permittees and agency personnel. Anything not covered in these guidelines will be addressed by existing laws, regulations, Indian treaties, and policies.

The BLM will identify and document within the local watershed all impacts that affect the ability to meet the standards. If a standard is not being met due to livestock grazing, then allotment management will be adjusted unless it can be demonstrated that significant progress toward the standard is being achieved. This applies to all subsequent guidelines.

**Guidelines**

1. Use grazing management practices and/or facilities to maintain or promote significant progress toward adequate amounts of ground cover [determined on an ecological site basis) to support infiltration, maintain soil moisture storage, and stabilize soils.

2. Locate livestock management facilities away from riparian areas wherever they conflict with achieving or maintaining riparian-wetland functions.
3. Use grazing management practices and/or facilities to maintain or promote soil conditions that support water infiltration, plant vigor, and permeability rates and minimize soil compaction appropriate to site potential.
4. Implement grazing management practices that provide periodic rest or deferment during critical growth stages to allow sufficient regrowth to achieve and maintain healthy, properly functioning conditions, including good plant vigor and adequate vegetative cover appropriate to site potential.
5. Maintain or promote grazing management practices that provide sufficient residual vegetation to improve, restore, or maintain healthy riparian-wetland functions and structure for energy dissipation, sediment capture, ground water recharge, streambank stability, and wildlife habitat appropriate to site potential.
6. The development of springs, seeps, or other projects affecting water and associated resources shall be designed to protect the ecological functions, wildlife habitat, and significant cultural and historical/ archaeological/paleontological values associated with the water source.
7. Apply grazing management practices to maintain, promote, or progress toward appropriate stream channel and streambank morphology and functions. Adverse impacts due to livestock grazing will be addressed.
8. Apply grazing management practices that maintain or promote the interaction of the hydrologic cycle, nutrient cycle, and energy flow that will support the appropriate types and amounts of soil organisms, plants, and animals appropriate to soil type, climate, and landform.
9. Apply grazing management practices to maintain adequate plant vigor for seed production, seed dispersal, and seedling survival of desired species relative to soil type, climate, and landform.
10. Implement grazing management practices and/or facilities that provide for complying with the Idaho Water Quality Standards.
11. Use grazing management practices developed in recovery plans, conservation agreements, and Endangered Species Act, Section 7 consultations to maintain or improve habitat for federally listed threatened, endangered, and sensitive plants and animals.
12. Apply grazing management practices and/or facilities that maintain or promote the physical and biological conditions necessary to sustain native plant populations and wildlife habitats in native plant communities.
13. On areas seeded predominantly with non-native plants, use grazing management practices to maintain or promote the physical and biological conditions to achieve healthy rangelands.
14. Where native communities exist, the conversion to exotic communities after disturbance will be minimized. Native species are emphasized for rehabilitating disturbed rangelands. Evaluate whether native plants are adapted, available, and able to compete with weeds or seeded exotics.
15. Use non-native plant species for rehabilitation only in those situations where:
    a. native species are not readily available in sufficient quantities;
    b. native plant species cannot maintain or achieve the standards; or

c. non-native plant species provide for management and protection of native rangelands.
d. Include a diversity of appropriate grasses, forbs, and shrubs in rehabilitation efforts.

16. On burned areas, allow natural regeneration when it is determined that populations of native perennial shrubs, grasses, and forbs are sufficient to revegetate the site. Rest burned or rehabilitated areas to allow recovery or establishment of perennial plant species.
17. Carefully consider the effects of new management facilities (e.g., water developments, fences) on healthy and properly functioning rangelands prior to implementation.
18. Use grazing management practices, where feasible, for wildfire control and to reduce the spread of targeted undesirable plants (e.g., cheatgrass, medusa head, wildrye, and noxious weeds) while enhancing vigor and abundance of desirable native or seeded species.
19. Employ grazing management practices that promote natural forest regeneration and protect reforestation projects until the Idaho Forest Practices Act requirements for timber stand replacement are met.
20. Design management fences to minimize adverse impacts, such as habitat fragmentation, to maintain habitat integrity and connectivity for native plants and animals.

## 6.2 Appendix 2. Current Permit Other Terms and Conditions

**Armacost Individual (00012)**

1. Turn-out is subject to Boise District range readiness criteria.
2. Your certified actual use report is due within 15 days of completing your authorized annual grazing use.
3. Salt and/or supplement shall not be placed within (1/4) mile of the springs, streams, meadows, aspen stands, playas or water developments.
4. Changes to the scheduled use require prior approval.
5. Trailing activities must be coordinated with the BLM prior to initiation. A trailing permit or similar authorization may be required prior to crossing public lands.
6. Livestock exclosures located within your grazing allotment are closed to all domestic grazing use.
7. Range improvements must be maintained in accordance with the cooperative agreements and range improvements permits in which you are a signator or assignee. All maintenance or range improvements within a wilderness study area require prior consultation with the authorize officer.
8. All appropriate documentation regarding base property leases, lands offered for exchange-of-use, and livestock control agreements must be approved prior to turn-out. Leases of land and/or livestock must be notarized prior to submission and be in accordance with the Boise District Policy.
9. Failure to pay the grazing bill within 15 days of the due date specified shall result in a late fee assessment of $25.00 dollars or 10 percent of the grazing bill, whichever is greater, not to exceed 250.00 payment made later than 15 days after the due date, shall include the appropriate late fee assessment. Failure to make payment within 30 days may be a violation of 43 CFR 4140.1(B)(1) and shall result in action by the authorized officer under 43 CFR 4150.1 and 4160.1-2.

**Boyd Individual (00040)**

1. Season, numbers, and class are not restricted provided overuse and deterioration do not occur to the federal range.
2. Turn-out is subject to Boise District range readiness criteria.
3. Your certified actual use report is due within 15 days of completing your authorized annual grazing use.
4. Salt and/or supplement shall not be placed within (1/4) mile of the springs, streams, meadows, aspen stands, playas or water developments.
5. Changes to the scheduled use require prior approval.
6. Trailing activities must be coordinated with the BLM prior to initiation. A trailing permit or similar authorization may be required prior to crossing public lands.
7. Livestock exclosures located within your grazing allotment are closed to all domestic grazing use.
8. Range improvements must be maintained in accordance with the cooperative agreements and range improvements permits in which you are a signator or assignee. All maintenance or range improvements within a wilderness study area require prior consultation with the authorize officer.

9. All appropriate documentation regarding base property leases, lands offered for exchange-of-use, and livestock control agreements must be approved prior to turn-out. Leases of land and/or livestock must be notarized prior to submission and be in accordance with the Boise District Policy.
10. Failure to pay the grazing bill within 15 days of the due date specified shall result in a late fee assessment of $25.00 dollars or 10 percent of the grazing bill, whichever is greater, not to exceed 250.00 payment made later than 15 days after the due date, shall include the appropriate late fee assessment. Failure to make payment within 30 days may be a violation of 43 CFR 4140.1(B)(1) and shall result in action by the authorized officer under 43 CFR 4150.1 and 4160.1-2.

**Cambridge (00082)**

1. Livestock grazing from Cambridge Allotment will comply with Field Manager's Proposed Decision dated August 30, 2006.
2. Authorized AUMs will not be exceeded on public lands. Livestock numbers and season of use, as shown above, indicate maximums that will be allowed under this permit. Permittee has discretion to manage within these numbers, provided overuse does not occur on public lands.
3. Trailing would be between May 5 and May 15, each year, for a maximum of three days across Horse Flat Allotment (00095). Trailing activities must comply with all terms and conditions of the grazing permit and all management requirements. Trailing activities would be temporary, and could be cancelled at any time at the discretion of the authorized officer if deemed detrimental to management of Horse Flat Allotment.
4. Scheduled use changes require prior approval on an annual basis. From information provided in the annual application. A grazing bill will be prepared indicating authorized use for that year.
5. The annual actual use report is due within 15 days of completing your authorized annual grazing use.
6. Annual maintenance of range improvements will be completed prior to livestock entry of the allotment.
7. Turn-out date will be subject to range readiness. Range readiness occurs once the soils have firmed after the spring thaw, and the physiological requirements of the plants have been met.
8. Pursuant to 43 CFR 10.4(b) notify the BLM Field Manager by telephone or with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony on federal land. Pursuant to 43 CFR 10.4(c), the permittee must immediately stop any ongoing activities connected with the discovery and make a reasonable effort to protect the discovered remains or objects.
9. Salt and/or supplement shall not be placed within (1/4) mile of the springs, streams, meadows, aspen stands, playas or water developments.

**Gambril Individual (00090)**

1. Turn-out is subject to Boise District range readiness criteria.
2. Your certified actual use report is due within 15 days of completing your authorized annual grazing use.

3. Salt and/or supplement shall not be placed within (1/4) mile of the springs, streams, meadows, aspen stands, playas or water developments.
4. Changes to the scheduled use require prior approval.
5. Trailing activities must be coordinated with the BLM prior to initiation. A trailing permit or similar authorization may be required prior to crossing public lands.
6. Livestock exclosures located within your grazing allotment are closed to all domestic grazing use.
7. Range improvements must be maintained in accordance with the cooperative agreements and range improvements permits in which you are a signator or assignee. All maintenance or range improvements within a wilderness study area require prior consultation with the authorize officer.
8. All appropriate documentation regarding base property leases, lands offered for exchange-of-use, and livestock control agreements must be approved prior to turn-out. Leases of land and/or livestock must be notarized prior to submission and be in accordance with the Boise District Policy.
9. Failure to pay the grazing bill within 15 days of the due date specified shall result in a late fee assessment of $25.00 dollars or 10 percent of the grazing bill, whichever is greater, not to exceed 250.00 payment made later than 15 days after the due date, shall include the appropriate late fee assessment. Failure to make payment within 30 days may be a violation of 43 CFR 4140.1(B)(1) and shall result in action by the authorized officer under 43 CFR 4150.1 and 4160.1-2.

**Deer Creek (00151)**

1. This permit or lease is issued under the authority of Section 428, Public Law 111-8 and contains the same mandatory terms and conditions as the expired or transferred permit or lease. This permit or lease may be cancelled, suspended, or modified, in whole or in part to meet requirements of applicable laws and regulations.
2. Authorized AUMs will not be exceeded on public lands. Livestock numbers and season of use, as shown above, indicate maximums that will be allowed under this permit. Permittee has discretion to manage within these numbers, provided overuse does not occur on public lands.
3. Your base property lease for the Deer Creek Allotment has an indefinite expiration date. You must notify BLM in writing, if there are any changes to your lease agreement with Clifford Hopper.
4. The allotment listed on this grazing permit is subject to the requirement of 43 CFR 4180—Fundamentals of Rangeland Health and Guidelines for Grazing Administration. This permit shall be modified (if necessary) to meet these requirements upon completion of a standards and guidelines assessment and determination as scheduled by the authorized officer.
5. Turn-out is subject to range readiness criteria.
6. Your certified actual use report is due within 15 days of completing your authorized annual grazing use.
7. Salt and/or mineral blocks shall not be placed on public land within one-quarter (1/4) mile of springs, streams, meadows, riparian habitats, aspen stands, or water developments.
8. Changes to the scheduled use require prior approval.

9. Trailing activities must be coordinated with the BLM prior to initiation. A trailing permit or similar authorization may be required prior to crossing public lands.
10. Range improvements must be maintained in accordance with the cooperative agreements and range improvement permits in which you are a signator or assignee. Annual maintenance of range improvements would be completed prior to livestock entry of the allotment.
11. All appropriate documentation regarding base property leases, lands offered for exchange-of-use, and livestock control agreements must be approved prior to turn-out. Leases of land and/or livestock must be notarized prior to submission and be in compliance with Boise District Policy.
12. Failure to pay the grazing bill within 15 days of the due date specified shall result in a late fee assessment of $25.00 or 10 percent of the grazing bill, whichever is greater, not to exceed $250.00.

**East Pine Creek (00172)**

1. This permit or lease is issued under the authority of Section 428, Public Law 111-8 and contains the same mandatory terms and conditions as the expired or transferred permit or lease. This permit or lease may be cancelled, suspended, or modified, in whole or in part to meet requirements of applicable laws and regulations.
2. For the East Pine Creek Allotment #172, season of use and the number of livestock are not restricted to those shown above provided overuse and deterioration does not occur to the public lands.
3. Turn-out is subject to range readiness criteria.
4. The allotment listed on this grazing permit is subject to the requirement of 43 CFR 4180—Fundamentals of Rangeland Health and Guidelines for Grazing Administration. This permit shall be modified (if necessary) to meet these requirements upon completion of a standards and guidelines assessment and determination as scheduled by the authorized officer.
5. Your certified actual use report is due within 15 days of completing your authorized annual grazing use.
6. Salt and/or mineral blocks shall not be placed on public land within one-quarter (1/4) mile of springs, streams, meadows, riparian habitats, aspen stands, or water developments.
7. Changes to the scheduled use require prior approval.
8. Trailing activities must be coordinated with the BLM prior to initiation. A trailing permit or similar authorization may be required prior to crossing public lands.
9. Livestock exclosures located within your grazing allotment are closed to all domestic grazing use.
10. Range improvements must be maintained in accordance with the cooperative agreements and range improvement permits in which you are a signator or assignee. Annual maintenance of range improvements would be completed prior to livestock entry of the allotment.
11. All appropriate documentation regarding base property leases, lands offered for exchange-of-use, and livestock control agreements must be approved prior to turn-out. Leases of land and/or livestock must be notarized prior to submission and be in compliance with Boise District Policy.

12. Failure to pay the grazing bill within 15 days of the due date specified shall result in a late fee assessment of $25.00 or 10 percent of the grazing bill, whichever is greater, not to exceed $250.00

**West Pine Creek (00268)**

1. In accordance with Public Law 111-290, and extension of Public Law 111-242 continuing Appropriations Act, 2011, this permit or lease is issued under the authority of section 416, Public Law 111-88 and contains the same mandatory terms and conditions as the expired or transferred permit or lease. This permit or lease maybe cancelled, suspended, or modified, in whole or in part to meet requirements of applicable laws and regulations.
2. Livestock grazing for the West Pine Creek Allotment will comply with the Field Manager's Proposed Decision dated September 28, 2007.
3. All appropriate documentation regarding base property leases must be current and approved prior to turn-out.
4. Livestock numbers will be coordinated between BLM and the lessee and may vary within the permitted use period; however, AUMs may not be exceeded.
5. Scheduled use changes require approval on an annual basis. From information provided in the annual application, a grazing bill will be prepared indicating authorized use for that year.
6. The annual actual use report is due within 15 days of completing your authorized annual grazing use.
7. Turn-out date will be subject to range readiness. Range readiness occurs once the soils have firmed after the spring thaw, and the physiological requirements of the plants have been met.
8. Pursuant to 43 CFR 10.4(b) notify the BLM Field Manager by telephone or with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony on federal land. Pursuant to 43 CFR 10.4(c), the permittee must immediately stop any ongoing activities connected with the discovery and make a reasonable effort to protect the discovered remains or objects.
9. Salt and/or supplement shall not be placed within (1/4) mile of the springs, streams, meadows, aspen stands, playas or water developments.

## 6.3 Appendix 3. Standard Other Terms and Conditions

1. Livestock grazing must be conducted in accordance with the Terms and Conditions described in the Final Decision dated _____.
2. Livestock turn-out would be subject to District Range Readiness Criteria.
3. Changes to the scheduled use would require prior approval by the authorized officer.
4. You are required to submit a signed and dated Actual Grazing Use Report Form (BLM Form 4130-5) for each allotment you graze. The completed form(s) must be submitted to this office within 15 days from the last day of your authorized grazing use period.
5. Salt and/or supplements shall not be placed within one-quarter (1/4)-mile of springs, streams, meadows, aspen stands, playas, special status plant populations, eligible historic properties, or water developments. Use of supplements other than the standard salt or mineral block on public land requires annual authorization by the authorized officer.
6. A crossing permit may be required prior to trailing livestock across public lands. Crossing activities must be coordinated with the BLM prior to initiation. Permittee would also notify any/all affected permittees in advance of crossing.
7. Livestock exclosures located within your grazing allotment(s) would be closed to all domestic grazing use.
8. Range improvements must be maintained in accordance with the cooperative agreement and range improvement permits in which you are a signatory or assignee. All maintenance activities which may result in ground disturbance require prior approval from the authorized officer.
9. Bird ladders that meet BLM standards must be installed and functioning on water troughs located on public lands. The permittee would inform BLM if bird ladders are needed on permanent troughs, and BLM would supply bird ladders. The permittee would be responsible for providing bird ladders for temporary troughs. It is the permittee's responsibility to maintain and install all bird ladders.
10. Pursuant to 43 CFR 10.4(b), you must notify the BLM authorized officer, by telephone with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony on federal lands. Pursuant to 43 CFR 10.4(c), you must immediately stop any ongoing activities connected with such discovery and make a reasonable effort to protect the discovered remains or objects.
11. Permittees or lessees shall provide reasonable administrative access across private and leased lands to the BLM for the orderly management and protection of the public lands.

# 7.0 Maps