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DOI-BLM-ID-B030-2011-0010-EA

Fossil Butte Group Grazing Permit Renewal

November 2013

U.S. Department of the Interior
Bureau of Land Management
Owyhee Field Office
20 1st Ave. West
Marsing, ID 83639

NATIONAL SYSTEM OF PUBLIC LANDS

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1 INTRODUCTION

1.1 Title

Fossil Butte Group Livestock Grazing Permit Renewal Environmental Assessment

1.2 Name and Location of Preparing Office

Bureau of Land Management
Owyhee Field Office
20 1st Ave. West
Marsing, ID 83639

1.3 Background

The Bureau of Land Management (BLM), Owyhee Field Office (OFO) has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA), and other relevant Federal and State laws and regulations. This EA analyzes the effects of different alternatives for livestock management on the following six allotments: Fossil Butte (#00535), Con Shea (#00571), Sinker Butte (#00578), Murphy Fenced Federal Range (FFR) (#00486), Joyce FFR (#00487), and Montini FFR (#00654). This EA serves as a tool to help the Authorized Officer make an informed decision that is in conformance with the Owyhee Resource Management Plan (ORMP) (USDI-BLM 1999b) and Snake River Birds of Prey National Conservation Area (NCA) RMP (USDI-BLM 2008) objectives and in compliance with the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (Idaho S&Gs) (USDI-BLM 1997). It discloses the direct, indirect, and cumulative environmental effects that would result from the various alternatives.

On May 11, 2009, the OFO sent out EA #DOI-BLM-ID-130-2008-312-EA and a Manager's Proposed Decision on Fossil Butte, Con Shea, Sinker Butte, Murphy Fenced Federal Range (FFR), Joyce FFR, and Montini FFR. After carefully reviewing all protest points received, the Owyhee Field Manager decided to reconsider the alternatives analyzed in the EA. Subsequently, due to the lengthy pause in the process, the Owyhee Field Manager decided to withdraw the proposed decision and revise the existing EA to include additional alternatives. This EA evaluates conditions from about 2003 to present.

1.4 Purpose and Need

The purpose of this action is to provide for livestock grazing opportunities on public lands consistent with meeting management objectives, including the Idaho S&Gs, Snake River Birds of Prey (SRBOP) RMP, and the ORMP.

The need for this action is established by the Taylor Grazing Act (TGA), the Federal Land Policy and Management Act (FLPMA), and the ORMP (USDI BLM, 1999a), which require that the BLM respond to applications to fully process and renew permits to graze livestock on public land. The analysis of the actions identified in the applications for grazing permit renewals and the alternative actions is needed because:

- Idaho BLM adopted the Idaho S&Gs in 1997. Rangelands should be meeting or making significant progress toward meeting the standards and must provide for proper nutrient cycling, hydrologic cycling, and energy flow. Guidelines direct the selection of grazing management practices and, where appropriate, livestock facilities to promote significant progress toward, or the attainment and maintenance of, the standards. Rangeland health assessment, evaluation , and determination reports (Appendix A) completed for the Fossil Butte, Con Shea, Sinker Butte, Murphy Fenced Federal Range (FFR), Joyce FFR, and Montini FFR allotments identify a number of standards that have not been met.

- The ORMP identifies resource management objectives and management actions that establish guidance for managing a broad spectrum of land uses and allocations for public lands in the Owyhee Field Office. The SRBOP NCA RMP also provides direction for management of lands within most of the six allotments. The ORMP allocated public lands within the six allotments as available for domestic livestock grazing. Where consistent with the goals and objectives of the ORMP, SRPOP NCA RMP, and Idaho S&Gs, allocation of rangelands for livestock use and the issuance of grazing permits to qualified applicants are provided for by the Taylor Grazing Act (TGA) and the Federal Land Policy and Management Act (FLPMA).

The following is a summary of findings from the Evaluation/Determination documents (Appendix A):

Table 1.1 - Evaluations and Determinations for the Fossil Butte Group Allotments

Rangeland Health Standards		Fossil Butte	Sinker Butte	Montini FFR	Con Shea	Joyce FFR	Murphy FFR
Standard 1 Watersheds		NOT MET Significant Progress	NOT MET Not due to Current Livestock	MET	NOT MET Not due to Current Livestock	NOT MET Not due to Current Livestock	MET
Standard 2 Riparian and Wetlands		N/A	MET	MET	MET	N/A	N/A
Standard 3 Stream Channel and Floodplain		N/A	MET	MET	MET	N/A	N/A
Standard 4 Native Plant Communities		NOT MET Significant Progress	NOT MET Not due to Current Livestock	N/A	NOT MET Not due to Current Livestock	NOT MET Not due to Current Livestock	N/A
Standard 5 Seedings		N/A	NOT MET Not due to Current Livestock	N/A	NOT MET Not due to Current Livestock	N/A	N/A
Standard 6 Exotic Plant Communities		N/A	N/A	MET	MET	N/A	MET
Standard 7 Water Quality		N/A	NOT MET Significant Progress	NOT MET Significant Progress	NOT MET Significant Progress	N/A	N/A
Standard 8 Threatened and Endangered Plants and Animals	Upland Animal	NOT MET Significant Progress	NOT MET Not due to Current Livestock	NOT MET Not due to Current Livestock	NOT MET Not due to Current Livestock	NOT MET Not due to Current Livestock	NOT MET Not due to Current Livestock
	Riparian Animals	N/A	NOT MET Significant Progress	NOT MET Significant Progress	NOT MET Significant Progress	NOT MET Not due to Current Livestock	NA
	Plants	NOT MET Not due to Current Livestock	MET	NOT MET Not due to Current Livestock	NOT MET Not due to Current Livestock	MET	NA

1.5 Location and Setting

These allotments are generally located between Oreana and Murphy, Idaho bordered to the east by the Snake River and to the west by the Owyhee Front (Figure 1.1). Elevations range between 2,300 to 5,200 feet. Landforms are generally composed of terraces, slopes, table lands, plug domes and bottomlands with shallow to very deep loamy to fine sandy soils and scattered badlands.

Fires have played a significant role in shaping the vegetation in the area, between 1981 and 2012 approximately 19,250 acres burned in 15 fires, many of these fires overlapped burning some areas multiple times. The fires ranged in size from 15 acres to 8,000 (2012 Con Shea fire) (Figure 1.2). The large majority of the fires have occurred in Con Shea pasture 1 and Sinker Butte pastures 1, 4, and 5.

Table 1.2 - Allotment Ownership Acreages and AUMs

Allotment Name & Number	Category	Active AUMs	Public Acres	State Acres	Private Acres	Total Acres
Joyce FFR (0487)	I	246	1,609	634	3,751	5,995
Fossil Butte (0535)	M	1,622	40,744	1,934	1,946	44,624
Con Shea (0571)	M	990	12,468	0	1,220	13,668
Sinker Butte (0578)	M	707	8,541	0	390	8,931
Murphy FFR (0486)	C	5	56	0	250	306
Montini FFR (0654)	C	140	1,664	294	388	2,346
Total		3,710	65,083	2,862	7,944	75,889

I = Improve; M = Maintain; C = Custodial, per the ORMP.
Note - allotment acreages have been updated since the ORMP based on improved inventories.

All but one of the allotments (Murphy FFR) are at least partially within the Morley Nelson Snake River Birds of Prey NCA; grazing management for all six allotments is administered by the OFO.

Table 1.3 - Lands within the SRBOP NCA

Allotments	SRBOP NCA Acres	Percent Area within SRBOP NCA
Con Shea	10,210	74%
Fossil Butte	22,891	51%
Joyce FFR	7,056	12%
Montini FFR	2,361	100%
Sinker Butte	8,877	100%

Note: Murphy FFR Allotment contains no land within the SRBOP NCA.

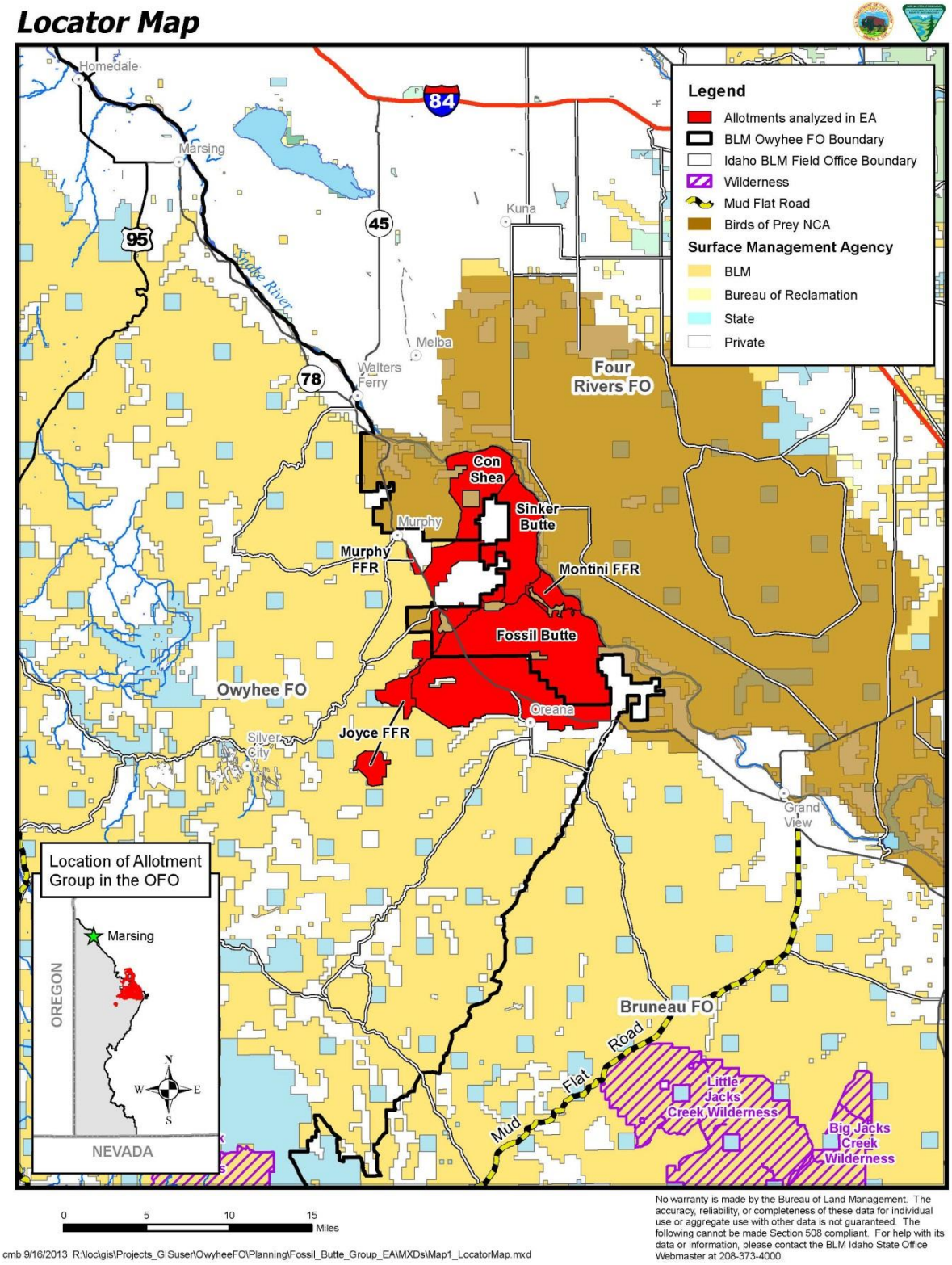

Figure 1.1– Fossil Butte Group Allotments Locator Map

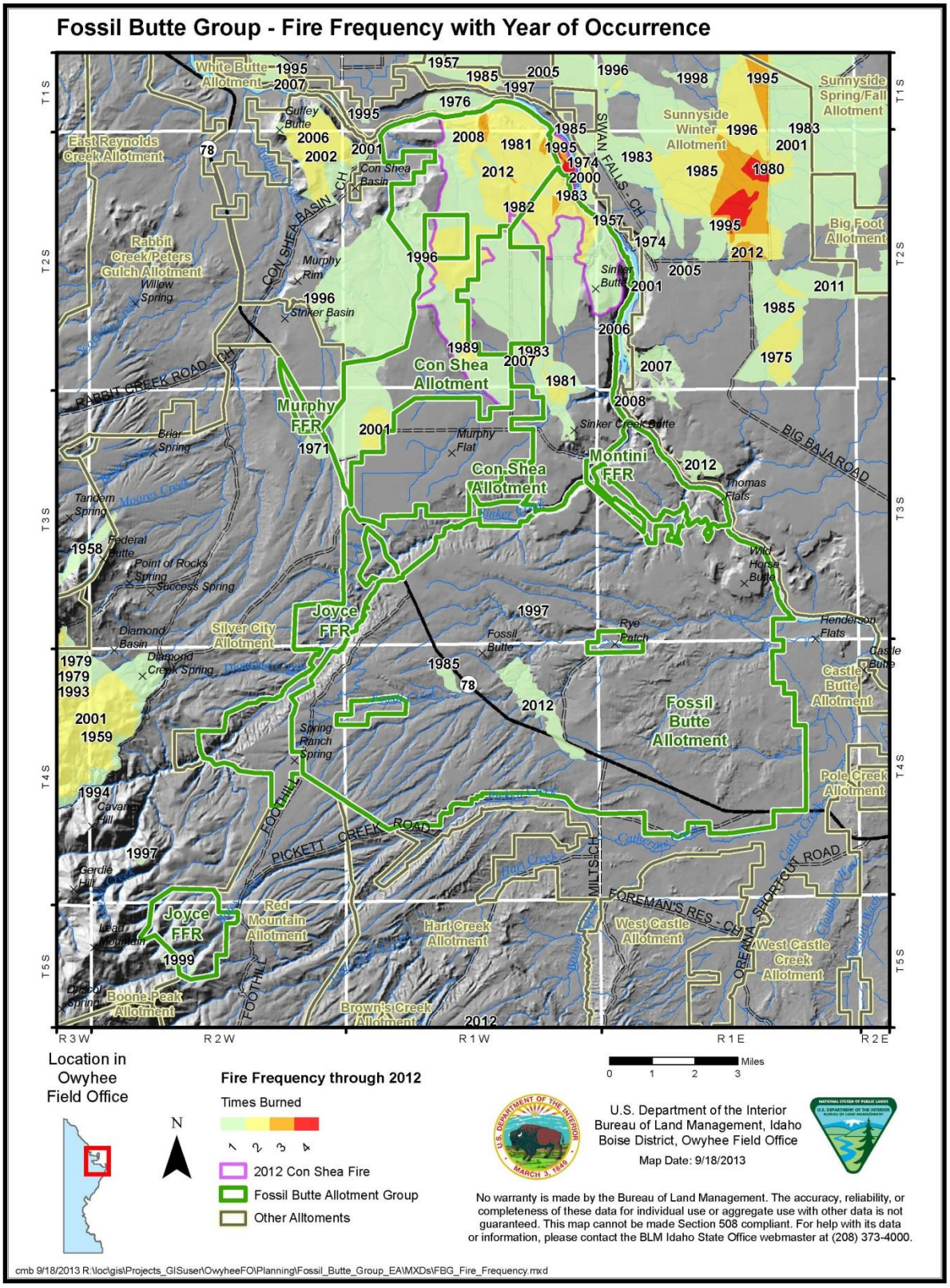

Figure 1.2 – Fossil Butte Group Allotments Fire Frequency with Year of Occurrence

1.6 Supporting Information

Supporting background information not included as part of this EA document consists of:

- Digital photos taken in upland and riparian areas where BLM conducted standards assessment field work
- Upland and riparian field forms used to document Idaho BLM standards assessments
- Field forms and digital photos of upland and riparian monitoring areas
- Resource Specialists Reports, including trend monitoring, special status plant monitoring, sage-grouse habitat assessments, etc.

All information listed above is available to the public in digital format and may be obtained from BLM upon request.

1.7 Scoping, Issues, and Decision to be Made

1.7.1 Scoping

On March 15, 2011, the Owyhee Field Manager issued the Scoping Document for this EA, (DOI-BLM-ID-B030-2011-0010-EA) "Fossil Butte Group Grazing Permit Renewal" for a 30-day comment and review, to affected grazing permittees, interested publics and other state and local governments of record for the Con Shea, Fossil Butte, Joyce FFR, Montini FFR and Sinker Butte (Fossil Butte Group) Allotments. Comments on the Fossil Butte Group allotments were received from Western Watersheds Project (WWP), Idaho Department of Fish and Game, Southwest Region; Miller Land Company, Inc.; Joyce Livestock Company and Kenny Kershner.

Western Watersheds Project (WWP) provided most of the comments. In summary, they expressed concern about the current conditions of the allotments and the effects of recent livestock grazing on the riparian areas, the natural vegetation, wildlife habitat, watershed health and the establishment of noxious and invasive weeds. They stated that the scoping document contained only a limited range of alternatives and briefly suggested additional considerations for analysis and indicated that an Environmental Impact Statement (EIS) should be prepared. Concerns regarding climate change and the desertification of the landscape were also raised.

Miller Land Company, Inc. suggested that BLM should actively manage invasive weed species. Joyce Livestock Company asked for an additional alternative that incorporated many of the water haul sites but with the addition of a pre-season on-site meeting of BLM and permittees/interested public on any year that key growing season precipitation is 30% below normal or 20% below normal on successive years for the purpose of determining proper usage for that season. They also requested that BLM lands be fenced in the FFR allotments. Kenny Kershner requested that water haul sites (existing and proposed) be included as part of the alternatives analyzed. Responses were prepared to the scoping comments and are included in Appendix B.

1.7.2 Issues

Through the scoping process and development of the Rangeland Health Assessment/Evaluation Reports, the BLM interdisciplinary team identified the following issues concerning livestock grazing management in one or more of the Fossil Butte Group allotments:

- The potential for livestock grazing in the Fossil Butte Group Allotments to:
    - promote the spread of weeds on public lands, including at existing and proposed water haul sites
    - reduce the cover and health of microbiotic crusts

- adversely affect general habitat requirements for upland and riparian wildlife species, including raptors, sage-grouse, and big game
- cause detrimental impacts to special status plants and their habitats when combined with off-highway vehicle (OHV) use in the area
- result in a shift from desirable to undesirable native plant communities
- impair upland watershed conditions
- reduce riparian vegetation and stream-bank stability

Climate Change

The science on predicting future climate conditions is continuously evolving. Land management actions might contribute to changes in atmospheric greenhouse gas levels, which can affect global climate. Addressing effects on greenhouse gas (GHG) levels within the scope of NEPA is difficult due to the lack of explicit regulatory guidance on how to meaningfully apply existing NEPA regulations to this evolving issue, and due to the continuously evolving science available at varying levels.

Agencies apply the rule of reason to ensure that their discussion pertains to the issues that deserve study and deemphasizes issues that are less useful to the decision regarding the proposal, its alternatives, and mitigation options (40 CFR § 1500.4(f), (g), 1501.7, 1508.25). In addressing GHG emissions, the BLM ensures that such discussion is commensurate with the importance of the GHG emissions of the proposed action, avoiding useless bulk and boilerplate documentation, so that the NEPA document may concentrate attention on important issues (40 CFR § 1502.5, 1502.24).

The BLM's 2008 NEPA Handbook, H-1790-1, explains that a topic must have a cause-and-effect relationship with the proposed action or alternatives to be considered an issue (H-1790-1, p. 40).

Climate change does not have a clear cause-and effect-relationship with the proposed action or alternatives. It is currently beyond the scope of existing science to identify a specific source of GHG emissions or sequestration and designate it as the cause of specific climate or resource impacts at a specific location.

The proposed action and alternatives, when implemented, would not have a clear, measurable cause-and-effect relationship to climate change because the available science cannot identify a specific source of GHG emissions such as those from livestock grazing and tie it to a specific amount or type of changes in climate. Therefore, the effects of livestock grazing to the global climate will not be analyzed in detail in this EA.

1.7.3 Decision to be Made

The Owyhee Field Manager is the authorized officer responsible for the decisions regarding management of public lands within these six allotments. Based on the results of the NEPA analysis, the authorized officer will issue a determination of the significance of the environmental effects and whether an Environmental Impact Statement (EIS) would be required. If the authorized officer determines that it is not necessary to prepare an EIS, the EA will provide information for the authorized officer to make an informed decision whether to renew the applicants' grazing permits. If renewed, specific management actions, mitigation measures, and monitoring requirements will be prescribed for each of the six allotments to ensure management objectives and Idaho S&Gs are met.

1.8 Conformance

These allotments are partially to entirely located in the Snake River Birds of Prey NCA, with exception of the Murphy FFR. The NCA has delegated livestock grazing management authority to the OFO. Copies of the RMPs are available at the BLM Boise District Office, and these documents are also available for viewing and downloading on the BLM Idaho State Office Internet web site http://www.id.blm.gov/. The applicable objectives of both RMPs are outlined below:

1.8.1 Owyhee Resource Management Plan

The ORMP was approved on December 30, 1999. This land use plan guides public land management, including the grazing management program, in the area where the subject allotments are located. The proposed action is in conformance with the ORMP, as required by 43 CFR §1610.5-3(a). Specifically, the proposed action is designed to achieve the following applicable management objectives:

- Provide for a sustained level of livestock use compatible with meeting other resource objectives. (LVST1 p. 23)
- Improve unsatisfactory or maintain satisfactory watershed and vegetative health conditions. (SOIL1 p. 9; VEGE 1 p. 12)
- Meet or exceed water quality standards. (WATR1 p. 11)
- Maintain or improve riparian and wetland areas to attain proper functioning conditions, and perennial streams to support native fish. (RIPN1 p. 13; FISH1 p. 18)
- Maintain or enhance plant community structure and condition to support wildlife. (WDLF1 p. 15)
- Manage special status species and habitats so their existence is not threatened and there is no need for listing under the Endangered Species Act. (SPSS1 p. 20)
- Manage for specified visual resource management classifications. (VISL1 p. 44)
- Protect known cultural resource values from loss until their significance is determined; protect/conserve significant cultural resource sites and values. (CULT1 and CULT2 p. 44-45)

1.8.2 Snake River Birds of Prey NCA RMP

The Snake River Birds of Prey NCA RMP and Record of Decision were signed on September 30, 2008. The proposed action is in conformance with the Snake River Birds of Prey NCA RMP (Alternative D), as required by 43 CFR §1610.5-3(a). Specifically, the proposed action is designed to achieve the following objectives:

- Manage cultural resources by emphasizing mitigation and public interpretation (p. 2-2).
- Emphasize protection and enhancement of raptor prey and other wildlife populations and habitats, expand areas utilized by raptor prey and big game, and reduce competition for forage in perennial pastures between livestock and Piute ground squirrels (p. 2-4 and 2-9).
- Emphasize maintenance, protection, and enhancement of raptors and other sensitive wildlife populations and habitats (p. 2-7).
- The distribution, abundance, and vigor of Special Status Plants (SSPs) will be maintained or improved (p. 2-7).
- Watersheds would have stable vegetative communities that provide for proper hydrologic function, nutrient cycling, energy flow, and soil stability (p. 2-8).
- Soil productivity would be maintained and enhanced. Accelerated soil erosion caused by human activities would be minimal (p. 2-8).
- Minimize the potential for future localized soil erosion processes on all soils with a moderate to very high soil erosion potential (p. 2-8).

- Limit further loss of existing native shrub habitat to no more than 30,000 acres and increase the acres of restored shrub habitat (p. 2-9).
- SSP and animal habitat would be in good ecological condition, where potential allows, and authorized human uses would be compatible (p. 2-9).
- Rivers, streams, and reservoir shorelines would have appropriate aquatic-riparian habitat (p. 2-12).
- Protect the visual resources of historic areas with a secondary emphasis on the Snake River Canyon. (p. 2-13).
- Livestock grazing would be managed to maintain or enhance prey habitat and reduce competition for forage in perennial pastures between livestock and Piute ground squirrels (p. 2-17).

1.8.3 Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management

On August 12, 1997, the Idaho S&Gs were approved by the Secretary of the Interior. Subsequently, livestock management practices must be in conformance with the approved standards and guidelines (USDI-BLM 1997).

1.8.4 Statutes

The BLM OFO is required to comply with all relevant Acts, including the National Environmental Policy Act (NEPA), Clean Water Act, Clean Air Act, Migratory Bird Treaty Act, FLPMA, Taylor Grazing Act, Bald and Golden Eagle Protection Act, and the Code of Federal Regulations in 43 CFR § 4100. This document is prepared pursuant to Federal law, court orders, collaborative plans, and BLM guidance.

In addition to the above Acts, the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, and American Indian Religious Freedom Act are pertinent to this Proposed Action. 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, reservations were established at Duck Valley on the Nevada/Idaho border west of the Bruneau River. The Shoshone-Paiute Tribes residing at Duck Valley today actively practice their culture and retain aboriginal rights and/or interests in this area. The Shoshone-Paiute Tribes claim 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.

The 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 BLM action, will have sufficient opportunity to contribute to the decision, and (2) that the decision maker will give tribal concerns proper consideration" (USDI, BLM Manual Handbook H-8120-1). Tribal coordination and consultation responsibilities are implemented under laws and executive orders that are specific to cultural resources, referred to as "cultural resource authorities," and under regulations that are not specific, termed "general authorities." Cultural resource authorities include: the National Historic Preservation Act of 1966, as amended; 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 National Environmental Policy Act of 1969; the Federal Land Policy and Management Act of 1976; and Executive Order 13007-Indian Sacred Sites. The proposed action is in compliance with the aforementioned authorities.

1.8.5 Collaborative Habitat Management Plans

The purpose and need for action is also consistent with objectives and management actions for the following wildlife habitat conservation plans developed cooperatively by diverse groups of agency, conservation, and sportsmen interests.

2006 Conservation Plan for Greater Sage-grouse in Idaho: The Idaho Sage-grouse Advisory Committee developed a conservation plan in 2006 (ISAC 2006), and the Owyhee Sage-grouse Local Working Group (LWG) (2004) developed a plan in 2000, updated in 2004. Conservation plan objectives include:

1. Manage Idaho's landscape to foster a dynamic sagebrush ecosystem that includes a diverse species composition of sagebrush, grasses, and forbs; and incorporates structural characteristics that promote rangeland health in general, and sage-grouse habitat requirements in particular.
2. Manage conifer encroachment to restore sage-grouse habitat improving understory habitat quality in areas where sagebrush cover limits the herbaceous cover needs of sage-grouse, improving understory quality where sagebrush cover is otherwise suitable.

The North American Mule Deer Conservation Plan: "restore or improve mule deer habitat function throughout mule deer range" (MDWG 2004). The most relevant objectives include:

1. Proactively manage shrub communities (using prescribed fire, mechanical treatment, or other approaches, as appropriate, at a site specific basis) to maintain mosaics of uneven aged stands to enhance habitat conditions for mule deer.
2. Manage mule deer habitat in a fashion to control type conversions (i.e., conversion of rangeland to croplands, and shrublands to monotypic pinyon-juniper stands).
3. Allow normal fire regimes to occur where this practice does not pose high risk to human developments.

Coordinated Implementation Plan for Bird Conservation in Idaho: (Idaho Steering Committee Intermountain West Joint Venture 2005): Juniper/pinyon pine/mountain mahogany habitats (page 23):

1. Protect, maintain, enhance and/or restore historical juniper woodland habitat, limit further expansion into adjacent grasslands, shrublands, aspen, and riparian areas, and restore encroached habitats by removing juniper woodlands through active management.

2 PROPOSED ACTION AND ALTERNATIVES

2.1 Management Common to all Grazing Alternatives

Rangeland Project Maintenance and Construction

Cooperative agreements between the individual livestock operators and the BLM have assigned responsibility for rangeland improvement maintenance to the individual operators. These cooperative agreements will remain in effect regardless of which grazing permit renewal alternative considered in this NEPA document is implemented. As a result, maintenance of existing projects is outside the scope of this NEPA document.

None of the alternatives considered in this NEPA document for grazing permit renewal is dependent on new project construction. No new project construction or reconstruction, with one exception, is considered within this NEPA document. Alternatives B and C authorize maintenance of certain existing push ponds (small dugout reservoirs) in the Fossil Butte Allotment that are not covered by current cooperative agreements. Additionally, water haul sites would be authorized in three allotments in Alternatives B, C, and D. Otherwise, analysis of consequences of any new project construction, reconstruction, and maintenance will be addressed through separate NEPA analysis specific to the proposed project(s) and will not be included in this NEPA document.

Suspension AUMs

In accordance with regulation pertaining to reducing permitted use (43 CFR § 4110.3-2), alternatives that result in a reduction in active use AUMs to meet Rangeland Health Standards or make significant progress, as well as reductions in active use AUMs to meet ORMP management objectives, would be implemented by reducing permitted use. Active use AUMs no longer available would not be converted to suspension[1]. Suspension AUMs held on permits prior to this activity planning process would continue to be held on permits as suspension.

Monitoring

Monitoring studies would be conducted during the term of the grazing permits in accordance with guidance provided by the Idaho State Office Instruction Memorandum IM ID-2008-022: Monitoring Strategies for Rangelands. Monitoring studies during the term of permits would include but are not limited to nested plot frequency, upland utilization, browse utilization, photo plots, range readiness, riparian multiple indicator monitoring (MIM), stubble height measurement, bank alteration, riparian woody browse utilization, and water quality testing.

2.2 Alternatives Considered but Not Analyzed in Detail

Current Permits

The current permits for the Joyce FFR and Fossil Butte allotments were not analyzed in detail because they were not meeting Standards in the 2003 and 2007 Assessment/Determination respectively. It was determined that livestock grazing at the level of AUMs and/or season of use permitted was a significant causal factor in not meeting applicable Standards.

Realign Fences

An alternative to realign fences in the Joyce FFR and Murphy FFR allotments was considered. Under this alternative, fences would be moved to incorporate public lands into adjacent allotments (Silver City, Fossil Butte, and/or Red Mountain allotments) or the public parcels would be offered for disposal to private ownership, and the two FFR allotments would no longer exist. This alternative was not analyzed

[1] In accordance with revisions to the grazing regulations as amended through February 6, 1996, paragraph "c" with provisions requiring the authorized officer to hold AUMs comprising the decreased permitted use in suspension was removed from 43 CFR 4110.3-2.

in detail because moving fences (tearing out old and building new) or completing the process required for land disposal would be impractical and infeasible under current workforce and budget limitations. Also, land ownership adjustments are beyond the scope of this grazing permit renewal.

2009 Proposed Decision Alternatives

On May 11, 2009, the OFO released EA #DOI-BLM-ID-130-2008-312-EA and a Manager's Proposed Decision on the Fossil Butte Group allotments. The Proposed Decisions were protested. After carefully reviewing all protest points received, the Owyhee Field Manager decided to reconsider the alternative analyzed in the EA. Subsequently, due to a lengthy pause in the process, the Owyhee Field Manager decided to withdraw the proposed decision and revise the existing EA to include additional alternatives.

The alternatives defined in the 2009 Fossil Butte Group Proposed Decisions are described as follows:

Fossil Butte

The permit would define a season of use from October 1 through February 28 and authorize 1,519 cattle AUMs and 103 horse AUMs, for a total of 1,622 AUMs of livestock use on the allotment. Four existing and six new water haul sites would be authorized for livestock use. The allotment would continue to be managed as a common use allotment with three permit holders.

Con Shea

The permit would define a season of use from November 1 through February 28 and authorize 917 AUMs of cattle use on the allotment. Pastures 1, 2 and 5 would be combined into a single pasture. Pastures 3 and 4 would be transferred into the Joyce FFR Allotment. A total of 943 acres of public land and 73 AUMs would be removed from the Con Shea Allotment (and associated grazing permit) and added to the Joyce FFR Allotment (and associated grazing permit).

Sinker Butte

The permit would define a season of use from October 15 through February 28 and from April 1 through April 30, authorizing 771 AUMs of cattle use on the allotment. A five pasture rest rotation system would be implemented. The rest rotation would involve one year of spring use followed by a year of rest and three years of winter use. This prescribed use would be rotated throughout the five pastures. The following Terms and Conditions would be added to the permit:

- Utilization of key riparian browse vegetation along Sinker Creek would be measured in terms of incidence of use. The incidence of use on shrubs such as willow, alder, and dogwood would not exceed 25% on those plants generally less than 3 ft. in height in any given year.
- Stream bank damage attributable to livestock grazing would not exceed 10% on segments of Sinker Creek.
- At least a 4-inch stubble height would be attained for key hydric herbaceous species such as Nebraska sedge and beaked sedge at the end of the grazing period in the riparian areas along Sinker Creek.
- A water quality restoration plan would be implemented for Sinker Creek in the Sinker Butte Allotment.
- Water temperatures and bacterial concentration data would be monitored on a 5 year cycle on Sinker Creek in accordance with the water quality restoration plan.

Joyce FFR

The permit would define a season of use from November 1 through February 28 and authorize 160 AUMs of cattle use on the allotment. Con Shea Pastures 3 and 4 would be transferred into the allotment. A total of 943 acres of public land and 73 AUMs would be removed from the Con Shea Allotment (and associated grazing permit) and added to the Joyce FFR Allotment (and associated grazing permit).

Montini FFR
The permit would define a season of use from March 1 through February 28 and authorize 140 AUMs of cattle use on the allotment. With prior approval by the authorized office, livestock numbers and season of use could vary at the permittee's discretion as long as resource degradation did not occur on public land. The following Terms and Conditions would be added to the permit:

- Utilization of key riparian browse vegetation along Sinker Creek would be measured in terms of incidence of use. The incidence of use on shrubs such as willow, alder, and dogwood would not exceed 25% on those plants generally less than 3 ft. in height in any given year.
- Stream bank damage attributable to livestock grazing would not exceed 10% on segments of Sinker Creek.
- At least a 4-inch stubble height would be attained for key hydric herbaceous species such as Nebraska sedge and beaked sedge at the end of the grazing period in the riparian areas along Sinker Creek.
- A water quality restoration plan would be implemented for Sinker Creek in the Sinker Butte Allotment.
- Water temperatures and bacterial concentration data would be monitored on a 5 year cycle on Sinker Creek in accordance with the water quality restoration plan.

Murphy FFR
The permit would define a season of use from March 1 through February 28 and authorize 5 AUMs of cattle use on the allotment. With prior approval by the authorized office, livestock numbers and season of use could vary at the permittee's discretion as long as resource degradation did not occur on public land.

These alternatives were not analyzed in detail because they are similar to alternatives already analyzed in the EA.

2.3 Description of Proposed Action and Alternatives

Evaluations and determinations completed in 2013 updated previous versions. The interdisciplinary team then developed alternatives according to the issues identified therein.

2.3.1 Comparison of Alternatives

Six alternatives are analyzed in this EA. The alternative themes are:

- A - No action/Current permit
- B – Continue current situation
- C – Applicant's proposed action
- D – Preferred alternative
- E – No grazing
- F – Joyce FFR Fall/Winter use (Joyce FFR Allotment only)

The following tables provide a comparison of alternatives for each allotment. The alternatives are then described in detail.

Table 2.1 - Fossil Butte Allotment Comparison of Alternatives

Comparison by Alternative	Alternative A (Not Analyzed in Detail)	Alternative B	Alternative C	Alternative D	Alternative E
Cattle No.	315 cattle	316 cattle	339 cattle	349 cattle	0 cattle
Horse No.	24 horses	0 horses	0 horses	0 horses	0 horses

Comparison by Alternative	Alternative A (Not Analyzed in Detail)	Alternative B	Alternative C	Alternative D	Alternative E
Season of Use	10/01 – 02/28	10/15 – 02/28	10/01 – 02/28	11/01 – 02/28	Allotment closed to livestock grazing
Number of Days per Pasture	151 days	137 days	151 days	120 days	Allotment closed to livestock grazing
Number of Pastures	1	1	1	1	1
Total AUMs	1,622	1,328	1,622	1,328	No grazing
Acres per AUM	25.1	30.7	25.1	30.7	No grazing
Water haul Sites	0	8	8	6	0
Push Pond Maintenance	No	Yes	Yes	No	No
Allotment Specific Terms and Conditions	Winmill and Idaho Springsnail Stipulations	Winmill Stipulations	None	None	Allotment closed to livestock grazing

Table 2.2 - Con Shea Allotment Comparison of Alternatives

Comparison by Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Cattle No.	251 cattle	295 cattle	251 cattle	242 cattle	0 cattle
Season of Use	11/01 – 02/28	11/01 – 02/28	11/01 – 02/28	11/01 – 02/28	Allotment closed to livestock grazing
Number of Days per Pasture	120 days	120 days	120 days	120 days	Allotment closed to livestock grazing
Number of Pastures	4 (Pastures 1, 3, 4, and 5 could be used)	1 (Pasture 3 moved to Joyce FFR, Pastures 4 & 5 are not used)	1 (Pasture 3 moved to Joyce FFR, Pastures 4 and 5 available but not used)	1 (Pasture 3 moved to Joyce FFR, Pastures 4 and 5 available but not used)	4 (All pastures closed to livestock grazing)
Total AUMs	990	1,167	990	953	No grazing
Acres per AUM	12.6	9.6	11.4	11.8	No grazing
Water haul Sites	0	0	0	0	0
Allotment Specific Terms and Conditions	Winmill and Idaho Springsnail Stipulations	Winmill Stipulations	None	None	Allotment closed to livestock grazing

Table 2.3 - Sinker Butte Allotment Comparison of Alternatives

Comparison by Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Cattle No.	203 cattle	178 cattle	101 (April) and 153 (10/15 – 2/28) cattle	195 cattle	0 cattle
Season of Use	11/15 – 02/28	10/20 – 02/28	10/15 – 02/28 and 04/01 – 04/30	11/01 – 02/28	Allotment closed to livestock grazing
Number of Days per Pasture	106 days	132 days	167 days	120 days	Allotment closed to livestock grazing
Number of Pastures	4	5	6	5	5
Total AUMs	707	771	791	771	No grazing
Acres per AUM	11.1	11.1	10.8	11.1	No grazing
Water haul Sites	0	1	1	1	0
Allotment Specific Terms and Conditions	Winmill and Idaho Springsnail Stipulations	Winmill Stipulations	None	None	Allotment closed to livestock grazing

Table 2.4 - Joyce FFR Allotment Comparison of Alternatives

Comparison by Alternative	Alternative A (Not Analyzed in Detail)	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Cattle/Horse No.	Not specified	Not specified	Not specified	Not specified	0 livestock	Not specified
Season of Use	Discretionary/ yearlong	Discretionary restricted (per pasture)	Discretionary yearlong	Discretionary to restricted (per pasture)	Allotment closed to livestock grazing	11/1 – 2/28
Number of Days per Pasture	Discretionary	Not specified or up to 124 days	Discretionary	Not specified or up to 124 days	Allotment closed to livestock grazing	120
Number of Pastures	2	6	6	6	6	6
Total AUMs	87	246	246	124	No grazing	124
Acres per AUM	18.5	8.4	8.4	16.7	No grazing	16.7
Water haul Sites	0	0	0	0	0	0
Allotment Specific Terms and Conditions	Winmill and Idaho Springsnail Stipulations	Winmill Stipulations	None	Annual meeting for Pasture 3	Allotment closed to livestock grazing	None

Table 2.5 - Montini FFR Allotment Comparison of Alternatives

Comparison by Alternative	Alternative A (Not Analyzed in Detail)	Alternative B	Alternative C	Alternative D	Alternative E
Cattle No.	Not specified	Not specified	Not specified	Not specified	0 cattle
Season of Use	Discretionary/yearlong	01/10 – 04/30	Discretionary/yearlong	11/01 – 03/15	Allotment closed to livestock grazing
Number of Days per Pasture	Discretionary	111 days	Discretionary	135 days	Allotment closed to livestock grazing
Number of Pastures	2	2	2	2	2
Total AUMs	140	140	140	140	No grazing
Acres per AUM	11.9	11.9	11.9	11.9	No grazing
Water haul Sites	0	1	1	1	0
Allotment Specific Terms and Conditions	Winmill and Idaho Springsnail Stipulations	Winmill Stipulations	None	None	Allotment closed to livestock grazing

Table 2.6 - Murphy FFR Comparison of Alternatives

Comparison by Alternative	Alternative A (Not Analyzed in Detail)	Alternative B	Alternative C	Alternative D	Alternative E
Cattle No.	Not specified	Not specified	Not specified	Not specified	0 cattle
Season of Use	Discretionary/yearlong	03/01 – 03/31	Discretionary/yearlong	11/01 – 03/31	Allotment closed to livestock grazing
Number of Days per Pasture	Discretionary	31 days	Discretionary	151 days	Allotment closed to livestock grazing

Comparison by Alternative	Alternative A (Not Analyzed in Detail)	Alternative B	Alternative C	Alternative D	Alternative E
Number of Pastures	1	1	1	1	1
Total AUMs	5	5	5	5	No grazing
Acres per AUM	11.2	11.2	11.2	11.2	No grazing
Water haul Sites	0	0	0	0	0
Allotment Specific Terms and Conditions	Winmill and Idaho Springsnail Stipulations	Winmill Stipulations	None	None	Allotment closed to livestock grazing

2.3.2 Alternative A – No Action/Current Permit

This alternative applies only to the Con Shea and Sinker Butte allotments. The current permits for the Joyce FFR and Fossil Butte allotments were not analyzed in detail because they were not meeting Standards in the 2003 and 2007 Assessment/Determination respectively. It was determined that livestock grazing at the level of AUMs and/or season of use permitted was a significant causal factor in not meeting applicable Standards. Current permits for the Montini FFR and Murphy FFR allotments are the same as the applicants' proposals (Alternative C), except that interim terms and conditions are not included in the applicants' proposals. The interim terms and conditions make no substantial change to management because little to no livestock grazing has been observed in riparian areas (if present) in these allotments, so this alternative was not analyzed separately.

In accordance with the BLM NEPA Handbook (H-1790-1), the No Action alternative for externally generated proposals or applications is generally to reject the proposal or deny the application. The sole exception to this is for renewal of a grazing permit, for which the No Action alternative is to issue a new permit with the same terms and conditions as the expiring permit.

Permits currently authorizing grazing within these allotments are consistent with permits that were in effect in 1997. In an order dated February 29, 2000, (Civ. No. 97-0519-S-BLW), the United States District Court for the District of Idaho imposed interim terms and conditions on the grazing permits renewed by the BLM in 1997. The interim terms and conditions were to remain in place until completion of NEPA analysis and implementation of final decisions under the 1999 Owyhee Resource Management Plan with the associated EIS and the Idaho S&Gs. Interim terms and conditions imposed are:

1. *Key herbaceous riparian vegetation, where streambank stability is dependent upon it, will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the growing season;*
2. *Key riparian browse vegetation will not be used more than 50% of the current annual twig growth that is within reach of the animals;*
3. *Key herbaceous riparian vegetation on riparian areas, other than the streambanks will not be grazed more than 50% during the growing season, or 60% during the dormant season; and*
4. *Streambank damage attributable to grazing livestock will be less than 10% on a stream segment.*

Permits renewed under Alternative A – No Action/Current Permit would retain the interim terms and conditions.

2.3.2.1 Con Shea

Alternative A would renew one grazing permit for the Con Shea Allotment, which would authorize 990 AUMs of winter use for cattle in the allotment (Figure 2.1; Table 2.7). This authorization is consistent with the 1997 grazing permit. Under this alternative, four pastures would be available for use (although not all pastures are used under the allotment's current management – See Alternative B).

Table 2.7 - Alternative A: Permitted Livestock Use in Con Shea Allotment

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock Co. (1101423)	251[1]	Cattle	11/01-02/28	100%	990	0	990

[1]Annually, with prior approval by the authorized officer, livestock numbers may vary as long as season of use and active AUMs are not exceeded.

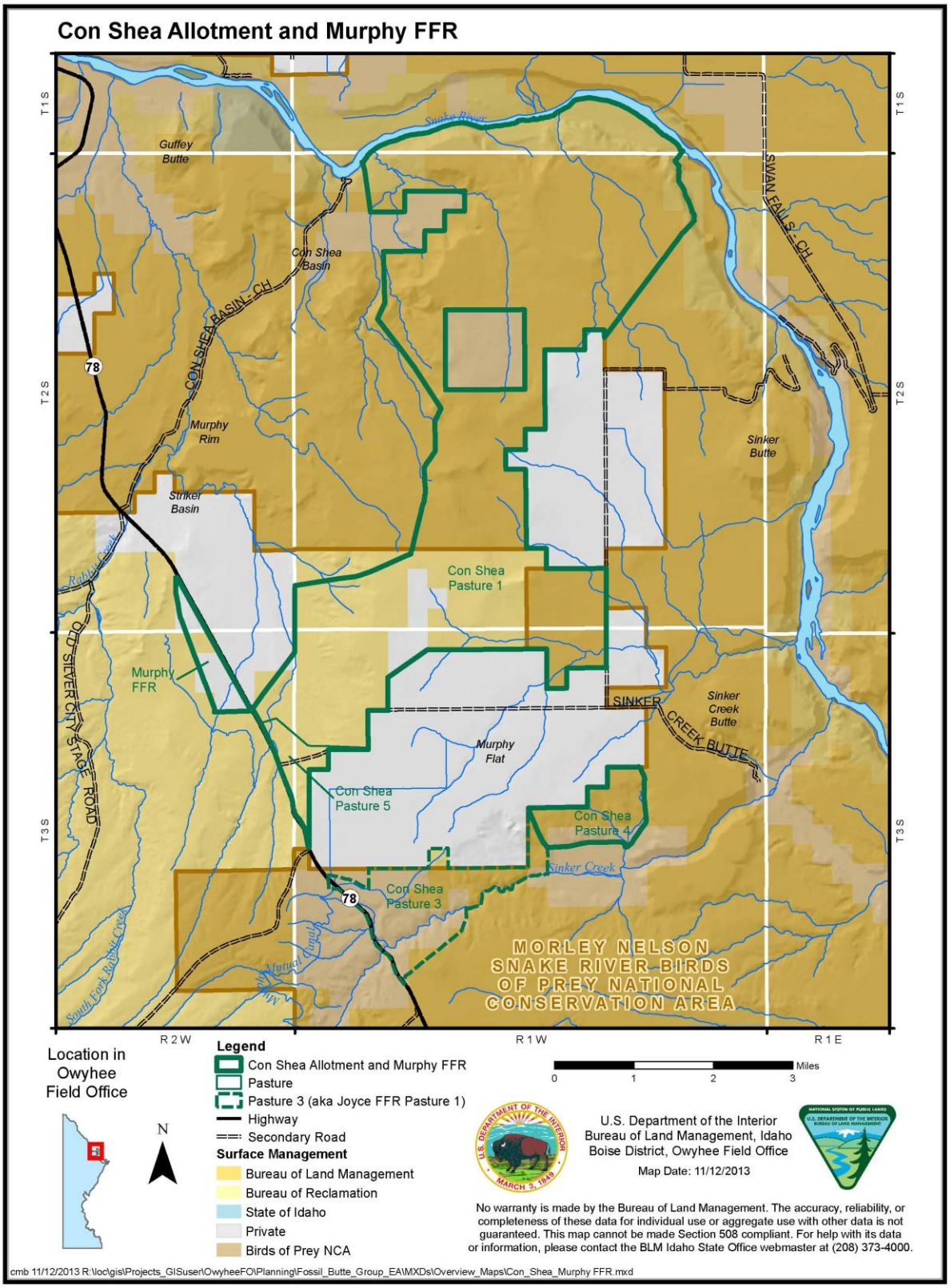

Figure 2.1 – Con Shea Allotment and Murphy FFR Pasture Map

2.3.2.2 Sinker Butte

Alternative A would renew the grazing permit for the Sinker Butte Allotment authorizing 707 AUMs of winter cattle use (Table 2.8). The allotment is currently divided into four pastures, one pasture of which is currently sub-divided by a temporary fence constructed to rest the portion of the pasture that burned in the 2012 Con Shea wildfire (Figure 2.2).

Table 2.8 - Alternative A: Permitted Livestock Use for Sinker Butte Allotment

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Sierra Del Rio (1100242)	203	Cattle	11/15-02/28	100%	707	0	707

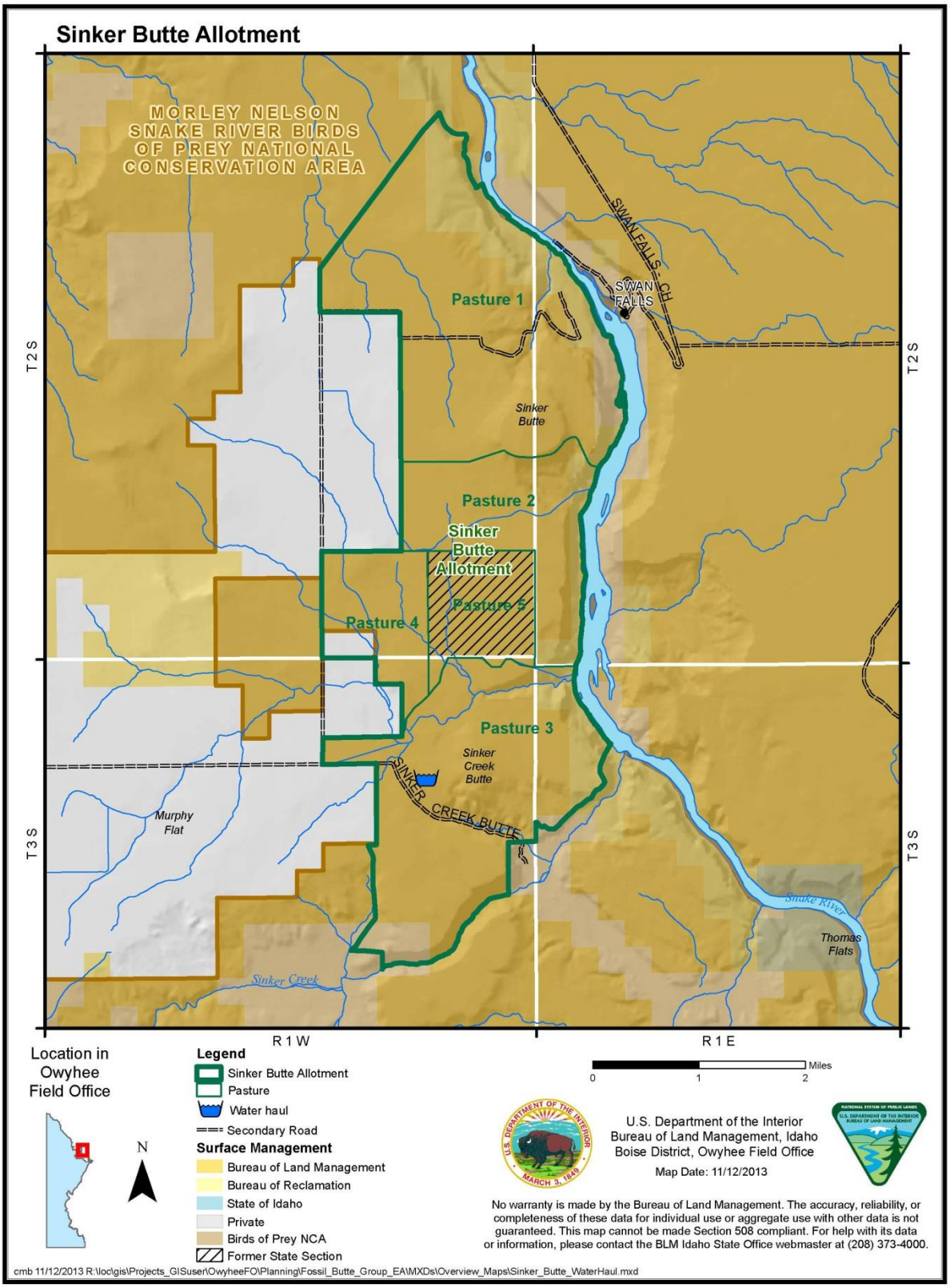

Figure 2.2 - Sinker Butte Pasture Map

2.3.3 Alternative B – Continue Current Situation

The Current Situation Alternative describes the current livestock grazing management in the six allotments. These recent adjustments to livestock grazing management are not adequately represented in the permit but provide a more accurate baseline for the environmental analysis. The use levels (AUMs) and seasons of use are based on reported actual use.

Alternative B would change the terms and conditions of the permits to reflect current management of the allotments. This alternative incorporates the terms and conditions (Winmill Stipulations) that had been imposed under court order as described in Alternative A:

1. *Key herbaceous riparian vegetation, where streambank stability is dependent upon it, will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the growing season;*
2. *Key riparian browse vegetation will not be used more than 50% of the current annual twig growth that is within reach of the animals;*
3. *Key herbaceous riparian vegetation on riparian areas, other than the streambanks will not be grazed more than 50% during the growing season, or 60% during the dormant season; and*
4. *Streambank damage attributable to grazing livestock will be less than 10% on a stream segment.*

2.3.3.1 Fossil Butte

Under Alternative B, BLM would renew three grazing permits to graze livestock within the Fossil Butte Allotment. A total of 1,328 AUMs of fall/winter use would be authorized for cattle (Table 2.9). These AUMs are the equivalent to the median annual actual use reported since 2008 (Table 2.10). The current permit includes 112 AUMs of horse use; however, horse use has not occurred in the allotment since 2008. Under this alternative, the horse AUMs would be removed from the livestock grazing permit. Implementation of this alternative would result in the elimination of 294 Active AUMs (112 horse and 182 cattle AUMs) in the Fossil Butte allotment.

The 2007 Determination identified current livestock management as a significant causal factor in not meeting Standards; subsequently the permittees voluntarily reduced AUMs by approximately 10% in an effort to move toward meeting Standards. Utilization levels prior to the reduction ranged from 47 to 55 percent. Since the reduction, annual utilization levels have ranged from 12 to 32 percent. Under this alternative, eight existing water haul sites would be retained for use in the Fossil Butte Allotment (Figure 2.3) along with maintenance of several of the existing push ponds. Maintenance of these push ponds would be authorized, by the BLM, as needed.

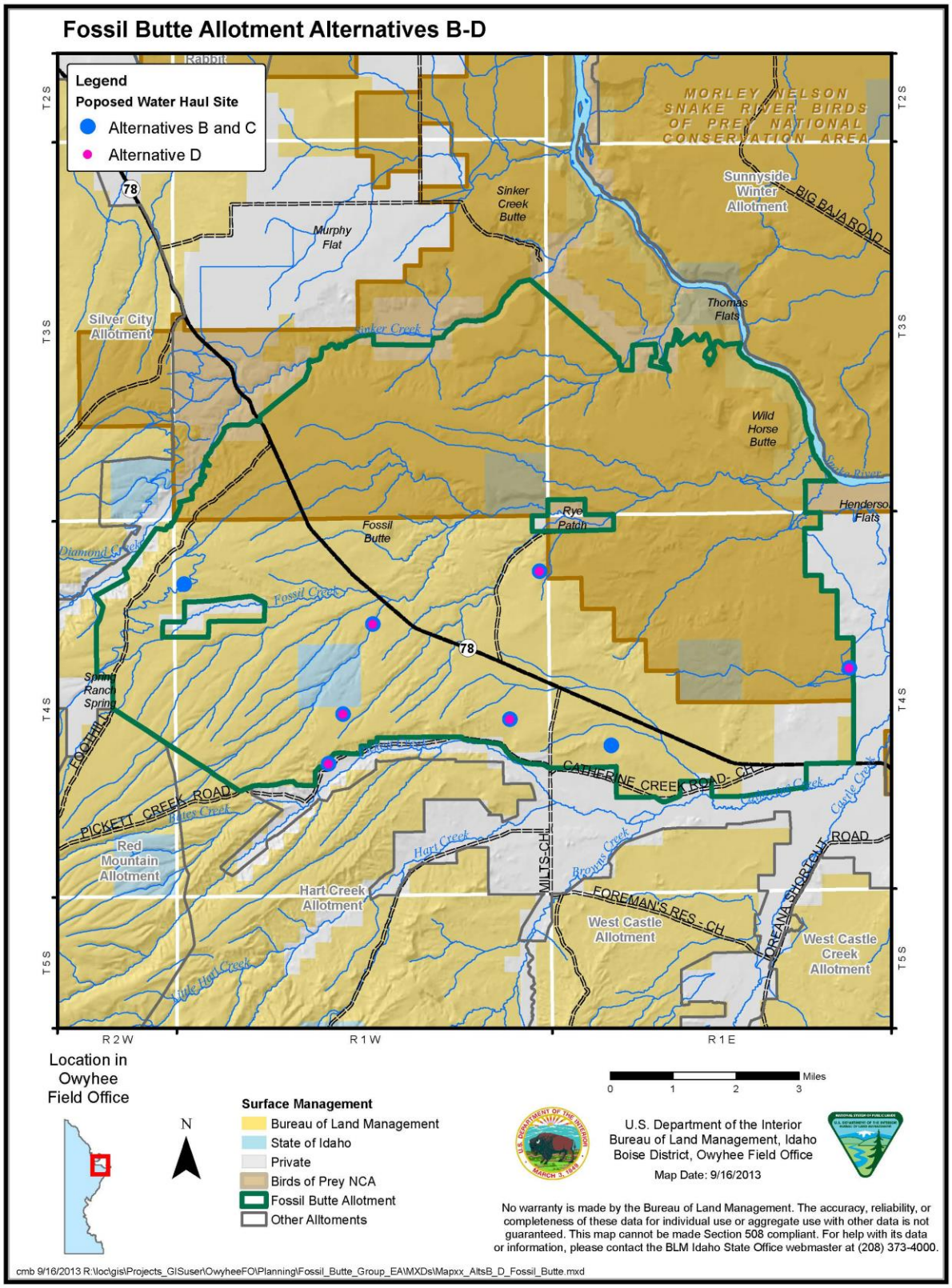

Figure 2.3 - Fossil Butte Allotment Water Haul Sites

Table 2.9 - Alternative B: Permitted Livestock Use for Fossil Butte Allotment

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock Co. (1101423)	189	Cattle	10/15-02/28	94%	776	0	776
Nick Nettleton (1101482)	76	Cattle	10/15-02/28	100%	332	0	332
Vernon and Kenneth Kershner* (1104187)	51	Cattle	10/15-02/28	100%	220	0	220
Total					1,328	0	1,328

*Control by lease of base property owned by Miller Land Co., Inc.[2]

Table 2.10 - Alternative B: Fossil Butte Actual Use (AUMs and Dates) by Operator

Year	Joyce Livestock	Nick Nettleton	Miller-Kershner	TOTAL
1998	**987** 10/28-3/10	**380***	**241** 11/1-2/28	1,608
1999	**957** 10/21-3/8	**361** 12/1-1/29	**251***	1,569
2000	**947** 10/15-3/6	**153** 12/1-1/29	**251***	1,351
2001	**991** 10/18-3/13	**317** 12/1-2/1	**251***	1,559
2002	**927** 10/12-3/3	**299** 11/1-2/26	**251***	1,477
2003	**991***	**87** 12/1-1/9	**Non-use**	1,329
2004	**991***	**380***	**251***	1,622
2005	959 10/21-2/28	**352** 12/2-3/31	**251***	1,562
2006	**486** 11/2-3/4	**325** 12/3-2/16	**212** 12/5-2/28	1,023
2007	**815** 10/19-2/28	**367** 12/1-2/27	**251***	1,433
2008	**580** 10/6-3/3	**335** 12/2-2/24	**184** 1/1-2/28	1,099
2009	**795** 10/21-3/2	**289** 12/4-2/25	**Non-use**	1,084
2010	**767** 10/21-3/8	**325** 11/19-2/28	**236** 12/28-2/28	1,328
2011	**852** 10/22-3/8	**370** 11/6-3/3	**233** 1/1-2/28	1,455
2012	**824** 11/2-3/5	**347** 12/1-2/27	**220** 1/29-2/28	1,391
Median	**927** 10/21-3/5	**335** 12/1-2/25	**251** 12/30-2/28	**1,328** 11/12-2/28

*asterisk indicates actual use reports were not available; data derived from billing statements

[2] This language was added in response to a specific request during the comment period on the draft EA by the base property owner.

The total of all actual use whether it was derived from actual use reports or billing information was used to calculate actual use values. Median actual use from 1998 to 2012 was 1,433 AUMs. Between 1998 and 2007 the median actual use value was 1,520 AUMs. After the voluntary reduction was implemented in 2008, the median actual use has been 1,328 AUMs.

2.3.3.2 Con Shea

Alternative B would renew one grazing permit for the Con Shea Allotment for 1,167 AUMs (Table 2.11). This alternative would authorize grazing at levels equivalent to the median actual use reported since 2005, excluding 2012 (Table 2.12). The current situation reflects the effects to resources in this allotment from a 2005 billing error when a total of 1,282 AUMs were erroneously authorized. This error continued until it was identified and corrected in 2012. Implementation of this alternative would result in the addition of 177 AUMs in the Con Shea Allotment.

Authorized livestock grazing in the Con Shea Allotment would continue to occur primarily in Pasture 1. Pasture 3 has been managed as a pasture in the Joyce FFR Allotment since the 1980s. This alternative would complete the move, and transfer the 466 acres of public land in Pasture 3 to the Joyce FFR Allotment. Currently, Pastures 4 and 5 are not fenced off from adjacent cropland and are not used for livestock grazing in the Con Shea Allotment. Pastures 4 and 5 would be available, but not expected to be used. If use was to occur in Pastures 4 or 5, herding or fencing would be required to keep livestock off private fields. Because recent use has only been made in Pasture 1, livestock management under this alternative would not result in increased use in this pasture, but would remedy administration discrepancies of the allotment boundaries.

Table 2.11 - Alternative B: Permitted grazing use within the Con Shea Allotment

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock Co. (1101423)	295	Cattle	11/01-02/28	100%	1,167	0	1,167
Total					1,167		1,167

Table 2.12 - Con Shea Pasture 1 Actual Use

Year	Season of Use	AUMs
2012*	11/02 – 02/27	243
2011	11/04 – 03/06	1,221
2010	11/03 – 03/03	1,259
2009	11/07 – 03/03	834
2008	11/01 – 02/28	1,241
2007	10/31 – 03/03	1,031
2006	11/01 – 03/03	1,167
2005	11/04 – 03/02	700

*75% of the allotment was closed in response to wildfire

The actual use reported above is for Pasture 1 only and indicates a median of 1,167 AUMs from the years 2005 through 2011. 2012 actual use data was not included in this calculation, as it was an anomaly due to wildfire.

2.3.3.3 Sinker Butte

Under Alternative B, the BLM would renew one grazing permit for the Sinker Butte Allotment for 771 AUMs of fall/winter use by cattle (Table 2.13). This alternative includes the incorporation into the allotment of a parcel of previously state-owned land (Pasture 5). The increase of 64 AUMs from the

current term permit is the result of the acquisition of the state land section (640 acres) by the BLM in 2004. The transfer was completed through a Lands and Realty EA and Decision Record, however the livestock grazing on that acreage was never formally addressed. The permittee has been using this pasture since 2004, and actual use in 2011 (only) included AUMs used on the acquired section of ground in addition to authorized AUMs.

Actual use data (Table 2.14) indicates that livestock are turned onto the allotment on or shortly after October 20 and usually removed by early to mid-January, but occasionally through the month of February. The allotment is currently divided into five pastures; one pasture is sub-divided by a temporary fence constructed in response to the 2012 Con Shea wildfire. This fence is scheduled to be removed when post-fire resource objectives have been achieved. One authorized water haul site is located in Pasture 3.

Table 2.13 - Alternative B: Sinker Butte Livestock Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Sierra Del Rio (1100242)	178	Cattle	10/20 – 2/28	100%	771	0	771

Table 2.14 - Sinker Butte Actual Use

Year	Season of Use	AUMs
2012	10/26 – 12/30	729
2011	11/04 – 01/05	770
2010	11/15 – 1/9 & 02/02 – 02/28	720
2009	11/02 – 01/11	717
2008	10/24 – 01/05	711
2007	10/22 – 01/04	718
2006	10/25 – 01/09	704
2005	10/20 – 01/07	705
2004	10/22 – 01/07	705
2003	10/23 – 12/04	353
2002	10/27 – 11/29	224
2001	10/21 – 12/27	698
2000	10/21 –12 /27	698
1999	10/21 – 12/29	718
1998	10/21 – 01/10	718

2.3.3.4 Joyce FFR

Under Alternative B, the BLM would renew the livestock grazing permit on the Joyce FFR Allotment for 246 AUMs of cattle and horse use (Table 2.15). The 246 AUMs is based on billing and actual use records. The allotment consists of 6 pastures (Figure 2.4), including Pasture 3 from the Con Shea Allotment (now Joyce FFR Pasture 1). Pasture use dates would reflect past use as reported by the permittee (Table 2.16).

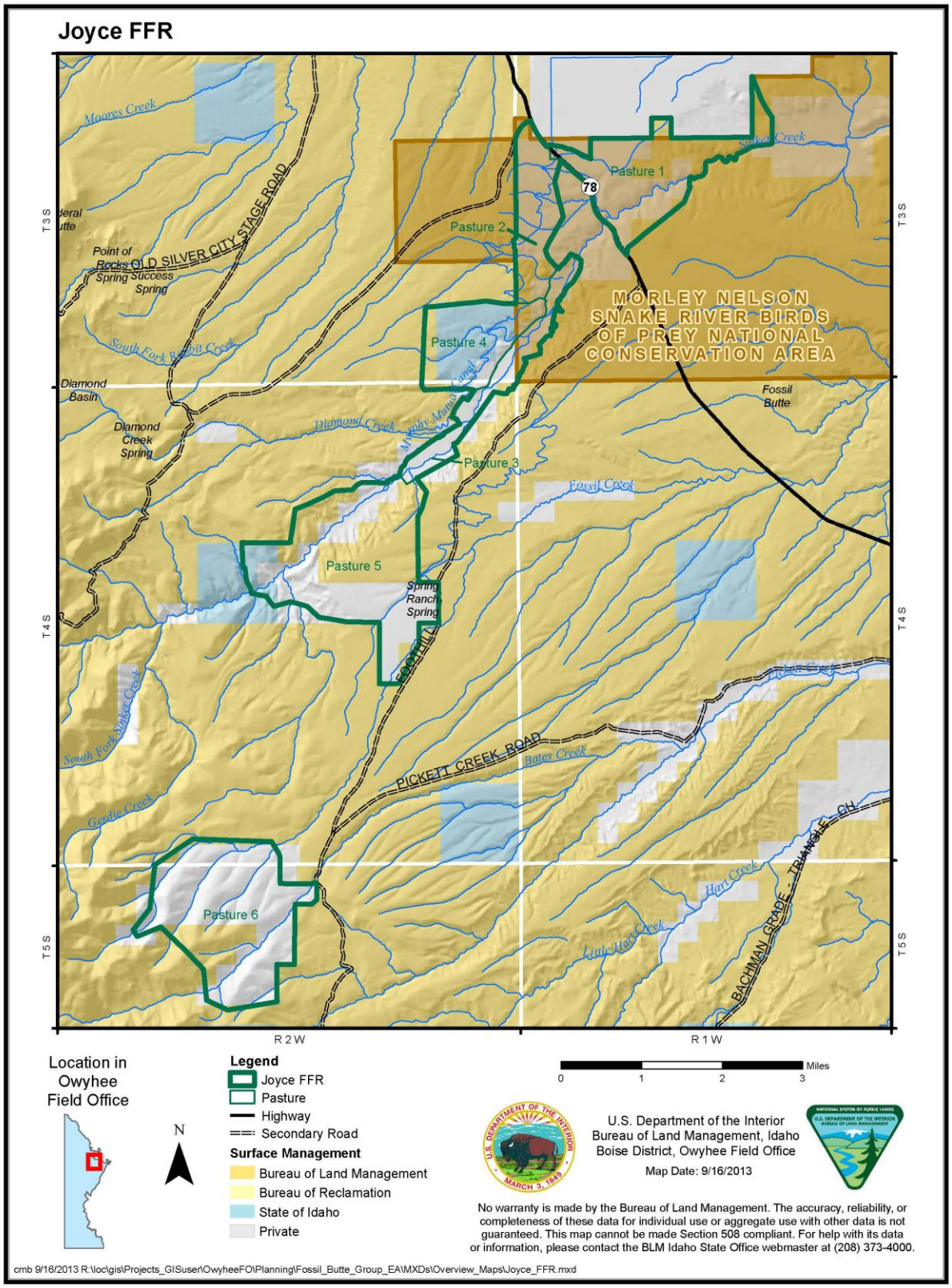

Figure 2.4 – Joyce FFR Pasture Map

The 2003 Determination indicated that current grazing management was a significant causal factor in not meeting Standards. Prior to the start of the 2003 grazing season, the permittee agreed to eliminate March 1 through March 31 grazing in Pasture 5 in order to make significant progress toward meeting Standards 4 and 8. Table 2.10 reflects that change. Con Shea Pasture 3 has been included as part of the Joyce FFR (0487) Allotment since the 1980s, and although no actual use data is available for this pasture, the permittee verified it is generally used in early March for one to two weeks.

Table 2.15 - Alternative B: Joyce FFR Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock Co. (1101423)	13[1]	Cattle	3/1 – 2/28[2]	100%	158	0	158
	7[1]	Horses	3/1 – 2/28	100%	88	0	88
Total AUMs					246	0	246

[1] Number of livestock may vary annually, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.
[2]The season of use per pasture would be as shown in Table 2.10.

Table 2.16 - Joyce FFR Seasons of Use by Pasture

Pasture	Season of Use	Livestock Kind	Acres		
			BLM	Private	State
1	03/01 – 03/20	Cattle	468	735	0
2	11/01 – 02/28	Cattle	126	511	0
3	Yearlong	Cattle and Horses	61	476	0
4	03/01 – 03/31	Cattle	145	124	498
5	10/01 – 11/15	Cattle	911	1,117	136
6	5/15 – 6/15, fall trailing	Cattle	367	1,523	0

2.3.3.5 Montini FFR

Under Alternative B, the BLM would renew the livestock grazing permit for the Montini Allotment for 140 AUMs of cattle use from January 10 through April 30 (Table 2.17). The allotment consists of two pastures (Figure 2.5). One authorized water haul site is located in Pasture 1.

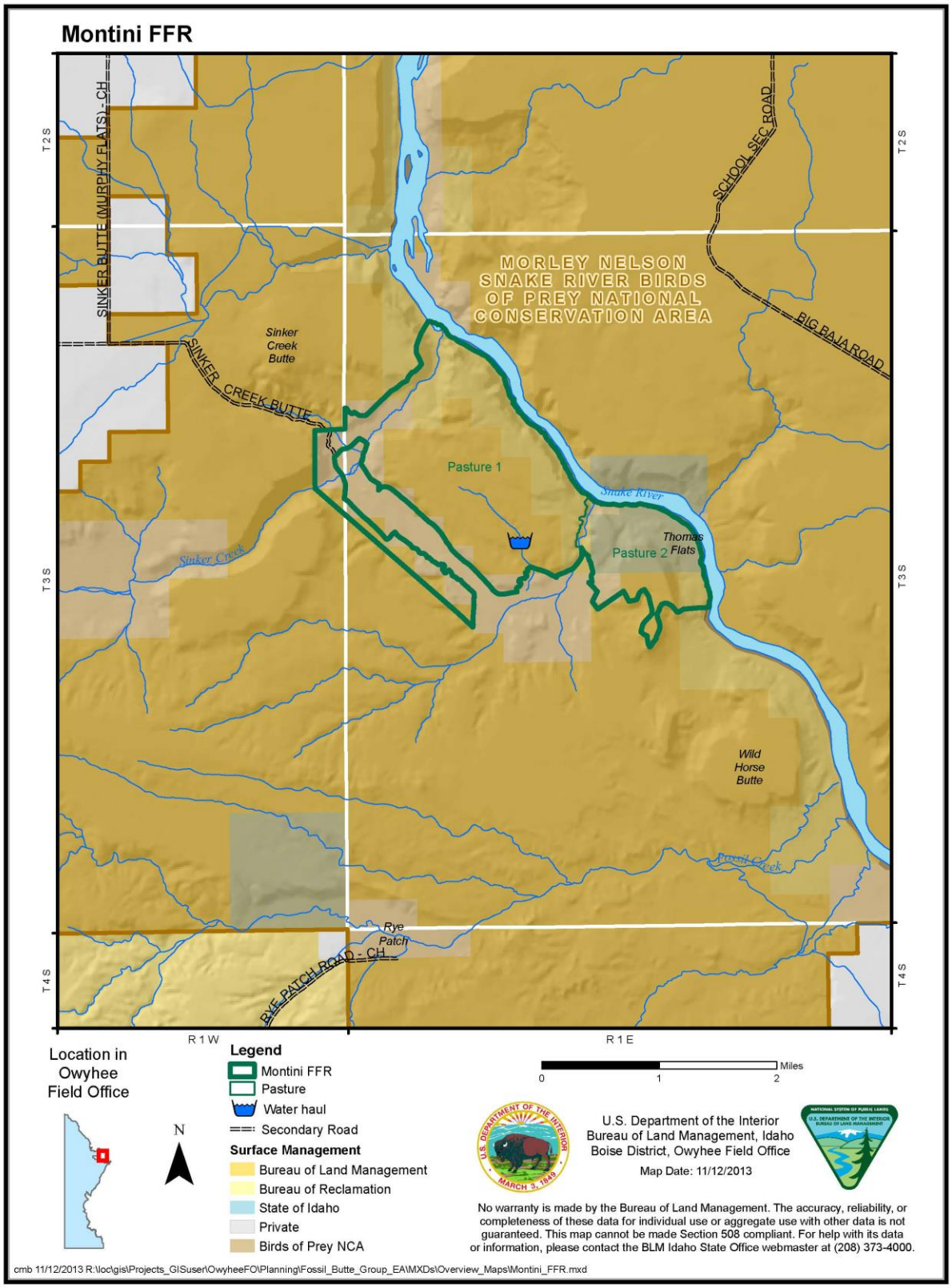

Figure 2.5 – Montini FFR Pasture Map

Table 2.17 - Alternative B: Montini FFR Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Sierra Del Rio (1100242)	38[1]	Cattle	1/10 – 4/30	100%	140	0	140

[1] Number of livestock may vary annually, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

Table 2.18 - Montini FFR Actual Use

Year	Season of Use	AUMs
2012	02/01 – 03/28	129
2011	03/01 – 02/19	140
2010	02/01 – 03/28	129
2009	03/01 – 02/28	140
2008	01/10 – 02/29	139
2007	02/01 – 03/31	135
2006	02/01 – 03/30	143
2005	02/15 – 04/30	140*
2004	02/15 – 04/30	141
2003	03/01 – 02/28	144*
2002	02/16 – 03/31	137
2001	02/16 – 03/31	137

*asterisk indicates actual use reports were not available; data derived from billing statements

2.3.3.6 Murphy FFR

Under Alternative B, BLM would renew the livestock, grazing permit in the Murphy FFR Allotment for 5 AUMs for cattle use between March 1 – March 31 (Table 2.19 and Table 2.19). The allotment consists of one pasture (Figure 2.6).

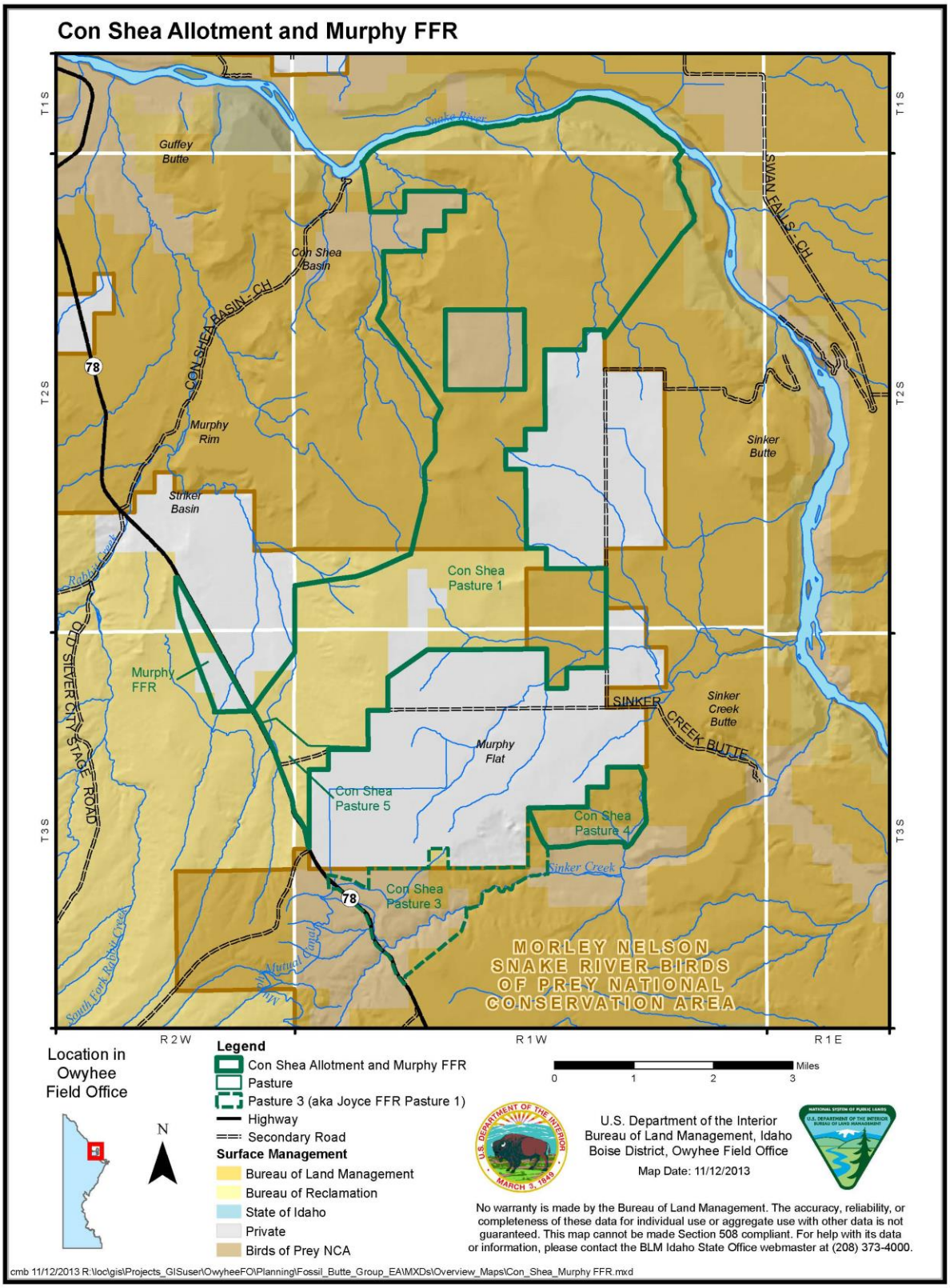

Figure 2.6 – Murphy FFR Pasture Map

Table 2.19 - Alternative B: Murphy FFR Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock (1101423)	5[1]	Cattle	03/01-03/31	100%	5	0	5

[1] Number of livestock may vary annually, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

Table 2.20 – Murphy FFR Actual Use

Year	Season of Use	AUMs
2012	03/1 – 03/31	5
2011	03/01 – 03/31	5

2.3.3.7 Terms and conditions for livestock grazing authorization under Alternative B.

The following tables present the mandatory and other terms and conditions (per 43 CFR §4130.3-1 and §4130.3-2) as they would appear on the livestock grazing permits for each applicant.

Terms and Conditions of the livestock grazing permit for Joyce Livestock Co. under Alternative B – Current Situation

Allotment	Livestock		Grazing Period		% PL	Type Use	AUMs
	Number	Kind	Begin	End			
00535 Fossil Butte	189	Cattle	10/15	02/28	94	Active	776
00571 Con Shea	295	Cattle	11/01	02/28	100	Active	1,167
00487 Joyce FFR	13	Cattle	03/01	02/28	100	Active	158
00487 Joyce FFR	7	Horse	03/01	02/28	100	Active	88
00486 Murphy FFR	5	Cattle	3/01	3/31	100	Active	5

1. Number of livestock may vary annually, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.
2. Livestock grazing exclosures located within your grazing allotment(s) are closed to all domestic grazing use.
3. You are required to properly complete, sign, and date an actual grazing use report form (4130-5) for each allotment. The completed form(s) must be submitted to this office within 15 days from the last day of your authorized annual grazing use.
4. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter mile away from any riparian area, spring, stream, meadow, aspen stand, playa, special status plant population, or water development.
5. Pursuant to 43 CFR 10.4(B) you must notify the BLM Field Manager, by telephone with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) 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.

United States District Court for the District of Idaho imposed terms and conditions

1. Key herbaceous riparian vegetation, where streambank stability is dependent upon it, will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the growing season;
2. Key riparian browse vegetation will not be used more than 50% of the current annual twig growth that is within reach of the animals;
3. Key herbaceous riparian vegetation on riparian areas, other than the streambanks, will not be grazed more than 50% during the growing season, or 60% during the dormant season; and
4. Streambank damage attributable to grazing livestock will be less than 10% on a stream segment.

Terms and Conditions of the livestock grazing permit for Nick Nettleton under Alternative B – Current Situation.

Allotment	Livestock		Grazing Period		% PL	Type Use	AUMs
	Number	Kind	Begin	End			
00535 Fossil Butte	76	Cattle	10/15	02/28	100	Active	332

1. Your certified actual use report is due within 15 days of completing your authorized annual grazing use.
2. Salt and/or supplement shall not be placed within one quarter (1/4) mile of springs, streams, meadows, aspen stands, playas, or water developments.
3. Changes to the scheduled use requires prior approval.
4. 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.
5. Livestock exclosures located within your grazing allotments are closed to all domestic grazing use.
6. Range improvements must be maintained in accordance with the cooperative agreements and range improvement permits in which you are a signator or assignee.
7. 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.
8. 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. 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
9. Utilization may not exceed 50% of the current year's growth.

United States District Court for the District of Idaho imposed terms and conditions

1. Key herbaceous riparian vegetation, where streambank stability is dependent upon it, will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the growing season;
2. Key riparian browse vegetation will not be used more than 50% of the current annual twig growth that is within reach of the animals;
3. Key herbaceous riparian vegetation on riparian areas, other than the streambanks, will not be grazed more than 50% during the growing season, or 60% during the dormant season; and
4. Streambank damage attributable to grazing livestock will be less than 10% on a stream segment.

Terms and Conditions of livestock grazing permit for Vernon and Kenneth Kershner under Alternative B – Current Situation.

Allotment	Livestock		Grazing Period		% PL	Type Use	AUMs
	Number	Kind	Begin	End			
00535 Fossil Butte	51	Cattle	10/15	02/28	100	Active	220

1. Your certified actual use report is due within 15 days of completing your authorized annual grazing use.
2. Salt and/or supplement shall not be placed within one quarter (1/4) mile of springs, streams, meadows, aspen stands, playas, or water developments.
3. Changes to the scheduled use requires prior approval.
4. 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.
5. Livestock exclosures located within your grazing allotments are closed to all domestic grazing use.
6. Range improvements must be maintained in accordance with the cooperative agreements and range improvement permits in which you are a signator or assignee.
7. 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.
8. 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 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
9. Utilization may not exceed 50% of the current year's growth.

United States District Court for the District of Idaho imposed terms and conditions

1. Key herbaceous riparian vegetation, where streambank stability is dependent upon it, will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the growing season;
2. Key riparian browse vegetation will not be used more than 50% of the current annual twig growth that is within reach of the animals;
3. Key herbaceous riparian vegetation on riparian areas, other than the streambanks, will not be grazed more than 50% during the growing season, or 60% during the dormant season; and
4. Streambank damage attributable to grazing livestock will be less than 10% on a stream segment.

Terms and Conditions of the livestock grazing permit for Sierra Del Rio under Alternative B – Current Situation.

Allotment	Livestock		Grazing Period		% PL	Type Use	AUMs
	Number	Kind	Begin	End			
00578 Sinker Butte	178	Cattle	10/20	02/28	100	Active	771
00654 Montini	38	Cattle	1/10	04/30	100	Active	140

1. Your certified actual use report is due within 15 days of completing your authorized annual grazing use.
2. Salt and/or supplement shall not be placed within one quarter (1/4) mile of springs, streams, meadows, aspen stands, playas, or water developments.
3. Changes to the scheduled use requires prior approval.
4. 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.
5. Livestock exclosures located within your grazing allotments are closed to all domestic grazing use.
6. Range improvements must be maintained in accordance with the cooperative agreements and range improvement permits in which you are a signator or assignee.
7. 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.
8. 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. 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
9. Utilization may not exceed 50% of the current year's growth.

United States District Court for the District of Idaho terms and conditions

1. Key herbaceous riparian vegetation, where streambank stability is dependent upon it, will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the growing season;
2. Key riparian browse vegetation will not be used more than 50% of the current annual twig growth that is within reach of the animals;
3. Key herbaceous riparian vegetation on riparian areas, other than the streambanks, will not be grazed more than 50% during the growing season, or 60% during the dormant season; and
4. Streambank damage attributable to grazing livestock will be less than 10% on a stream segment.

2.3.4 Alternative C – Applicant's Proposed Action

Under Alternative C, the BLM would renew livestock grazing permits in accordance with applications received from current permittees authorized to graze livestock within the Fossil Butte, Con Shea, Sinker Butte, Joyce FFR, Murphy FFR, and Montini FFR allotments. The applications included the required terms and conditions for BLM grazing permits. In accordance with regulations the mandatory terms and conditions include the kind and number of livestock; the period of use; the allotment to be used; the amount of use in animal unit months (AUMs); as well as other terms and conditions to ensure conformance with the Idaho S&Gs. Other terms and conditions include those that will assist in achieving management objectives, provide for proper range management, or assist with the orderly administration of the public rangelands.

Under Alternative C, grazing permits would be renewed with terms and conditions identified in the submitted applications. The submitted applications are in OFO grazing files.

2.3.4.1 Fossil Butte

Alternative C would renew three permits authorizing a total of 1,622 AUMs of livestock use in the Fossil Butte Allotment with fall/winter use (Table 2.21). The 112 AUMs currently permitted for horse use would be converted to cattle use. Eight existing water haul sites (Figure 2.3) would be authorized, as would maintenance of specified existing push ponds. Push ponds to be maintained would be identified and included in inventory for upkeep; others would be considered abandoned and no maintenance would be authorized.

Table 2.21 - Alternative C: Fossil Butte Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock (1101423)	212	Cattle	10/01-02/28	94%	994	0	994
Nick Nettleton (1101482)	76	Cattle	10/01-02/28	100%	377	0	377
Vernon and Kenneth Kershner* (1104187)	51	Cattle	10/01-02/28	100%	253	0	253
Total**					1,622	0	1,622

*The sum of the AUMs may not equal the AUMs for individual authorizations due to rounding in the AUM calculation.

**Control by lease of base property owned by Miller Land Co., Inc.[3]

2.3.4.2 Con Shea

Alternative C would renew the livestock grazing permit in the Con Shea Allotment for 990 AUMs of fall/winter use by cattle (Table 2.22). Under this alternative, the allotment would consist of the current Pasture 1. Livestock grazing in Pasture 3 would be authorized under the permit for Joyce FFR (0487) Allotment (Figure 2.1). The 466 acres of public land in Pasture 3 would be moved administratively from the Con Shea Allotment (and associated grazing permit) to the Joyce FFR Allotment (and associated grazing permit). Pastures 4 and 5 would be available, but not expected to be used. If use was to occur in Pastures 4 or 5, herding or fencing would be required to keep livestock off private fields.

[3] This language was added in response to a specific request during the comment period on the draft EA by the base property owner.

Table 2.22 - Alternative C: Con Shea Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock (1101423)	251[1]	Cattle	11/01-02/28	100%	990	0	990

[1]Annually, with prior approval by the authorized officer, livestock numbers may vary as long as season of use and active AUMs are not exceeded.

2.3.4.3 Sinker Butte

Under Alternative C, BLM would renew one permit to graze livestock within the Sinker Butte Allotment. A total of 791 AUMs of permitted use consisting of 691 active AUMs of fall/winter use and 100 active AUMs of spring use would be authorized for cattle in this allotment (Table 2.23). BLM acquired 640 acres of state land within this allotment in 2004. This section (36) within Pasture 5 and the associated 64 AUMs would be incorporated into the allotment. In addition, through verifying the accuracy of mapped fence lines, an additional 199 acres was found to be located in the allotment. The permittee has requested that a corresponding increase of 20 AUMs be authorized. A temporary fence was constructed in 2012 following a wildfire; under this alternative the fence would remain as a permanent structure dividing Pasture 1 into two separate pastures. The allotment would have a total of 6 pastures (Figure 2.2).

Table 2.23 - Alternative C: Sinker Butte Livestock Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Sierra Del Rio (1100242)	153	Cattle	10/15-02/28	100%	691	0	691
	101	Cattle	04/01-04/30	100%	100	0	100
Total					791	0	791

A five pasture deferred rest rotation system (Pastures 3 and 5 to be used together as one unit) would be implemented as outlined in Table 2.24. The grazing prescription would involve one year of spring use followed by a year of rest and three years of deferred fall/winter use. One water haul location would be authorized.

Table 2.24 - Alternative C: Grazing Management for the Sinker Butte Allotment

Pastures	Year in Grazing Rotation				
	Year 1	Year 2	Year 3	Year 4	Year 5
Pasture 1	Spring[1]	Rest	Fall/Winter[2]	Fall/Winter[2]	Fall/Winter[2]
Pasture 2	Fall/Winter[2]	Spring[1]	Rest	Fall/Winter[2]	Fall/Winter[2]
Pasture 3/5	Fall/Winter[2]	Fall/Winter[2]	Spring[1]	Rest	Fall/Winter[2]
Pasture 4	Fall/Winter[2]	Fall/Winter[2]	Fall/Winter[2]	Spring[1]	Rest
Pasture 6	Rest	Fall/Winter[2]	Fall/Winter[2]	Fall/Winter[2]	Spring[1]

[1] Spring use would occur between April 1 and April 30.
[2] Fall/Winter use would occur between October 15 and February 28.

2.3.4.4 Joyce FFR

Under Alternative C, BLM would renew one permit to graze livestock within the Joyce FFR Allotment. A total permitted use of 246 AUMs of discretionary use would be authorized for livestock (Table 2.25). The allotment would have 6 designated pastures. Pasture 3 from the Con Shea (0571) Allotment would become part of the Joyce FFR (0487) Allotment (Figure 2.4). A total of 464 acres of public land would be removed from the Con Shea Allotment (and associated grazing permit) and added to the Joyce FFR Allotment (and associated grazing permit).

Table 2.25 - Alternative C: Joyce FFR Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock Co. (1101423)	13[1]	Cattle	03/01 – 02/28	100%	158	0	158
	7[1]	Horses	03/01 –02/28	100%	88	0	88
Total AUMs					246	0	246

[1] Number of livestock may vary annually, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

2.3.4.5 Montini FFR

Under Alternative C, BLM would renew one grazing permit to graze livestock within the Montini Allotment. A total permitted use of 140 AUMs would be authorized for livestock (Table 2.26). Use would occur at the permittee's discretion as long as resource degradation does not occur in the allotment. One water haul site would be authorized for use in Pasture 1. The permittee has requested limited feeding (no more than 1,000 pounds on an annual basis) of dry, weed-free certified hay to bait cows and assist in cow/calf trailing within the allotment.

Table 2.26 - Alternative C: Montini FFR Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Sierra Del Rio (1100242)	11[1]	Cattle	03/01-02/28	100%	140	0	140

[1] Number of livestock may vary annually, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

2.3.4.6 Murphy FFR

Under Alternative C, BLM would renew one grazing permit to graze livestock within the Murphy FFR Allotment. A total permitted use of 5 AUMs of discretionary use would be authorized for cattle (Table 2.27).

Table 2.27 - Alternative C: Murphy FFR Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock (1101423)	1[1]	Cattle	03/01-02/28	100%	5	0	5

[1] Number of livestock may vary annually, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

2.3.4.7 Terms and conditions for livestock grazing authorization under Alternative C.

The following tables present the mandatory and other terms and conditions as they would be appear on the livestock grazing permits. None of the terms and conditions include limitations on use within riparian areas.

Terms and Conditions of livestock grazing for Joyce Livestock Co. under Alternative C (Applicants' Proposed Action).

Allotment	Livestock		Grazing Period		% PL	Type Use	AUMs
	Number	Kind	Begin	End			
00535 Fossil Butte	212	Cattle	10/01	02/28	94	Active	994
00571 Con Shea	251	Cattle	11/01	02/28	100	Active	990
00487 Joyce FFR	13	Cattle	03/01	02/28	100	Active	158
00487 Joyce FFR	7	Horse	03/01	02/28	100	Active	88
00486 Murphy FFR	1	Cattle	11/01	02/28	100	Active	5

1. Number and kind of livestock and season of use on the Fenced Federal Range (FFR) allotments #0486 and 0487 are at your discretion.
2. Livestock grazing exclosures located within your grazing allotment(s) are closed to all domestic grazing use.
3. You are required to properly complete, sign, and date an actual grazing use report form (4130-5) for each allotment. The completed form(s) must be submitted to this office within 15 days from the last day of your authorized annual grazing use.
4. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter mile away from any riparian area, spring, stream, meadow, aspen stand, playa, special status plant population, or water development.
5. Pursuant to 43 CFR 10.4(B) you must notify the BLM Field Manager, by telephone with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) 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.

Terms and Conditions of the livestock grazing permit for Nick Nettleton under Alternative C (Applicants' Proposed Action).

Allotment	Livestock		Grazing Period		% PL	Type Use	AUMs
	Number	Kind	Begin	End			
00535 Fossil Butte	76	Cattle	10/01	02/28	100	Active	377

1. Your certified actual use report is due within 15 days of completing your authorized annual grazing use.
2. Salt and/or supplement shall not be placed within one quarter (1/4) mile of springs, streams, meadows, aspen stands, playas, or water developments.
3. Changes to the scheduled use requires prior approval.
4. 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.
5. Livestock exclosures located within your grazing allotments are closed to all domestic grazing use.
6. Range improvements must be maintained in accordance with the cooperative agreements and range improvement permits in which you are a signator or assignee.
7. 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.
8. 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. 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

Terms and conditions of the livestock grazing permit for Vernon and Kenneth Kershner to grazing livestock within the Fossil Butte Allotment with implementation of Alternative C (Applicants' Proposed Action).

Allotment	Livestock		Grazing Period		% PL	Type Use	AUMs
	Number	Kind	Begin	End			
00535 Fossil Butte	51	Cattle	10/01	02/28	100	Active	253

Terms and Conditions:

1. Your certified actual use report is due within 15 days of completing your authorized annual grazing use.
2. Salt and/or supplement shall not be placed within one quarter (1/4) mile of springs, streams, meadows, aspen stands, playas, or water developments.
3. Changes to the scheduled use require prior approval.
4. 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.
5. Livestock exclosures located within your grazing allotments are closed to all domestic grazing use.
6. Range improvements must be maintained in accordance with the cooperative agreements and range improvement permits in which you are a signator or assignee.
7. 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.
8. 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 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

Terms and conditions of the offered permit for Sierra Del Rio to grazing livestock within the Sinker Butte and Montini FFR allotments with implementation of Alternative C – Applicants' Proposed Action.

Allotment	Livestock		Grazing Period		% PL	Type Use	AUMs
	Number	Kind	Begin	End			
00578 Sinker Butte	153	Cattle	10/15	02/28	100	Active	691
00578 Sinker Butte	101	Cattle	04/01	04/30	100	Active	100
00654 Montini FFR	11	Cattle	03/01	02/28	100	Active	140

Terms and Conditions:

1. The number of livestock and season of use on the Fenced in Federal Range (FFR) Allotment #0654 is at your discretion.
2. Your certified actual use report is due within 15 days of completing your authorized annual grazing use.
3. Salt, supplemental feed, and/or mineral supplement shall not be placed within one quarter (1/4) mile of springs, streams, meadows, aspen stands, playas, special status plant occurrences, 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 allotments are closed to all domestic grazing use.
7. Range improvements must be maintained in accordance with the cooperative agreements and range improvement permits in which you are a signator or assignee.
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 compliance with 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 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
10. Livestock grazing will be in accordance with your allotment grazing schematic(s). Changes in scheduled pasture use dates will require prior authorization.
11. Limited supplemental feeding of no more than 1,000 pounds annually of dry, certified weed-free hay would be authorized in the Montini FFR Allotment (#00654) to bait cows and assist in cow/calf trailing within the allotment.

2.3.5 Alternative D – Preferred Alternative[4]

2.3.5.1 Fossil Butte

Alternative D would renew three permits for livestock use in the Fossil Butte Allotment, for a total of 1,328 AUMs of late fall/winter use by cattle (Table 2.28). AUMs currently authorized for horse use would be converted to cattle use. The season of use would be shortened (compared to the current situation) to120 days by moving the livestock turn-out-date back from October 15 to November 1.

Maintenance would occur for existing authorized range improvement projects. Six existing water haul sites would be authorized. No maintenance of push ponds would be authorized.

Table 2.28 - Alternative D: Fossil Butte Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock (1101423)	209	Cattle	11/01-02/28	94%	776	0	776
Nick Nettleton (1101482)	84	Cattle	11/01-02/28	100%	332	0	332
Vernon and Kenneth Kershner (1104187)*	56	Cattle	11/01-02/28	100%	220	0	220
Total**					1,328	0	1,328

*Control by lease of base property owned by Miller Land Co., Inc.[5]
**the sum of AUMs may not equal the AUMs for individual authorizations due to rounding in the AUM calculation.

2.3.5.2 Con Shea

Alternative D would renew one permit to graze livestock within the Con Shea Allotment. A total of 953 AUMs of permitted late fall/winter use in one pasture would be authorized for cattle (Table 2.29).

Under this alternative, the allotment would be reduced to what is currently Pasture 1. Grazing would occur between November 1 and February 28. A temporary fence was constructed in 2012 to allow for partial closure of the pasture in response to the Con Shea wildfire. This fence will be removed fall of 2014 if post-fire resource objectives have been met. Pasture 3 and its associated acres of public land and AUMs would be moved to the Joyce FFR Allotment and livestock grazing would be administered under the permit for Joyce FFR allotment. Pastures 4 and 5 would be available, but not expected to be used. If use was to occur in Pastures 4 or 5, herding or fencing would be required to keep livestock off private fields.

Table 2.29 - Alternative D: Permitted grazing use within the Con Shea Allotment

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock Co. (1101423)	242	Cattle	11/1-02/28	100%	953	0	953
Total					953	0	953

[4] Though Alternative D is identified as the preferred alternative for the Fossil Butte Group Allotments, no decision has yet been made to implement such. The proposed decision for each allotment, which the BLM will issue upon the completion of the Final EA, will identify which alternative has been selected.
[5] This language was added in response to a specific request during the comment period on the draft EA by the base property owner.

2.3.5.3 Sinker Butte

Alternative D would renew one permit to graze livestock within the Sinker Butte Allotment. A total of 771 AUMs of permitted late fall/winter use would be authorized for cattle (Table 2.30).

Table 2.30 - Alternative D: Sinker Butte Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Sierra Del Rio (1100242)	195	Cattle	11/1-02/28	100%	771	0	771

BLM acquired 640 acres of state land within this allotment in 2004. This section (36) within Pasture 5 and the associated 64 AUMs would be incorporated into the allotment. The allotment is currently divided into five pastures; one pasture is sub-divided by a temporary fence constructed in response to the 2012 Con Shea wildfire. This fence is scheduled to be removed when post-fire resource objectives have been achieved.

One existing water haul location in Pasture 3 would be authorized.

2.3.5.4 Joyce FFR

Alternative D would renew one permit to graze livestock within the Joyce FFR Allotment. A total of 124 AUMs (87 AUMs from the current permit and 37 AUMs from the previous Con Shea Pasture 3) of permitted use would be authorized for cattle and horses (Table 2.31). The allotment consists of 6 pastures, including Pasture 3 from the Con Shea Allotment (now Joyce FFR Pasture 1). Pasture use dates would be as shown in Table 2.32.

Pasture 3 would be authorized a discretionary season of use, subject to an additional term and condition which would apply to this pasture requiring the permittee to meet with the BLM prior to each grazing year in order to determine overall management of the pasture. This annual meeting would determine if changes in annual authorizations are required. Such modifications must be in accordance with the ten-year grazing permit.[6]

Table 2.31 - Alternative D: Joyce FFR Permitted Use

Operator Name (Number)	Livestock		Season of Use[2]	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock Co. (1101423)	7[1]	Cattle	03/01 – 02/28	100%	80	0	80
	4[1]	Horses	03/01 – 02/28	100%	44	0	44
Total AUMs					124	0	124

[1] Number of livestock may vary annually, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

[2]The season of use per pasture would be as shown in Table 2.32.

Table 2.32 – Alternative D: Joyce FFR Seasons of Use by Pasture

Pasture	Season of Use	Livestock Kind	Acres		
			BLM	Private	State
1	03/01 – 03/20	Cattle	468	735	0
2	11/01 – 02/28	Cattle	126	511	0
3	03/1 - 02/28	Cattle and Horses	61	476	0
4	03/01 – 03/31	Cattle	145	124	498
5	10/15 – 11/15	Cattle	911	1,117	136

[6] Modifications could include seasons of use, rotations, or livestock numbers in specified fields.

Pasture	Season of Use	Livestock Kind	Acres		
			BLM	Private	State
6	05/15 – 06/15, fall trailing	Cattle	367	1,523	0

2.3.5.5 Montini

Alternative D would renew the livestock grazing permit in the Montini Allotment for 140 AUMs by cattle from November 1 through March 15 (Table 2.33). This allotment would no longer be classified as fenced federal range (FFR). FFR classification is more appropriate for allotments with a majority of private land. However, public acres are well over half the allotment area (Table 1.2). One water haul site would be authorized in Pasture 1. Hay feeding would not be authorized.

Table 2.33 - Alternative D: Montini FFR Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Sierra Del Rio (1100242)	31[1]	Cattle	11/01-03/15	100%	140	0	140

[1] Number of livestock may vary annually, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

2.3.5.6 Murphy FFR

Alternative D would renew the livestock grazing permit for the Murphy FFR Allotment for 5 AUMs of cattle use. The season of use would be restricted to November 1 through March 31.

Table 2.34 - Alternative D: Murphy FFR Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock Co. (1101423)	1[1]	Cattle	11/01-03/31	100%	5	0	5

[1] Number of livestock may vary annually, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

2.3.5.7 Terms and conditions for livestock grazing authorization under Alternative D.

The following tables (1-4) present the mandatory and other terms and conditions as they would be appear on the livestock grazing permits.

Terms and conditions of the grazing permit for the Joyce Livestock Co. on Fossil Butte, Con Shea, Joyce FFR, and Murphy FFR allotments under implementation of Alternative D – Preferred Alternative.

Allotment	Livestock		Season of Use		% PL	Type Use	AUMs
	Number	Kind	Begin	End			
00535 Fossil Butte	209	Cattle	11/01	02/28	94	Active	776
00571 Con Shea	242	Cattle	11/01	02/28	100	Active	953
00487 Joyce FFR	7	Cattle	03/01	02/28	100	Active	80
	4	Horse	03/01	02/28	100	Active	44
00486 Murphy FFR	1	Cattle	11/01	03/31	100	Active	5

1. Grazing use will be in accordance with the Final Decision of the Owyhee Field Manager dated _____.
2. Livestock grazing exclosures located within your grazing allotment(s) are closed to all domestic grazing use.
3. You are required to properly complete, sign, and date an actual grazing use report form (4130-5) for each allotment. The completed form(s) must be submitted to this office within 15 days from the last day of your authorized annual grazing use.
4. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter mile away from any riparian area, spring, stream, meadow, aspen stand, playa, special status plant population, or water development.
5. Trailing activities must be coordinated with the BLM prior to initiation. A trailing permit or similar authorization will be required prior to crossing public lands.
6. Range improvements must be maintained in accordance with the cooperative agreements and range improvement permits in which you are a signator or assignee.
7. Livestock grazing will be in accordance with your allotment grazing schematic(s). Changes in scheduled pasture use dates will require prior authorization.
8. 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. 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
9. Pursuant to 43 CFR 10.4(B) you must notify the BLM Field Manager, by telephone with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) 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.

ALLOT NO CONDITIONS

ID 00487 The permittee will be required to meet with the BLM prior to each grazing year in order to determine turnout dates(s) and location(s) and the overall management of livestock within Pasture 3 of the Joyce FFR Allotment. Annual meetings will determine if changes in annual authorizations are required either by request of the permittee, or at the discretion of the BLM. Such modification must be in accordance with the ten-year grazing permit.

Terms and conditions of the grazing permit for Nick Nettleton for the Fossil Butte Allotment under implementation of Alternative D – Preferred Alternative.

Allotment	Livestock		Grazing Period		% PL	Type Use	AUMs
	Number	Kind	Begin	End			
00535 Fossil Butte	84	Cattle	11/01	02/28	100	Active	332

1. Grazing use will be in accordance with the Final Decision of the Owyhee Field Manager dated _____.
2. Livestock grazing exclosures located within your grazing allotment(s) are closed to all domestic grazing use.
3. You are required to properly complete, sign, and date an actual grazing use report form (4130-5) for each allotment. The completed form(s) must be submitted to this office within 15 days from the last day of your authorized annual grazing use.
4. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter mile away from any riparian area, spring, stream, meadow, aspen stand, playa, special status plant population, or water development.
5. Trailing activities must be coordinated with the BLM prior to initiation. A trailing permit or similar authorization will be required prior to crossing public lands.
6. Range improvements must be maintained in accordance with the cooperative agreements and range improvement permits in which you are a signator or assignee.
7. Livestock grazing will be in accordance with your allotment grazing schematic(s). Changes in scheduled pasture use dates will require prior authorization.
8. 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. 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
9. Pursuant to 43 CFR 10.4(B) you must notify the BLM Field Manager, by telephone with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) 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.

Terms and conditions of the livestock grazing permit for Vernon and Kenneth Kershner for the Fossil Butte Allotment with implementation of Alternative D – Preferred Alternative.

Allotment	Livestock		Grazing Period		% PL	Type Use	AUMs
	Number	Kind	Begin	End			
00535 Fossil Butte	56	Cattle	11/01	02/28	100	Active	220

1. Grazing use will be in accordance with the Final Decision of the Owyhee Field Manager dated _____.
2. Livestock grazing exclosures located within your grazing allotment(s) are closed to all domestic grazing use.
3. You are required to properly complete, sign, and date an actual grazing use report form (4130-5) for each allotment. The completed form(s) must be submitted to this office within 15 days from the last day of your authorized annual grazing use.
4. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter mile away from any riparian area, spring, stream, meadow, aspen stand, playa, special status plant population, or water development.
5. Trailing activities must be coordinated with the BLM prior to initiation. A trailing permit or similar authorization will be required prior to crossing public lands.
6. Range improvements must be maintained in accordance with the cooperative agreements and range improvement permits in which you are a signator or assignee.
7. Livestock grazing will be in accordance with your allotment grazing schematic(s). Changes in scheduled pasture use dates will require prior authorization.
8. 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. 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
9. Pursuant to 43 CFR 10.4(B) you must notify the BLM Field Manager, by telephone with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) 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.

Terms and conditions of the livestock grazing permit for Sierra Del Rio for the Sinker Butte and Montini FFR allotments with implementation of Alternative D – Preferred Alternative.

Allotment	Livestock		Grazing Period		% PL	Type Use	AUMs
	Number	Kind	Begin	End			
00578 Sinker Butte	195	Cattle	11/01	02/28	100	Active	771
00654 Montini FFR	31	Cattle	11/01	03/15	100	Active	140

1. Grazing use will be in accordance with the Final Decision of the Owyhee Field Manager dated _____.
2. Livestock grazing exclosures located within your grazing allotment(s) are closed to all domestic grazing use.
3. You are required to properly complete, sign, and date an actual grazing use report form (4130-5) for each allotment. The completed form(s) must be submitted to this office within 15 days from the last day of your authorized annual grazing use.
4. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter mile away from any riparian area, spring, stream, meadow, aspen stand, playa, special status plant population, or water development.
5. Trailing activities must be coordinated with the BLM prior to initiation. A trailing permit or similar authorization will be required prior to crossing public lands.
6. Range improvements must be maintained in accordance with the cooperative agreements and range improvement permits in which you are a signator or assignee.
7. Livestock grazing will be in accordance with your allotment grazing schematic(s). Changes in scheduled pasture use dates will require prior authorization.
8. 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. 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
9. Pursuant to 43 CFR 10.4(B) you must notify the BLM Field Manager, by telephone with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) 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.

2.3.6 Alternative E – No Grazing

Under Alternative E, no grazing would be authorized on public lands within the Fossil Butte, Con Shea, Sinker Butte, Joyce FFR, Murphy FFR, or Montini FFR allotments for a term of 10 years. Applications for grazing permit renewal would be denied and no grazing permits would be offered. All associated AUMs (active and suspended) would be unavailable for livestock grazing on public lands. Upon expiration of the 10-year term, livestock grazing on the allotment(s) would be reevaluated, with retention of preference (priority for grazing authorization) for the approval of application(s) for grazing permit(s) attached to current base property(s).

2.3.7 Alternative F – Joyce FFR Fall/Winter Use

Alternative F applies only to the Joyce FFR Allotment. Under Alternative F, BLM would renew one permit to graze livestock within the Joyce FFR Allotment. A total permitted use of 124 AUMs of fall/winter use would be authorized for cattle and horses (Table 2.25). The allotment would have 6 designated pastures, including the former Pasture 3 from the Con Shea Allotment.

Table 2.35 - Alternative C: Joyce FFR Permitted Use

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Number	Kind			Active	Suspended	Permitted
Joyce Livestock Co. (1101423)	20[1]	Cattle	11/01 – 02/28	100%	80	0	80
	11[1]	Horses	11/01 – 02/28	100%	44	0	44
Total AUMs					124	0	124

[1] Number of livestock may vary annually, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Affected Environment Common to All Allotments

3.1.1 Vegetation, including Noxious Weeds

Upland Plant Communities
Appendix C contains a table of all plant names (common and scientific) and codes used in this document. Only common names will be used within the body of this EA.

Two ecological sites account for approximately 70 percent of the Fossil Butte Group area; the remaining 30 percent is made up of several different ecological sites. In each ecological site, the expected vegetation is a co-dominance of shrubs and native perennial bunchgrasses. The common ecological sites in order of dominance are:

- Calcareous Loam 7-10" shadscale-bud sage/Indian ricegrass-Thurber's needlegrass (44% of total area)
- Loamy 8-12" Wyoming big sagebrush/bluebunch wheatgrass-Thurber's needlegrass (26% in total area)
- Sandy Loam 8-12" Wyoming sagebrush/Indian ricegrass (7% of total area)
- Saline Bottom 8-12" greasewood/basin wildrye (4% of total area)
- Loamy 10-13" Wyoming sagebrush/bluebunch wheatgrass (1 % of total area)
- Shallow Claypan 12-16" low sagebrush/Idaho fescue (1% of total area)
- Shallow Claypan 11-13" low sagebrush/bluebunch wheatgrass (1% of total area)

Besides the broad ecological sites, smaller unmapped inclusions in the area consist of:
- Riparian areas and water bodies
- Rock outcrops, bluffs, buttes, or cliffs
- Naturally barren openings (such as ash outcrops) (Corbin 2013).

The existing plant communities in the Fossil Butte Group allotments have often been altered from what would be expected on the ecological site, as a result of a number of change agents over the years. Change agents include livestock grazing, wildfire, invasion by exotic plants, and roads/trails/off-highway vehicle activity. Disturbance from these change agents combine to compound with each other, creating cumulative and synergistic effects on vegetation from multiple stressors, in some cases resulting in crossing thresholds that preclude natural recovery. Within the Fossil Butte Group allotments, there has been limited recovery from these disturbances due to the generally low precipitation zone, lack of seed sources for large perennial grasses (once eliminated or highly reduced), and continuing invasive exotic plant competition.

Historic grazing impacts to vegetation in the Fossil Butte Group allotments area began during the Oregon Trail time period, with large numbers of stock animals herded through the area, and continued into the early settlement era of unregulated grazing. The Taylor Grazing Act of 1934 began to regulate livestock use, and grazing management has improved over the years with implementation of FLPMA, NEPA, Idaho S&Gs, the ORMP, and SRBOP RMP. Effects of past, both historic (more than 20 years ago) and more recent times, grazing are still evident. Current grazing is defined as grazing management since the last Determination of Idaho S&Gs before the current (2013, except for Murphy FFR) Determination.

Based on historical descriptions, past livestock grazing in the general area included season-long use at high stocking rates. As a result of past livestock grazing practices and wildfire, preferred forage species, particularly large bunchgrasses like bluebunch wheatgrass, Idaho fescue, Thurber's needlegrass, and Indian ricegrass and the diversity of forbs, has been highly reduced in many areas. In most cases, the large bunchgrasses have been replaced by the low-stature native perennial Sandberg bluegrass and/or the invasive non-native annual grass - cheatgrass. The rich diversity of native mostly perennial forbs (e.g. milkvetch, fleabane, desert parsley) has often been replaced by cheatgrass, or non-native weedy annual forbs such as Russian thistle, tumble-mustard, or clasping pepperweed. Heavy past livestock grazing has also resulted in a reduction in microbiotic soil crusts, which has affected both the plant community and watershed/soil processes. Livestock congregation points or concentrated use areas such as near riparian areas, troughs, water haul sites, salting grounds, or along fence-lines have left vegetation especially altered.

Invasive exotic plants are extensive across the allotments. The primary exotic species is cheatgrass, which, in this area, is commonly co-dominant with Sandberg bluegrass and/or sagebrush or salt desert shrubs and forms nearly pure patches in some limited low elevation areas. Other invasive plants common throughout the area include the broadleaf (forb) annuals Russian thistle, tumble-mustard, bur buttercup, clasping pepperweed, and halogeton. Non-native annual weeds like prickly lettuce and yellow salsify are widespread but not abundant within the area (noxious weeds in these allotments are discussed below).

Wildfire has affected extensive portions of some of these allotments between the 1980s and 2012, particularly low elevation areas in Con Shea and Sinker Butte allotments. These wildfires removed the shrub canopy, and there has been very little shrub recovery from the earlier fires due to the low precipitation zone, competition with invasive annuals and seeded grasses. Large burned areas in the 1980s were typically seeded with a combination of crested wheatgrass, Russian wildrye, and fourwing saltbush. Although not all seedings have been successful, crested wheatgrass in particular established in a couple of pastures. Much of the seeded area from 1980s fires re-burned in 2012. Although fire is a natural disturbance in these systems, the increased fire frequency in some areas and invasive annual grasses have the altered post-fire communities from what would be expected under reference conditions. The plant communities now are dominated by Sandberg bluegrass, cheatgrass, and crested wheatgrass rather than the bluebunch wheatgrass and Sandberg bluegrass expected after a fire.

Motorized traffic, especially on off highway vehicle (OHV) trails, has removed or altered the native vegetation on and adjacent to trails. This physical disturbance to vegetation and soils increase bare ground and erosion, and the roads and trails act as vectors for the introduction and spread of invasive and noxious weeds.

Biological Soil Crusts

Biological soil crusts are an important component of many ecological sites in the Fossil Butte Group area. They function as living mulch by retaining soil moisture and discouraging annual weed growth. By occupying interspatial areas between larger plants, these crusts reduce wind and water erosion, and enhance soil stability, soil moisture retention, and site fertility by fixing atmospheric nitrogen and contributing soil organic matter (Belnap et al. 2001, Belnap and Gillette 1998). See individual allotment descriptions for particular biological soil crust conditions.

Noxious Weeds

Several species of invasive weeds listed as noxious by the state of Idaho are present in the Fossil Butte Group allotments (Table 3.1). Noxious is a legal designation given by the Director of the Idaho State Department of Agriculture to any plant having the potential to cause injury to public health, crops, livestock, land or other property (Idaho Statute 22-2402).

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 also developed partnerships known as Cooperative Weed Management Areas with Federal, state, county, and private organizations to cooperatively combat noxious weeds across ownership boundaries.

Table 3.1 - Noxious Weeds within the Fossil Butte Group Area

Common Name	Scientific Name	Idaho Category	Lifeform	Typical Habitat
Canada thistle	*Cirsium arvense*	Containment	Rhizomatous perennial	Riparian or seasonally wet areas
Perennial pepperweed	*Lepidium latifolium*	Containment	Rhizomatous perennial	Riparian, seasonally wet, or swale areas
Puncturevine	*Tribulus terrestris*	Containment	Annual	Dry, open upland soil
Purple loosestrife	*Lythrum salicaria*	Containment	Rhizomatous perennial	Riparian areas
Rush skeletonweed	*Chondrilla juncea*	Containment	Rhizomatous perennial	Dry, open upland soil
Russian knapweed	*Acroptilon repens*	Control	Rhizomatous perennial	Swales to drier uplands
Russian olive	*Elaeagnus angustifolia*	*	Shrub/tree	Riparian, seasonally wet, or swale areas
Salt cedar	*Tamarix spp.*	Containment	Shrub/tree	Riparian, seasonally wet, or swale areas
Scotch thistle	*Onopordum acanthium*	Containment	Biennial	Seasonally wet, swale, to drier upland areas
Whitetop	*Cardaria draba*	Containment	Rhizomatous perennial	Seasonally wet, swale to somewhat drier areas

*Not a noxious weed, but included because it is a high priority for control within the Boise District.

Indicators

Indicators are identified that would provide comparison between alternatives and would indicate substantial effects on vegetation in order to help display effects. Indicators were chosen because they show grazing management effects relating to plant vigor, plant reproduction, soil nutrient and water cycling and availability, and plant community composition. See the Vegetation Specialist Report (Corbin 2013). The quantity or condition of all indicators for each alternative is described to address direct and indirect effects for each allotment. The direct and indirect effects of each alternative are then considered additively with effects of other activities to describe cumulative effects.

Table 3.2 - Indicators for upland vegetation, weeds, and Special Status Plants for the Fossil Butte Group

Factor	Indicator(s)	Rationale
Season of use	Dates	Critical growing period; residual vegetation for snow capture; reproduction/seed set; soil effects (compaction, churning); species selection/palatability
Duration of use	Days per pasture	Re-grazing and recovery time effects on plant vigor
Frequency of use	Times used per year; times used per decade; times used during growing season per decade	Re-grazing effects on plant vigor; incorporation of rest or deferment

Factor	Indicator(s)	Rationale
Intensity of use	Total AUMs; acres/AUM; utilization	Plant vigor, reproduction; species composition; physical disturbance, trampling (plant displacement, breakage, soil crusts, ground-nesting pollinators); ground cover (weeds); nutrient cycling. Also affected by condition of range/forage availability.
Use distribution	Number and placement of water sources	Overuse of some areas; identification of key areas. Also affected by topography and size of pasture.
Weed introduction	Number of cattle	Weed seed introduction potential

The season of use (dates used) is an important indicator relating to plant phenology and ability to recover from grazing. The following table shows grazing period factors for the Fossil Butte Group area.

Table 3.3 - Grazing Period Factors for the Fossil Butte Group Area

Grazing Period Term	Approximate Timeframe (+/- up to 2 weeks on either end)	Factors Influencing Timeframes (temperature, precipitation, and elevation driven)
Early Season	Early March	Post dormant season; begins when some green growth is evident; much of available forage is from previous year's residual growth; dates driven by warming temperatures and precipitation timing and amount.
Critical Growing Period	Mid March to early June	Period of most active growth, when plant is most sensitive to water deficit or defoliation; apical meristem (site of actively growing tissue) is elevated; occurs just prior to boot stage through flowering.
Non-critical Growing Period	Mid June through early July	Period between the end of the critical growing period and the beginning of the hot season; occurs after most active plant growth, but before maturity and seed set.
Hot Season	July to September	Period of maturity to senescence (the plant growth phase from full maturity to death or dormancy); timeframe determined by duration of high temperatures; can be modified by precipitation amount and duration; period where cattle seek riparian areas because of cooler temperatures and because upland plants are senescing.
Regrowth	October	Root and shoot regeneration occurs at this time; regrowth of root material because of increased water availability and moderate temperatures; influenced by variability in daytime high and nighttime low temperatures and fall moisture availability.
Dormant Season	November to February	Period of non-growth characterized by low soil temperature and water availability; low soil and plant biological activity due to temperature.

The next table lists annual and monthly average temperatures and precipitation at Swan Falls Dam, the closest weather station (2,850 feet elevation, from 0.2-20 miles from the Fossil Butte Group allotments), indicating the temperature and precipitation combinations that influence the above grazing periods.

Table 3.4 - Climate Data at Swan Falls Dam (based on Weatherbase.com for 76 years of data, accessed 9/11/2013)

Parameter	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature (ºF)	55.2	32.7	38.9	46.2	53.9	62.8	70.6	79.8	77.7	67.7	55.8	42.5	34.1
Average Precipitation (inches)	7.9	0.8	0.6	0.8	0.9	1.1	0.8	0.2	0.2	0.4	0.5	0.8	0.7

Parameter	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average No. of Days above 90ºF	73.9	-	-	-	0.2	3.8	11	25.6	23.6	9.5	0.3	-	-
Average No. of Days below 32ºF	98.5	24.6	18.6	11.5	2.7	0.2	-	-	-	0.1	2.4	14.7	23.7

3.1.2 Soils

The scope of the project area consists of all pastures within the 6 allotments that are identified in Chapter 1. Rangeland health was evaluated using resource indicators as defined in the Idaho S&Gs. The assessment of the current situation (Standards 1-3 and 7) are based on a comparison of various field observations within the period from 2001 and 2013. Field evaluations were used to develop a baseline and comparison of rangeland conditions for the affected area. This description of current condition will focus the analysis of environmental consequences to a comparison between alternatives.

This analysis addresses the affected environment that is relevant to the Idaho S&Gs. The analysis uses the methods described herein to assess the conditions of Watersheds (Standard 1), Riparian Areas and Wetlands (Standard 2), Stream Channel/Floodplain (Standard 3), and Water Quality (Standard 7). Table 3.5 identifies the standards that are carried forward through this analysis. The watersheds are defined in Table 3.6 and watershed health is evaluated based on project activities on lands within BLM jurisdiction. The riparian areas associated with this analysis include only a section of Fossil Creek that is less than two miles in length and three[7] sections of Sinker Creek that total about three miles (1 mile within Con Shea, 1 mile within Sinker Butte, and 0.75 miles within Montini FFR). Because the stream channels/floodplains relevant to this analysis are functioning and meet standards (Table 1.1), Standard 3 is evaluated as it directly relates to the condition of riparian areas and wetlands (Standard 2). Water Quality discussions will only be evaluated for Sinker Creek and Fossil Creek and will not be evaluated for the Snake River for two reasons. The access for livestock to the Snake River is extremely limited due to bluffs, steep terrain, and fencing. There is no connectivity between the Snake River and the two perennial reaches of Sinker Creek and Fossil Creek. This absence of a connection between the Snake River and its two tributaries within the project area eliminates the contribution of pollutants of concern. Table 3.5 focuses the project analysis to the four Standards related to the soils and watershed resources.

Field assessments were completed between 2001 and 2013 for these allotments. In 2012, the Owyhee Field Office interdisciplinary team (IDT) conducted field evaluations of indicators ("Rangeland Indicators", per Pellant et al. 2005) to update the previous evaluations and determinations. These field assessments were combined with qualitative assessments completed in 2013 to validate riparian conditions and connectivity between Sinker Creek and the Snake River. The affected environment defines the baseline for which environmental consequences will be evaluated.

The effects of continued livestock grazing on soils are influenced by the complex interaction between soil texture, soil moisture, slope, vegetative cover, and degree of use by livestock. Impacts to the soil resource from grazing activities include compaction (Wheeler 2002), soil surface disturbance, and disruption or destruction of physical or microbiotic soil crusts (Memmott1998), which can result in soil erosion.

Compaction from livestock grazing activities would result in an increase in bulk density and soil strength; a decrease in water infiltration (Abdel-Magid1987) and an increase in resistance to root penetration (McIlvanie1942). Compaction effects would occur around water troughs and water gaps, near salting

[7] The 0.1 mile section of riparian area within the Joyce FFR has been discounted because of the stream alteration and influence of adjacent private lands making it impossible for BLM to improve through livestock management.

areas, near gates used to move cattle to other pastures or off the allotment, and along repeatedly used trails or crossing locations (such as along some fence lines or other areas repeatedly walked along by cattle). In these areas, reductions in plant available water and increased resistance to root penetration would diminish the soil's ability to support vegetation. The depth to which compaction occurs is dependent on soil texture, organic matter content, and moisture content. Soil compaction can occur to depths of 15 cm in moist riparian soils (Wheeler 2002) and at least to 5 cm in drier upland soils (Abdel-Magid 1987). However, frost action during the winter months can restore natural bulk density, particularly in riparian areas (Wheeler 2002). This freeze-thaw action promotes soil stability by decreasing compaction, reducing evidence of hoof action and hoof prints, and increasing surface area and safe sites for seed germination and vegetative establishment. This would occur mainly in riparian-spring areas, as spring and fall diurnal temperatures begin to fluctuate more widely.

Surface disturbance that disrupts or destroys physical or microbiotic soil crusts could lead to erosion by wind or water. Erosion of the soil surface following disturbances would remove the litter layer and potentially portions of the A horizon. Of the entire soil profile, the litter layer and the A horizon contain the greatest amount of organic matter that is the source of available plant nutrients (Neff 2005). Alterations to the nutrient cycle via erosion can reduce plant community productivity and create conditions which are conducive to the introduction of non-native species (Kourtev 2002). These types of effects would be greatest near concentrated use areas and would decrease as distance from the use area increases.

Livestock grazing, particularly over-grazing, can lead to a reduction of soil structure, soil compaction, less soil-water storage, accelerated soil erosion, and damage or loss of vegetative cover. Roberson (1996) identifies that excessive surface soil erosion has profound effects on soil productivity and riparian function and processes. This can lead to changes in the composition of riparian species from plants with deep soil-holding roots to less desirable, shallow-rooted species. Loss of streamside vegetation can increase stream temperature, and decrease sediment filtration capability. Soil compaction, changes to riparian vegetation, and channel widening or down cutting can cause changes to water infiltration, retention, and base flows. These conditions can cause less water to be available to instream habitat during low flow conditions.

Table 3.5 - Standards Evaluated for Watershed, Riparian, and Water Quality

Rangeland Health Standard	Evaluated; Allotment	Watershed Name	Miles or Acres
#1 - Watersheds	Yes; All Allotments	Castle Creek	198,028 acres
		Swan Falls-Snake River	207,032 acres
		Rabbit Creek-Snake River	197,164 acres
#2 – Riparian Areas & Wetlands	Yes; Con Shea, Montini, Sinker Butte Allotments	Fossil Creek	Up to 2 miles
		Sinker Creek	Up to 3 miles
#3 – Stream Channel/Floodplains	Yes; Con Shea, Montini, Sinker Butte Allotments	Fossil Creek	Up to 2 miles
		Sinker Creek	Up to 3 miles
#7 – Water Quality	Yes; All except Joyce FFR	Fossil Creek	Up to 2 miles
		Sinker Creek	Up to 3 miles

Soils information for the planning area was obtained from the USDA Natural Resources Conservation Service (NRCS) soil surveys for Owyhee County Area, Idaho (published 2003). This information was used to evaluate the capability of the soils to produce the vegetation necessary to support land use activities such as grazing.

Because soils are integral to the health and function of watershed and riparian health, they will be evaluated as an indicator to the rangeland health standards. Based on data collected and field observations, soils within the allotments are compacted with observed pedestalling (refer to vegetation report). These factors probably contribute to most of the current accelerated erosion problems are in the form of water flow patterns. The amount of bare ground (climatically dependent) and the condition of the vegetative community are the main concerns in many parts of these allotments.

3.1.3 Riparian/Water Quality

The scope of the analysis for direct and indirect effects is bounded by the project area and those streams downstream from the project area, wherever connected by annual streamflow. The scope of cumulative effects will include the areas of three watersheds (4th Field Hydrologic Unit Code (HUC)) that total about 200,000 acres each (Table 3.6). The beginning of the Soils Section (3.1.2) describes methods used to evaluate the affected environment for Standards 1-3 and 7. For perspective, the project can be described as containing about 11 percent of the total length of stream miles (perennial and intermittent) within the contributing watershed area or 602,224 acres draining to the Snake River. Only 9 percent of the total stream miles in the project area are managed by the BLM. These project stream miles include an estimated 3 miles of perennial stream and 133 miles of intermittent stream. Castle Creek, Fossil Creek, and Sinker Creek are considered the major streams within the project area and contributing watersheds. The combined project area of 76,002 acres is about 13% of the total watershed area defined in the table below.

Table 3.6 - Summary of Watershed Area as Scope of Analysis

Watershed Name	Area (acres)
Castle Creek	198,028
Swan Falls-Snake River	207,032
Rabbit Creek-Snake River	197,164
Total Area	**602,224**

Riparian-wetland areas are some of the most productive resources found on public and private lands (USDI-BLM, 1997). Riparian ecosystems have two important components: 1) woody vegetation for shade, cover, and streambank protection; and 2) the streambanks themselves, often called the “greenline,” with their protective herbaceous plant community. Riparian-wetland vegetation should also control erosion, stabilize streambanks, provide shading, filter sediment, aid floodplain development, dissipate energy, delay flood water, and increase groundwater recharge. Proper Functioning Condition (PFC) is a qualitative method for assessing the condition of riparian-wetland areas. The term PFC is used to describe both the assessment process, and a defined, on-the-ground condition of a riparian-wetland area (USDI-BLM, 1997). The BLM utilizes PFC as the primary indicator for riparian-wetland habitats (Standards 2 and 3).

Grazing can compact channel substrates important for fish spawning, collapse undercut banks, and destabilize streambanks through a localized reduction or removal of herbaceous and woody vegetation within riparian areas (Platts 1995). Increased sedimentation from grazing, particularly streambank trampling, can lead to increased bank erosion and channel widening (Agouridis et al. 2005). If delivered in sufficient quantities, grazing-related sedimentation can fill interstitial spaces in stream bed material, impede water flow through spawning redds, reduce dissolved oxygen levels, and restrict removal of wastes from redds. These conditions occasionally lead to increased embryo and fry mortality (Bjornn and

Reiser 1991). Sedimentation, especially in low-gradient channels, can also lead to the filling of rearing habitat (e.g., pool, glides, etc.).

Water quality varies with the time of year and the extent of human influence. In 1998, the Idaho Department of Environmental Quality (IDEQ) in conjunction with Idaho BLM assessed water quality and identified a state-wide list ("303(d)" list) of water quality-limited streams and water bodies on Idaho public lands in response to Section 303(d) of the Clean Water Act. Assessment of water quality on public lands managed by the BLM is based on meeting beneficial uses with regards to stream/riparian habitat and using biological species as indicators. The most recent 303(d) list was published in 2011 (IDEQ, 2011). In addition, IDEQ published the Mid Snake River/Succor Creek Subbasin Assessment and Total Maximum Daily Load in 2003. This Subbasin Assessment describes the project area streams, their beneficial uses, and the pollutants of concern (IDEQ 2003).

Streams with designated beneficial uses are addressed under the Idaho Administrative Procedures Act (IDAPA) 16.01.02.140. The Snake River along with two tributaries, Sinker Creek and Fossil Creek, are in the Mid-Snake River/Succor Creek sub-basin (hydrologic unit number 17050103).

Fossil Creek does not have a surface connection with the Snake River and therefore does not contribute to the water quality of the Snake River. Fossil Creek has not been assigned specific beneficial uses by IDEQ, nor has any water quality been evaluated. Presumed beneficial uses for Fossil Creek include agricultural water supply, wildlife habitat, and aesthetics.

IDEQ identified Sinker Creek as providing beneficial uses for agricultural water supply, wildlife habitat, and aesthetics (IDEQ 2008). The identified pollutants of concern are flow alteration, temperature, and sediment. Portions of these segments are on public lands managed by the BLM. Sinker Creek is perennial except in extreme drought years. However, the stream goes dry near the mouth due to flow diversions (IDEQ 2003). As validated by the BLM again in May of 2013, Sinker Creek has no surface connection with the Snake River.

With regard to Standard 7 (Water Quality), if the allotment contained a segment IDEQ listed as "Impaired," the allotment was determined to be "Not Meeting" the standard. It was further determined whether actions related to the allotment were contributing factors to the limited water quality. Findings indicated that some of the impacts could be attributed to grazing activities on public lands managed by the BLM; however, most of the observed site impacts could not be attributed to current grazing systems.

Grazing activities on public lands managed by the BLM in the project area have impacted water quality to varying degrees by decreasing deep-rooted riparian vegetation, destabilizing stream banks/channels, increasing sediment into streams and increasing water temperatures. Some of the stream segments in the project have been listed as water quality-limited, mostly from activities not on public land or from past activities and events that have dewatered the streams with diversions and gullying. In most cases, this is the result of water supplying agricultural uses.

BLM's evaluation of all of the related data recognizes that where there is perennial flow in Fossil Creek, there are obligate hydric plants throughout the riparian area sufficient to reduce erosion. However, the majority of Fossil Creek is either intermittent (lower reaches) or ephemeral (upper tributaries) and is not considered to exhibit riparian characteristics. There is a small reach as described above that has been identified as a riparian area. This reach is slightly greater than 1.4 miles in length. This reach is entirely

controlled by irrigation runoff as its source and is then dewatered again at its lowest extent[8]. This irrigation is not the management responsibility of the BLM and therefore, the BLM has no control over the long-term health of the riparian system. Fossil Creek was not part of a determination regarding livestock use within a fully functioning riparian area. However, because this reach receives "flow" and functions as a riparian area, it is expected to provide some degree of riparian-obligate wildlife habitat.

Riparian areas include approximately 6 miles of the Snake River and 1.05 miles of Sinker Creek and less than 2.4 miles of Fossil Creek. The Snake River flows east to west and is the east border of the Sinker Butte Allotment. Livestock have limited access to the Snake River due to bluffs, steep terrain, and fencing. Consequently, livestock have little effect on riparian and channel morphology and the Snake River is not analyzed for Standards 2 and 3.

3.1.4 Special Status Plants

Special status species are defined as species listed or proposed for listing under the Endangered Species Act (ESA) and species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. The BLM State Director designates BLM sensitive plants. BLM special status plants (SSPs) are assigned a status (from Type 1 to 4) based on risk of extinction, population size, distribution, and trend, using the following definitions (USDI-BLM 2012a). Type 1 plants are at greatest risk; Types 2-4 are at lower risk.

Twelve species of special status plants are known to exist within the Fossil Butte Group allotments, based on information from Idaho Fish and Game's Idaho Fish and Wildlife Information System (IFWIS) and BLM records. Information on each species' BLM status, life form, and habitat is given in Table 3.7. More specific information regarding which species occur in each pasture and allotment is in the allotment-specific section.

Table 3.7 - Special Status Plants in the Fossil Butte Group Allotments

Species	BLM Status	Life Form	Habitat Description
Mulford's milkvetch *Astragalus mulfordiae*	Type 2	Perennial	South-facing sandy slopes and ridges
Malheur prince's plume *Stanleya confertifolia*	Type 2	Biennial	Sparsely vegetated, often ashy, clay soil
Stiff milkvetch *Astragalus conjunctus*	Type 4	Perennial	Rocky hillsides, ridges, or benches with sagebrush and bunchgrasses
Snake River milkvetch *Astragalus purshii* var. *ophiogenes*	Type 4	Perennial	Sand or gravel on bluffs, dunes, or ash beds
Desert pincushion *Chaenactis stevioides*	Type 4	Annual	Open, sandy areas
Malheur cryptantha *Cryptantha propria*	Type 4	Perennial	Rocky, gravelly, or clay outcrops
Shining flatsedge *Cyperus bipartitus*	Type 4	Annual	Streambanks, wet, low places
White eatonella *Eatonella nivea*	Type 4	Annual	Sandy or volcanic soils often with sagebrush
Cowpie buckwheat *Eriogonum shockleyi* var.*packardaei*	Type 4	Perennial	Gravelly benches on lakebed sediments in shadscale and mixed desert shrub communities

[8] This reach of Fossil Creek has riparian qualities, however, it relies on irrigation overflow from the "Rye Patch". Agricultural irrigation historically drained enough water to flow through Fossil Creek for about 2.4 miles until the water was removed again for irrigation. Since the installation of a sprinkler system on the agricultural land, the streamflow no longer reaches the second irrigation diversion.

Species	BLM Status	Life Form	Habitat Description
White-margined wax plant *Glyptopleura marginata*	Type 4	Annual	Sandy-gravelly or loose ash soils in salt desert shrub communities
Rigid threadbush *Nemacladus rigidus*	Type 4	Annual	Open sandy or cindery soil
Turtleback *Psathyrotes annua*	Type 3	Annual	Sandy, well drained soils in salt desert shrub communities

Occurrence records for these species in the Fossil Butte Group allotments date from about the 1970s to 2013, but few occurrences have been visited or monitored in recent years. Some of the records are historic (over 20 years old) and with non-specific locations, so occurrences have been mapped with a large radius; the plants may or may not actually occur within a portion of that large circle in the allotment or pasture.

The milkvetches, cryptantha, and annual SSP (besides shining flatsedge) are most sensitive to disturbance in spring through early summer, while shining flatsedge is most sensitive late spring throughout the summer. Cowpie buckwheat and Malheur prince's plume are sensitive to disturbance year-round.

There are no ESA-listed, proposed, or candidate plants known or expected within the affected area. Although slickspot peppergrass (*Lepidium papilliferum*), listed as proposed under ESA, occurs in eastern Owyhee County, it has not been documented in the Owyhee Field Office area (USDI-USFWS 2010a), nor has critical or potential habitat (as mapped by Boise District BLM) been identified in the affected area; thus, this species will not be addressed further.

In general, special status plants and their habitats are threatened by invasive and noxious weeds, an altered fire regime (more frequent or infrequent than what the plant or community is adapted to), OHV traffic, lack of pollinators, trampling, and herbivory. Habitat for these special status plants is generally open microsites or areas, and they are easily outcompeted for water, light, and nutrients by invasive weeds such as cheatgrass. Livestock management effects on special status plants depend on the season, intensity, and duration of use in occupied habitat.

3.1.5 Wildlife and Special Status Animals

Wildlife Habitat

The dominant upland wildlife habitats within the Fossil Butte Group allotments include sagebrush steppe, native and annual grasslands, and sparsely vegetated rocky outcrops and canyons. Riparian/wetland wildlife habitats are limited in abundance and extent and include woody and herbaceous riparian areas along perennial and intermittent streams, the Snake River, and around springs, seeps, and reservoirs.

Recent and historical wildfires have modified wildlife habitats extensively within portions of the Fossil Butte Group allotments. Most of these burned areas have not recovered and are currently comprised of either exotic annual grasslands (i.e., cheatgrass) or early-seral rabbitbrush communities. These disturbed and altered vegetation communities either do not, or only marginally, meet the habitat requirements of most wildlife species.

Wildlife Species

Many wildlife species utilize a variety of habitats in the Fossil Butte Group allotments. These habitats provide forage, nesting substrate, and cover for a variety of bird, mammal, amphibian, reptile, and fish species common to southwestern 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 Bureau of Land Management (BLM) places management emphasis.

No Threatened or Endangered species listed under the Endangered Species Act (ESA) occur in the Fossil Butte Group allotments. However, the Snake River physa snail is listed as Endangered under the ESA and occurs in the Snake River immediately adjacent to portions of the Fossil Butte Group allotments. BLM, U.S. Fish & Wildlife Service (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, and 2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA (USDI-BLM 2008b), which are designated as sensitive by the BLM State Director. Special status wildlife species discussed in this document include those listed on the Idaho BLM State Sensitive Species List and those afforded protection under the Bald and Golden Eagle Protection Act (BGEPA) that could potentially occur within the allotments and may be affected by livestock grazing.

One bird listed as a candidate under the ESA. Seven mammals, 13 birds, three reptiles, three amphibians, two fish, and one invertebrate with special status could potentially occur within the Fossil Butte Group allotments. Common and scientific names of special status wildlife species, their status, and occurrence potential within each allotment are summarized in Appendix D.

Focal Special Status Animal Species

With the exception of a few well-studied species, current occurrence and population data for most special status animal species within the Fossil Butte Group allotments are limited. Therefore, only a few focal special status animal species will be discussed in detail individually. These species include the Snake River physa snail, greater sage-grouse, yellow-billed cuckoo, Columbia spotted frog, pygmy rabbit, and Columbia River redband trout.

The USFWS has listed the Snake River physa as Endangered under the ESA. The USFWS has also determined that the greater sage-grouse, yellow-billed cuckoo, and Columbia spotted frogs warrant listing under ESA (candidate species) but listings have been precluded due to higher priorities. Idaho BLM has determined that pygmy rabbit and Columbia River redband trout are imperiled globally and range-wide (i.e., BLM Type 2 sensitive species). These species will be discussed in greater detail because they occur or could possibly occur within the Fossil Butte Group allotments, and they have been the subject of targeted surveys and periodic species-specific monitoring studies.

The focal species concept provides a link between single- and multi-species methods of wildlife conservation and management (Mills 2007). Focal species serve as a set of species which define the characteristics of different spatial and compositional landscape attributes necessary for functional and healthy ecosystems (Caro & O'Doherty 1999). In short, because they are sagebrush obligates, sage-grouse and pygmy rabbits function as surrogates for sagebrush communities and associated vertebrates (Rowland et al. 2006), while spotted frogs and redband trout serve as coarse proxies for the relative integrity of lentic and lotic systems respectively (Reaser 1996) (Thurow et al. 1997). Other special status animal species, migratory birds, raptors, and species of socioeconomic importance (e.g., big game) will be included in a general discussion by taxonomic groupings.

Description of the current condition of species and their habitats are based on the 2007 and 2013 Evaluations and Determinations, best available GIS data, personal observation, and consultation with local wildlife professionals.

<u>Snake River physa</u>

The Snake River physa snail (*Physa natricina*) is a freshwater mollusk found in the middle Snake River of southern Idaho, with limited specimens recorded from a single major tributary. It has an ovoid shell that is amber to brown in color, and has 3 to 3.5 whorls (curls or turns in the shell). The physa can reach a maximum length of approximately 7 mm. While much information exists on the family *Physidae*, very little is known about the biology or ecology of this species. It is believed to be confined to the Snake River and lower reaches of the Bruneau River, inhabiting areas of swift current on sand to boulder-sized substrate. It is currently listed as an Endangered species under the ESA (USFWS 2013).

In 1995, USFWS reported the known modern range of the species to be from Grandview, Idaho (RM 487) to the Hagerman Reach of the Snake River (RM 573). More recent investigations have shown this species to occur outside of this historic range to as far downstream as Ontario, Oregon (RM 368), with another population known to occur downstream of Minidoka Dam (RM 675). While the species' current range is estimated to be over 300 river miles, the snail has been recorded in only 5% of over 1,000 samples collected within this area, and it has never been found in high densities. The species' status is uncertain within the current known range, but portions of the middle Snake River (e.g., Milner Reservoir, RM 663 to Lower Salmon Falls Reservoir, RM 572) are of questionable habitat value given current water quality and water use issues. The recovery area for the species extends from Snake River RM 553 to Snake River RM 675.

There are currently no planned conservation efforts that target the Snake River physa. While substantial new information has been obtained on the species' distribution and habitat, specifics on its water quality requirements or preferences are lacking, making effective planning difficult. In addition, the Snake River is a highly managed system with multiple anthropogenic influences. For this reason, the conservation needs to facilitate recovery of this species are to ensure that water quality and quantity, as well as habitat quality, are maintained within the Snake River to ensure Snake River physa can maintain viable populations. Water sources contributing to the quantity and quality of the Snake River (e.g., tributaries and aquifers) also need to be maintained, meeting the standards for cold-water biota and remaining free of contaminants and excessive nutrients. Activities that alter benthic habitats within the species' range in the Snake River should be minimized and habitats returned to their pre-project state or improved (USFWS 2011). The Snake River physa locations and potential habitat have been documented within the Snake River upstream, downstream, and immediately adjacent to portions of the Fossil Butte Group Allotments (Figure 3.1).

Fossil Creek and Sinker Creek are the only perennial streams in the Fossil Butte Group Allotments and are the only stream source, in the scope of the analysis, of increased sediment loads to the Snake River. Fossil Creek has limited perennial flow provided by irrigation runoff and all stream flow is diverted at the canal; no water from the drainage reaches the Snake River. Field observations confirmed minimal connectivity between Sinker Creek and the Snake River.

Sinker Creek is listed by IDEQ for excess sediment and temperature levels on streamreaches that extend below Diamond Creek to the Snake River. Streamflow is regulated by Hulet Reservoir and irrigation activity. The presence of the reservoir appears to minimize the scouring effect of extreme flow events (IDEQ 2003).

Sediment surveys of Sinker Creek south of Highway 78 showed little impact to the channel, and thus, to aquatic life from grazing activity. Based on this information, DEQ determined that the majority of sediment delivery was from instream channel erosion in the listed section. Hulet Reservoir, located above the section, effectively acts as a sediment sink for the majority of sediment delivered from upstream (IDEQ 2003).

In 2001, riparian inventories and assessments rated the lower reaches of Sinker Creek as functional at-risk (FAR) at the high end. PFC assessments completed by BLM personnel in 2012 reported similar conditions to those observed in 2001. However, the lower reaches of Sinker Creek were rated as properly functioning in 2012, with little to no livestock impacts observed.

In addition, the effects of beaver ponds can be seen throughout. The ponds act as sediment sinks and also increase channel width by backing water up, causing increases in temperature. While many of these areas were not being actively used, the water was ponded up and the width of the stream greatly increased by the dams. Temperature increases are expected in these areas. Stream surveys by IDEQ personnel showed that overall the system displays good biological integrity with a few isolated problem areas (IDEQ 2003).

Current grazing management is maintaining or improving upland habitat conditions, adequate ground cover, and perennial vegetation necessary to prevent excess water runoff or sedimentation within the watershed. As discussed previously (Section 3.1.3), livestock have limited access to the Snake River and consequently, have little effect on associated riparian areas, sediment loads, and channel morphology. Sinker Creek is rated as PFC and is limited by upstream water diversions; current livestock grazing does not appear to impact this stream. Sediment levels within Sinker Creek are not likely, except under extreme flows, to impact the Snake River due to the buffering ability of existing riparian vegetation, beaver ponds, and upstream water diversions. Field observations confirmed minimal to no connectivity between Fossil Creek or Sinker Creek and the Snake River.

Based on this information, the BLM has determined that permitted livestock grazing on the Fossil Butte Group allotments does not contribute to excess sediment loads or increased water temperature in Fossil Creek, Sinker Creek, or the Snake River. Consequently, BLM has also determined that permitted livestock grazing on the Fossil Butte Group allotments will not affect the Snake River physa or associated critical habitat. Therefore, the Snake River physa will not be brought forward for further analysis.

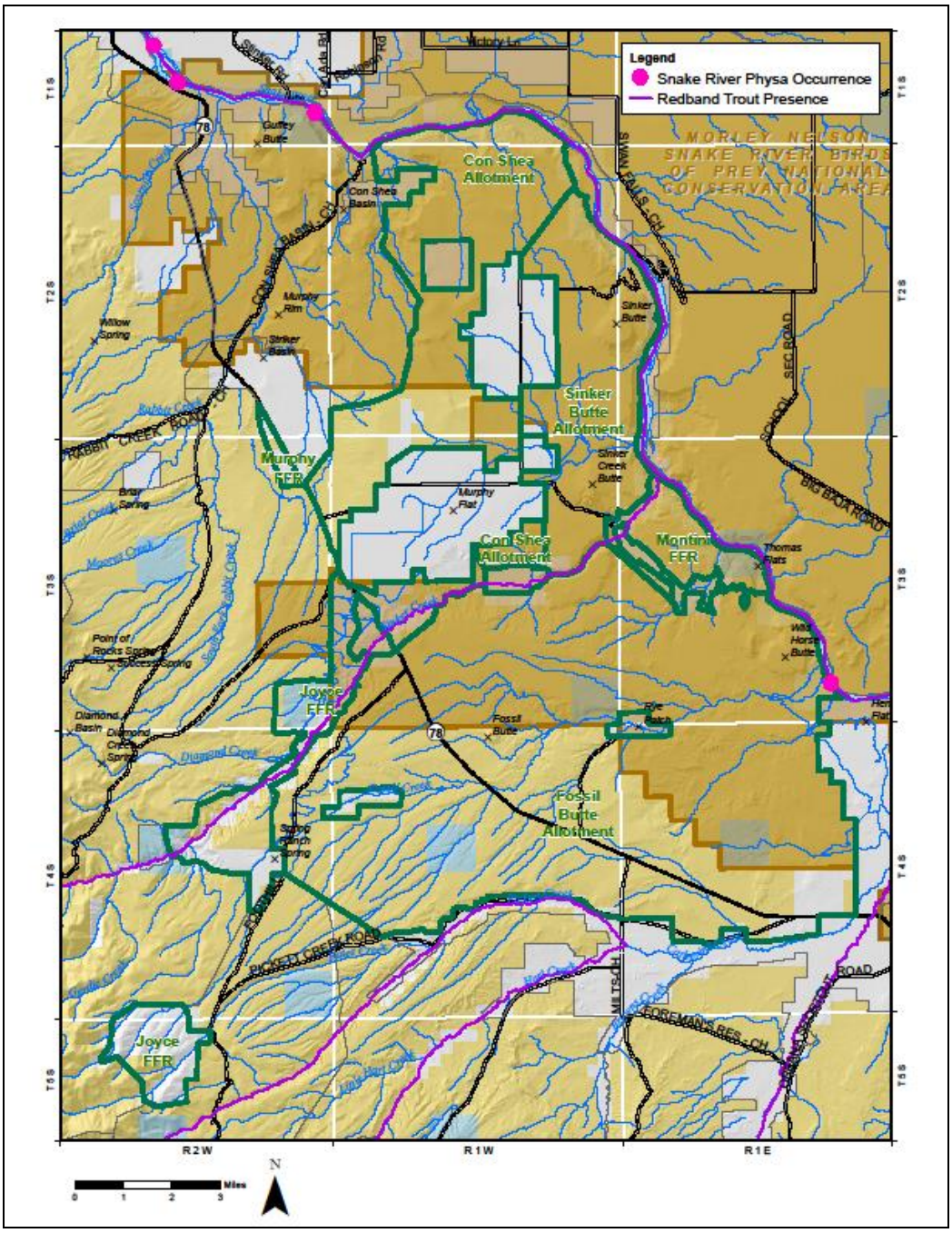

Figure 3.1 – Snake River Physa and Redband Trout Locations within the Fossil Butte Group Allotments

Greater Sage-grouse

The greater sage-grouse (*Centrocercus urophasianus*) is a sagebrush-obligate bird species that requires large areas of relatively undisturbed sagebrush steppe habitat. Sage-grouse were once abundant and associated with sagebrush steppe ecosystems across western North America; currently, however, their distribution has been reduced to nearly half of what it was historically (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' present range, and their persistence is important in the socio-political, economic, and environmental realms (Sands and Smurthwaite 1992). On March 23, 2010, the USFWS submitted a new 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 (USDI-USFWS 2010b). The finding has 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 across the West (Rowland et al. 2006; Hanser and Knick 2011).

The Fossil Butte Group allotments are located in the Western Association of Fish and Wildlife Management Agencies' (WAFWA) Snake River Plain Management Zone (Zone IV; (Stiver et al. 2006)). The Northern Great Basin greater sage-grouse population within Zone IV (Garton et al. 2011) is a large population in Nevada, southeast Oregon, southwest Idaho, and northwest Utah. Of the three subpopulations identified by Connelly et al. (2004) within the Northern Great Basin population, the north-central Central Nevada/southeast Oregon/southwest Idaho (hereafter Owyhee) subpopulation overlaps the Fossil Butte and Joyce FFR Allotments. The remaining allotments in the Fossil Butte Group fall outside of the Owyhee subpopulation boundary as well as modeled sage-grouse habitat.

Generally, habitat conditions have deteriorated or have been altered to some degree throughout the entire distribution of sage-grouse. This has caused local extirpations or declines in sage-grouse populations throughout their historical range and in the Fossil Butte Group allotments and surrounding area. Connelly et al. (2004) conducted a population analysis by state and not by management zone, population, or subpopulation; annual rates of change for sage-grouse in Idaho suggest a long-term decline for sage-grouse in Idaho. More recently, Garton et al. (2011) conducted a population analysis of the Northern Great Basin population based on data from 1965 to 2007. During the assessment period, the proportion of active leks decreased and average number of males per active lek declined by 17 percent (Garton et al. 2011). Although the Garton et al. (2011) analysis is more detailed than the Connelly et al. (2004) analysis, both indicated similar trends for sage-grouse populations in Zone IV.

In March 2010, BLM Washington Office Instruction Memorandum (WO IM) 2010-071 directed field office managers to implement appropriate conservation actions in priority sage-grouse habitat. Subsequent guidance (WO IM 2012-043) provided interim conservation measures for use within preliminary priority habitat (PPH) and preliminary general habitat (PGH) areas, while BLM is amending land use plans. The delineation of Idaho PPH and PGH for the greater sage-grouse in Idaho was completed in April 2012, by the Idaho BLM State Office Branch of Resources and Science. As defined by BLM Washington Office Instruction Memorandum 2012-043, PPH "comprises areas that have been identified as having the highest conservation value to maintaining sustainable Greater Sage-Grouse populations" and PGH "comprises areas of occupied seasonal or year-round habitat outside of priority habitat."

Prior mapping of sage-grouse habitat in Idaho focused on mapping "key habitat" and "potential restoration areas", derived primarily by expert local opinion and refined annually using wildfire perimeter and vegetation treatment data, or other refinements based on more localized mapping or modeling. While this approach led to a broad-scale "key habitat" map accepted by conservation partners in Idaho (Sather-Blair et al 2000; ISAC 2006), it lacked a sage-grouse population component, making it difficult to ascertain areas of "priority." Other habitat or vegetation mapping efforts in the state have been more

localized, such as for Resource Management Plan revisions, or by sage-grouse local working groups. Since some of these efforts have used differing approaches and scales, and are incomplete across the distribution of sage-grouse in Idaho, it was not possible to "roll up" site-specific data to create PPH or PGH.

Consequently, BLM applied a modeling approach for mapping PPH and PGH that incorporated a number of factors including broad-scale habitat information, sage-grouse lek density and connectivity models, known seasonal habitats, and other factors. Complete details are described in an unpublished Idaho BLM white paper (Makela and Major 2012). In general, PPH/PGH designations should be considered appropriate for use at the scale of agency land use plans or similar spatial extents but additional information is needed to inform implementation level decisions at more local scales. Due to the inherent assumptions in the PPH/PGH model, statewide scale, and analysis buffers needed to account for the landscape-scale nature of sage-grouse habitat use and lek connectivity, it is important to recognize that PPH and PGH both encompass areas of suitable sage-grouse habitat as well as areas or inclusions of marginal or non-habitat at more local, site-specific scales. Statewide modeling of PPH and PGH in a manner that perfectly describes local, site-specific conditions is not readily feasible at this time, given current technological limitations and the low resolution and accuracy of available thematic vegetation data at those scales.

Typically, sage-grouse in the vicinity of the Fossil Butte Group allotments congregate on communal strutting grounds (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 as 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. Historically, the Fossil Butte and Joyce FFR Allotments provided suitable habitat for sage-grouse and the area supported significant populations. Based on locations acquired through lek surveys, telemetry studies, and incidental observations, sage-grouse nesting, early and late brood-rearing, and winter habitats currently occur within portions of the Fossil Butte Group Allotments to varying degrees (Figure 3.2).

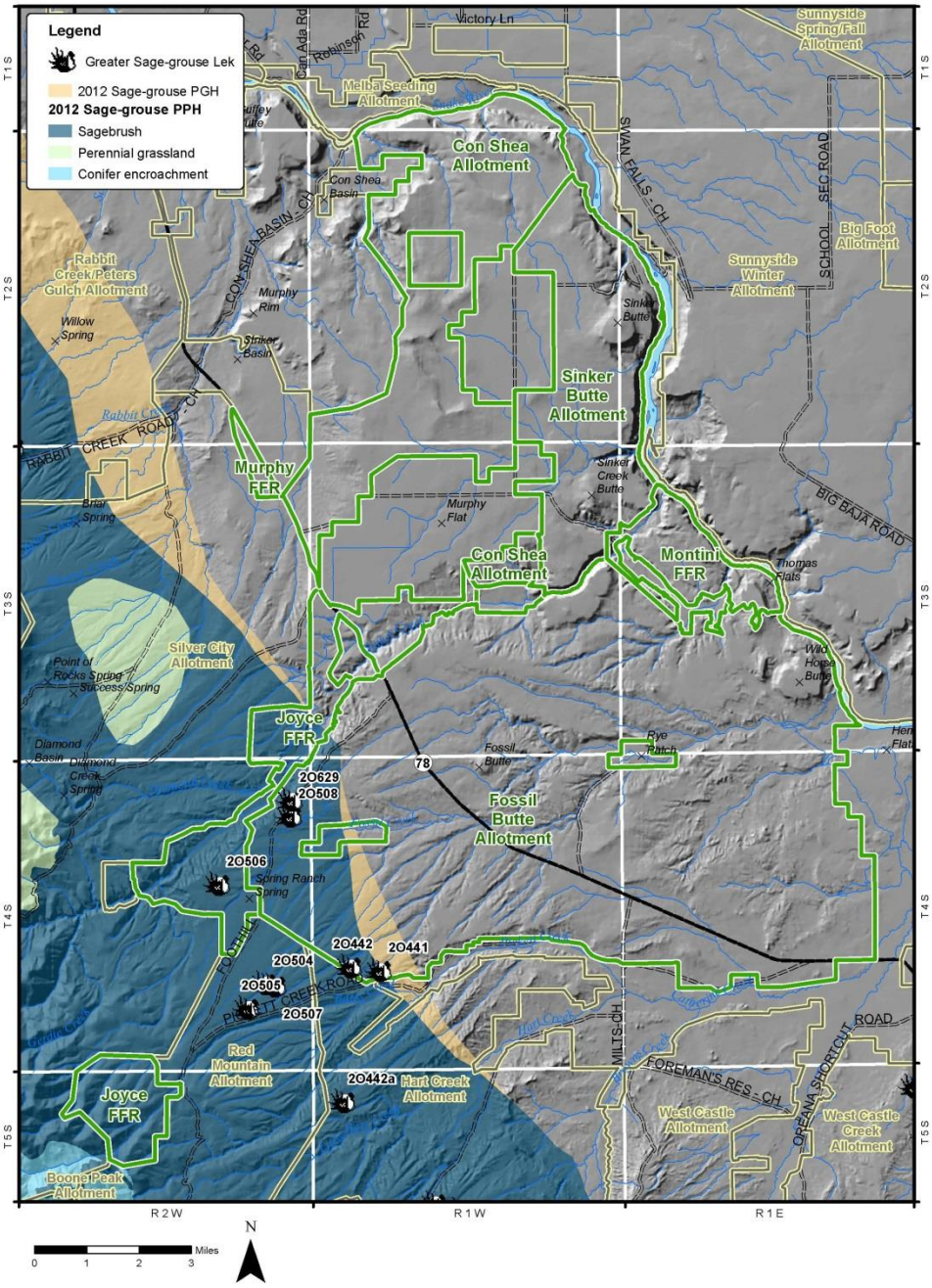

Figure 3.2 – Sage-grouse Habitat and Lek Locations within the Fossil Butte Group Allotments

<u>Yellow-billed Cuckoo</u>

The yellow-billed cuckoo (*Coccyzus americanus*) is a riparian-obligate bird species usually found in large tracts of cottonwood and dense willow habitat. In southwestern Idaho, the yellow-billed cuckoo has been considered a rare, sometimes erratic, visitor and breeder in the Snake River valley. The breeding population in Idaho is likely limited to a few breeding pairs at most (USDI-USFWS 2011a). The USFWS considers cuckoo populations that occur west of the Rocky Mountains a Distinct Population Segment (DPS) that is experiencing ongoing declines as a result of habitat loss and degradation due to land use conversion and livestock grazing (USDI-USFWS 2011a). On June 25, 2001, the USFWS submitted a new finding to the Federal Register, which found that listing the yellow-billed cuckoo was warranted but

precluded by the need to take action on other species facing more immediate and severe extinction threats (USDI-USFWS 2001).

Yellow-billed cuckoo nesting habitat has been described as large stands of cottonwood/willow over-story with a dense understory of shrubs (USDI-USFWS 2011a). There is no habitat associated with the Fossil Butte Group allotments that meet this description. Most riparian habitat along the Snake River adjacent to the allotments is dominated by Russian olive, an exotic tree imported into the United States to improve wildlife habitat and control erosion. Dense Russian olive stands do not support the multi-layered vegetation community of herbaceous understory, small shrubs, mid-layer willows, and over-story deciduous trees required for suitable cuckoo habitat.

Small stands of black cottonwood do occur at the confluence of Sinker Creek and the Snake River and along the banks of the Snake River. However, the size of these stands and the lack of required dense understory vegetation is not providing suitable habitat for yellow-billed cuckoos and would take decades to produce suitable cuckoo habitat under ideal conditions. In addition, the majority of perennial streams within the allotments lack the extensive sandy floodplains mature cottonwood groves require for development. Due to the lack of suitable habitat within the Fossil Butte Group allotments, the yellow-billed cuckoo will not be addressed further in this EA.

Columbia Spotted Frog

The Great Basin DPS of the Columbia spotted frog (*Rana luteiventris*) occurs in eastern Oregon, southwestern Idaho, and northern Nevada. On April 23, 1993, the USFWS submitted a finding to the Federal Register which found that listing the spotted frog in some parts of its range (i.e., Great Basin DPS) was warranted but precluded by the need to take action on other species (USDI-USFWS 1993). As a candidate species under the ESA, Columbia spotted frogs are awaiting review and additional information for potential listing as threatened or endangered.

Columbia spotted frogs are highly aquatic and are seldom found far from water. The largest populations occur in structurally complex wetlands with diverse pool and meadow components. Suitable sites contain shallow breeding pools and deeper water overwintering sites. Wet meadows, riparian wetlands, and stream courses are important as dispersal corridors among perennially occupied sites. Wetland and riparian habitat loss and degradation are the most serious threats to the maintenance of viable populations of spotted frogs (IDFG 2005a). Currently, spotted frogs are widely distributed throughout southwestern Idaho and eastern Oregon, but local populations appear to be isolated from each other by either natural or human induced habitat disruptions (USDI-USFWS 2011b).

Various agencies and researchers have surveyed potential spotted frog habitat throughout the Owyhee Mountains and Uplands since 1994 (Munger et al. 1994; Munger et al. 1997; Lohr and Haak 2009; Lohr 2011). Known spotted frog populations south of the Snake River occur at and above the 4,400 foot elevation. While the headwaters of Sinker Creek extend up to 7,000 feet in elevation, no spotted frogs have been found during IDFG surveys conducted in this drainage. Though movements of up to 6.5 km have been recorded, these frogs generally stay in wetlands and along streams within 1 km of their breeding pond (Turner 1960, Bull et al. 2001, Pilliod et al. 2002). The nearest spotted frog observation documented by the IDFG occurs in a different watershed approximately 10 km south of the Fossil Butte Group allotments. Due to the distance between population sources, and the relatively low elevation of the allotments, it is unlikely that spotted frogs occur within the Fossil Butte Group allotments. The Columbia spotted frog will not be addressed further in this EA.

Pygmy Rabbit

The pygmy rabbit (*Brachylagus idahoensis*) is a sagebrush-obligate species that requires tall stands of big sagebrush on deep, friable soils where they dig extensive burrow systems. These dense sagebrush habitats

provide food and shelter throughout the year. During winter, pygmy rabbits are almost entirely dependent on sagebrush for food. Fragmentation of sagebrush habitats poses a threat to this species by isolating disjunct populations, increasing susceptibility to localized threats, and reducing gene flow among populations.

On September 30, 2010, the USFWS submitted a new finding to the Federal Register which found that listing the pygmy rabbit was not warranted at the time (USDI-USFWS 2010b). As a BLM Type 2 sensitive species, BLM continues to manage the species to prevent future endangered species act listing. Habitat loss and fragmentation due to conversion of sagebrush to agriculture, wildfire, invasive plants, and conifer encroachment have been identified as some of the primary threats to pygmy rabbit populations (IDFG 2005b).

A coarse-level predictive occurrence model created by Idaho BLM in 2009 suggests that portions of the Fossil Butte Group allotments have a moderate likelihood of core pygmy rabbit habitat occurrence. Although deep, friable soils are relatively common within the allotments, higher elevation ecological sites (Loamy 12-16") associated with high confidence pygmy rabbit occurrences within Owyhee County do not occur in any of the allotments. Large areas of big sagebrush habitats within the allotments have also been removed by past wildfires. To date, no pygmy rabbit surveys or observations have been documented within the allotments. Due to the lack of appropriate ecological sites, relatively low elevation, and the fragmented nature of big sagebrush habitats within the allotments, it is unlikely that pygmy rabbits occur within the Fossil Butte Group allotments. The pygmy rabbit will not be discussed further in this EA.

Columbia River Redband Trout

The Columbia River redband trout (*Oncorhynchus mykiss gairdneri*) is the resident form of steelhead trout that historically returned from the ocean to spawn in streams throughout the Owyhee River watershed (now restricted by downstream dams). As a BLM Type 2 sensitive species, BLM continues to manage the species to prevent future endangered species act listing. In the Owyhee Uplands, Redband trout prefer cool streams with temperatures below 70° F (21° C). However, they can survive daily cyclic temperatures up to 80° F (27° C) for a short period of time (IDFG 2005c). Habitat loss and fragmentation of currently occupied habitat are among the major threats identified as issues relevant to the maintenance of viable populations of redband trout. Redband trout have been documented in rivers and streams in and around the Fossil Butte Group allotments (Figure 3.1).

Migratory Birds, Raptors, and other Birds (including Special Status Species)

A variety of special status bird species occur or are likely to occur within the Fossil Butte Group allotments (Appendix E). The majority of these species are associated with shrub steppe, grassland, or riparian habitats.

Shrub steppe habitats dominated by several species of sagebrush and perennial grasslands provide vital nesting and foraging habitat for obligate species such Brewer's and sage sparrows and dependent species including loggerhead shrike and sage thrasher. Direct loss, fragmentation, and degradation of sagebrush habitats connected with the spread of invasive plants, altered disturbance regimes, and the associated state transitions from stable native vegetation communities are some of the most important factors affecting long-term and regional population dynamics of these species (Knick et al 1995, 2000, 2002, 2003, and 2005).

Brewer's sparrow, sage sparrow, and sage thrasher are heavily reliant on sagebrush steppe for nesting and foraging. Loggerhead shrike, black-throated sparrow, and green-tailed towhee are less reliant on sagebrush but are dependent on shrubland habitat. Grassland species include long-billed curlew and grasshopper sparrow. Brewer's blackbird, calliope hummingbird, and willow flycatcher typically are associated with riparian areas, and black tern, white-faced ibis and Wilson's phalarope are associated with

ponds and wetlands. The grasslands and shrublands within the Fossil Butte Group allotments provide substantial amounts of suitable habitat for these species.

Further consideration is given to avian species afforded special management emphasis under the Migratory Bird Treaty Act (U.S.C. 1936). As of 2010, under a signed Memorandum of Understanding (MOU) with the USFWS, the BLM has a responsibility to "as practical, protect, restore, and conserve habitat of migratory birds, addressing the responsibilities in Executive Order 13186" (USDI 2010). The Fossil Butte Group allotments may provide foraging and nesting habitat for up to 177 additional species of migratory birds (Appendix E).

The North American Bird Conservation Initiative (NABCI) is a comprehensive instrument by which government agencies, such as the BLM, and private partners can promote and achieve integrated continental bird conservation as specified by Executive Order 13186 and the BLM-USFWS MOU (USDI 2010). One product of the NABCI is the designation of Bird Conservation Regions (BCR) across North America. BCRs are ecologically distinct regions with similar avian communities, habitats, and management concerns developed as the primary unit within which issues are resolved, sustainable habitats are designed, and priority projects are initiated (NABCI-US 2012). Within BCRs, regional partnerships, or joint ventures, identify Bird Habitat Conservation Areas (BHCA) in which to deliver and implement state or local bird conservation plans.

On a regional scale, the Fossil Butte Group allotments fall within the Great Basin BCR. In addition, the allotments are found within the more localized Owyhee and Birds of Prey BHCAs. The Owyhee and Birds of Prey BHCAs have been identified by the Intermountain West Joint Venture as areas of statewide importance for priority bird species where the opportunity for effective conservation activities exists. Within the Great Basin BCR and the Owyhee and Birds of Prey BHCAs, partner agencies and organizations have compiled a list of continentally important bird species, based on a variety of bird initiatives and plans (Appendix E).

The nesting requirements of many migratory birds are fulfilled within the Fossil Butte Group allotments from late-April to mid-July and/or during spring and fall migrations. While some migratory bird species use a wide variety of habitats, others are more specialized. Several species can successfully nest and raise multiple broods during a single breeding season if suitable conditions exist. Grasslands and shrub steppe provide nesting and foraging habitat for the majority of migratory bird species found within the Fossil Butte Group allotments. Most of these ground nesting or shrub-dependent species rely on the vegetative structure and cover found in these habitat types for successful breeding. Among birds, grassland and shrubland species are declining faster than any other group of species in North America (Dobkin and Sauder 2004).

Riparian habitats support the most diverse migratory bird communities in the arid and semiarid portions of the Intermountain West (Knopf et al. 1988). In addition, healthy riparian areas sustain high densities of breeding migratory birds (Mosconi and Hutto 1982). In Idaho, 60 percent of migratory landbirds are associated with riparian habitats (IDFG 1992), and one of the main reasons for the decline of migratory landbirds is the loss of riparian habitat (DeSante and George 1994).

Riparian habitats in the area likely host a variety of obligate bird species, such as the yellow warbler, and dependent species such as black-capped chickadee, black-headed grosbeak, house wren, and warbling vireo. These species prefer the structural diversity found in riparian areas with aspen and willow canopies and herbaceous understories along streambanks. The absence of disturbance associated with livestock grazing within these riparian communities has been demonstrated to result in high-quality breeding habitat (i.e., high nest success, low brood parasitism rates) for many of these species (Heltzel et al. 2006)

The Morley Nelson Snake River Birds of Prey National Conservation Area (NCA) includes portions of the Fossil Butte and Con Shea Allotments and all of the Montini FFR and Sinker Butte Allotments. The NCA was established in 1993 to conserve, protect, and enhance raptor populations and habitats. It contains the greatest concentration of nesting raptors in North America and the greatest density of prairie falcons in the world. The area is a unique habitat for raptors because the cliffs of the Snake River Canyon provide ideal nesting sites, while the adjacent upland plateau supports unusually large populations of small mammal prey species. The NCA is noted for having one of the highest densities of ground squirrels ever recorded, which provide a critical food source during late winter, spring, and early summer for many NCA raptor species, most notably prairie falcons.

An assortment of raptor species occur or potentially occur within the Fossil Butte Group allotments (Appendix E). The grasslands, rock outcrops, and shrub steppe located within the allotments provide nesting and foraging substrate for many of these species. Generally, raptors return to areas in which they have nested in the past, often using the same nesting territories. Nesting activities may be initiated in mid-February to late April depending upon species. Nest occupation continues until chicks are fledged, which usually occurs from early June to mid-August. Raptor nesting is expected to occur in suitable habitats within the allotment.

Eagle species are afforded additional protection under the BGEPA. Although bald eagles have been documented near the allotments during winter months, their use of the area is not well known. Due to the presence of waterfowl and open water for fishing, documented bald eagle observations are concentrated along the Snake River. However, bald eagle breeding within the Fossil Butte Group allotments is highly improbable because of the lack of open water and nesting trees.

Golden eagles, prairie falcons, ferruginous hawks, and Swainson's hawks prefer open shrub steppe, sagebrush and grassland habitats. Golden eagles, ferruginous hawks, and prairie falcons nest on cliffs and rocky outcrops throughout southwest Idaho. All of these species breed and forage in and/or around the Fossil Butte Group allotments. Documented nest sites and potential nesting habitat for these species is abundant in the uplands and nearby canyons (i.e., the Snake River Canyon, Sinker Creek, Wild Horse Butte, etc.). Prairie falcons prey primarily on small mammals, especially ground squirrels, but a large portion of their diet also can be comprised of birds.

A number of raptor species prefer open woodland or shrub steppe to dense forest. American kestrel, northern harrier, red-tailed hawk, short-eared owl, and western burrowing owl usually are found in more open areas such as sagebrush steppe, grasslands, meadows, or open riparian areas, and prey on a wide variety of small mammals, reptiles, birds, and insects. Northern harriers and short-eared owls are ground nesters and need adequate cover for suitable nest sites. Burrowing owls nest in burrows dug by other animals, usually badgers, and they hunt in grasslands and sagebrush steppe areas. The sagebrush steppe and grasslands found within the Fossil Butte Group allotments provide suitable foraging habitat for these species.

<u>Big Game and other Mammals (including Special Status Species)</u>
Several special status mammal species have been documented or have the potential to occur within the Fossil Butte Group allotments (Appendix D). California bighorn sheep in the area inhabit scattered pockets of suitable escape terrain within the Owyhee Front year round. Ewes and lambs occupy the most rugged and broken country, whereas rams seek out areas that provide abundant forage and isolation from human disturbance, often using low rock outcroppings or steep slopes in the absence of "typical" escape terrain. In recent years, the Owyhee Front population management unit (PMU) has maintained a herd of approximately 30 California bighorn sheep (Jake Powell, personal communication 2012). The overall management objective for the Owyhee Front PMU is to maintain or increase the current population,

provided the increase occurs in portions of the PMU where separation from domestic sheep can be maintained (IDFG, 2010).

Special status bat species occurring or potentially occurring within the Fossil Butte Group allotments include spotted bat, California myotis, and Townsend's big-eared bat. Although these species have been detected in the general area around the allotments, research conducted in the Owyhee Uplands suggests that bat populations are not numerous and species diversity is low (Perkins & Peterson, 1997). Quality day-roosting habitat (particularly caves and large, mature, live cottonwoods and snags) appears to be a limiting factor for bats in the area. Although abundant, the cliffs and rock outcrops found in the portions of the allotments only provide marginal roosting habitat (Perkins & Peterson, 1997). Because the effects of livestock grazing on bats are not well-known and cliffs and rock outcrops would remain the most abundant day roost substrates in the area, effects to bats are expected to be negligible and will not be discussed further.

Kit fox and various special status small mammal species, including the Piute ground squirrel, Merriam's ground squirrel, and Wyoming ground squirrel, have the potential to occur within the Fossil Butte Group allotments. Because the allotment is located at the northern extent of these species' ranges, occurrence within suitable lower elevation habitats is possible. These species prefer open habitats including sagebrush steppe, salt desert scrub, grasslands, meadows and other productive bottomlands. As well as being major constituents to biodiversity, small mammals serve as predators, prey, seed dispersers, and grazers. An abundant and diverse small mammal community can be an indicator of a healthy and functioning ecosystem (Fricke et al. 2009).

The Fossil Butte Group allotments have long supported populations of a wide variety of big game species. Mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*) use portions of the area year-long. However, some areas are used specifically as seasonal ranges (i.e., spring, summer, fall, and winter). Mule deer are common year-round in the uplands and canyonlands within the allotments. Similarly, pronghorn occur year-round throughout the uplands in much of the Fossil butte Group allotments. Some specific pronghorn seasonal habitats (i.e., spring through fall) occur east of Silver City (Figure 3.3).

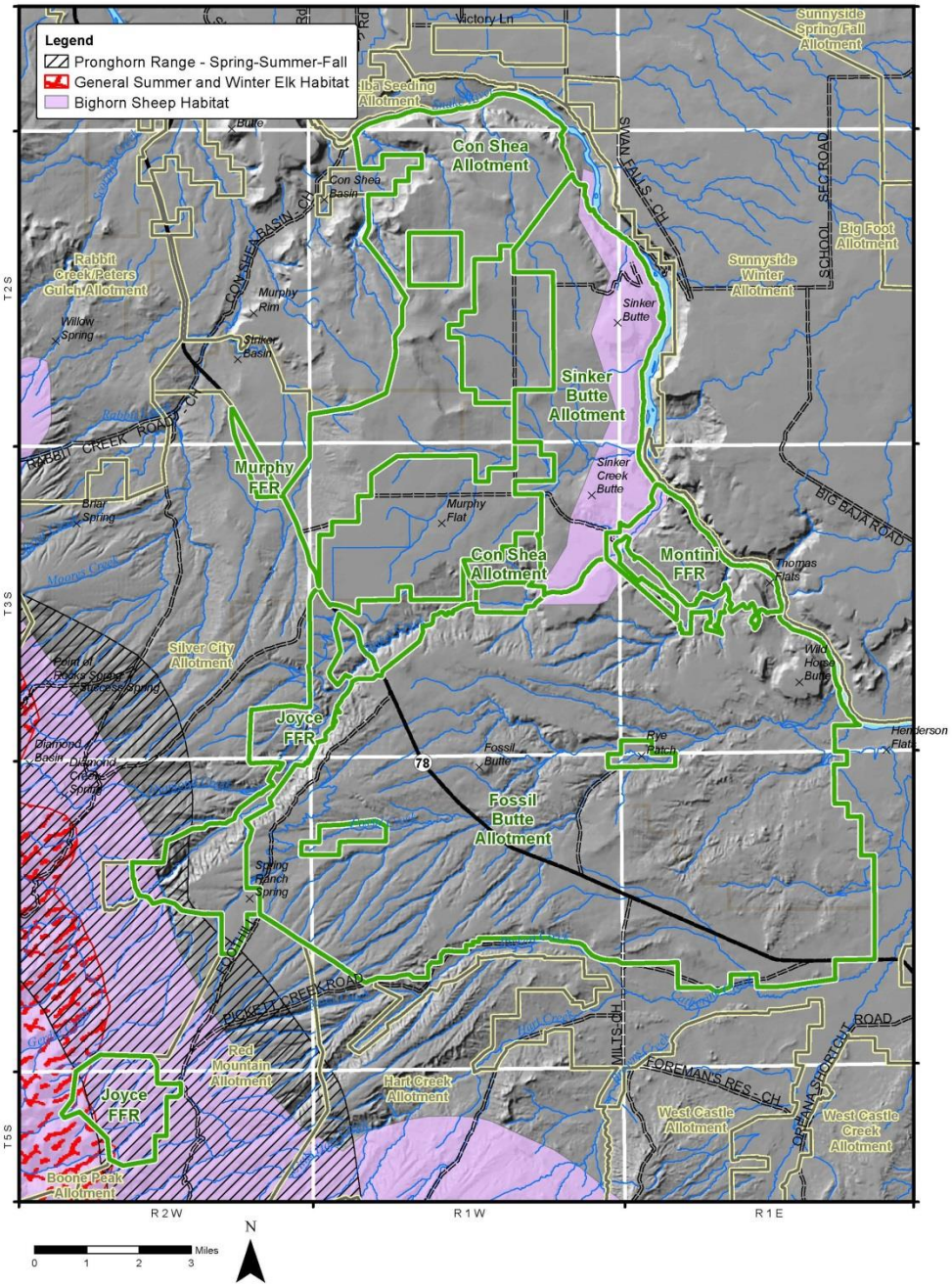

Figure 3.3 – Big Game Habitat within the Fossil Butte Group Allotments

Areas identified as seasonal habitats for Rocky Mountain elk (*Cervus canadensis)* occur on approximately 64 acres of BLM lands within the allotments. Due to the minute amount of habitat present on BLM lands within the allotments (< 1%), elk will not be specifically discussed further in this EA. Instead, elk habitat in general will be included in the broader context discussions of upland habitat conditions.

The Fossil Butte Group allotments are located within IDFG Game Management unit (GMU) 40. Current population data for mule deer are lacking because surveys have not been conducted within GMU 40 for several decades. IDFG does not have any current population estimates for mule deer in GMU 40;

managers have identified population information within the GMU as a primary data need in the future. The IDFG management objective for mule deer populations within GMU 40 is to maintain post season buck:doe rations at a minimum of 25 bucks per 100 does and the 4+ point bucks harvest at no less than 35% (IDFG 2011a).

IDFG does not have any current population estimates for pronghorn in GMU 40. Pronghorn surveys were conducted in the adjacent GMU 42 in 2010; more than 1,100 pronghorn were observed. The IDFG management objective for pronghorn within GMU 40 is the maintenance of a variety of hunting opportunities and meeting minimum average horn lengths of 12 inches (IDFG, 2011b).

Large predators that occur within the Fossil Butte Group allotments include bobcat (*Lynx rufus*), coyote (*Canis latrans*), and mountain lion (*Puma concolor*). These predators are quite secretive and elusive. Because of their secretive nature, predator densities are difficult to determine. However, predators are closely tied to their prey, and if prey numbers are low, predator numbers would reflect that. Because these species are relatively common and abundant habitat exists in the area, they will not be discussed further.

Beaver (*Castor canadensis*) are not as widespread throughout the area as they once were. Beaver habitat along many streams has deteriorated to the point that only remnant populations, such as in Sinker Creek, remain. Habitat for beavers in the Fossil Butte Group allotments has been affected by past livestock use and anthropogenic disturbance. While beavers do occur within the allotments, loss of cottonwood and willows has affected beaver by reducing suitable forage and material for building dams to create pond habitat. The loss of beavers throughout much of the OFO is suspected of leading to declines in spotted frog numbers.

Other common fur-bearing animals including badger, fox, muskrat, otter, raccoon, skunk, and weasel are widespread and relatively common in the region and will not be discussed further.

Amphibians and Reptiles (including Special Status Species)

Numerous special status amphibians and reptiles, including the northern leopard frog, Woodhouse's toad, and Great Basin collared lizard, have been documented or have the potential to occur within the Fossil Butte Group allotments (Appendix D). Loss and degradation of suitable habitats are the most serious threats to the maintenance of viable populations of these species. Because very little is known about local amphibian and reptile populations in the Fossil Butte Group allotments, individual species will not be discussed in detail further. Amphibian and reptile habitat in general will be analyzed in the broader context discussions of upland and riparian habitat conditions.

Fisheries (including Special Status Species)

The stretch of the Snake River between CJ Strike Dam and the Oregon line is characterized by a dominance of game fish. In 1995, IDFG conducted an electrofishing study on the Snake River. From Swan Falls Dam to Walter's Ferry, 73% of the fish captured were game fish and smallmouth bass (*Micropterus dolomieui*) was the dominant species. From below CJ Strike Dam to Swan Falls Reservoir, carp (*Cyprinus carpio*) were the dominant species. Other species that occur in this area of the Snake River include rainbow trout (*Oncorhynchus mykiss*), largemouth bass (*Micropterus salmoides)*, channel (*Ictalurus punctatus)* and flathead (*Pylodictis olivaris*) catfish, black crappie (*Pomoxis nigromaculatus*), yellow perch (*Perca flavescens)*, and sunfish (*Lepomis* spp.) as well as other non-game species. White sturgeon is considered a sensitive species by Idaho BLM and is also found in this reach, mainly below Swan Falls Dam (IDEQ 2003).

Other fish species that occur or potentially occur within rivers and streams within and adjacent to the Fossil Butte Group allotments include dace (*Rhinichthys* spp.), redside shiner (*Richardsonius bateatus*), sculpin (*Cottus* spp.) and suckers (*Catostomus* spp.) (IDEQ 2003; IDFG 2013). Some or all of these

species have been documented within the Snake River and have a high probability of occurrence within Sinker Creek and other perennial streams. Riparian conditions and activities in the upper reaches of streams also influence fish and fish habitat downstream of the allotment boundaries. These species will not be discussed further, as fish, mollusk, and macroinvertebrate habitat in general will be analyzed in detailed discussions under redband trout.

Desired Conditions for Wildlife and Special Status Animal Species Habitat
The appropriate structure, function, and composition of native upland and riparian vegetation communities are necessary to ensure the proper functioning of ecological processes and continued diversity and productivity of plant species. Vegetation communities meeting these desired conditions provide habitats suitable for the maintenance of viable wildlife populations, including threatened and endangered, sensitive, and other special status species (Appendix D).

Wildlife habitats should be managed to maintain or enhance the condition, abundance, and structural stage and distribution of plant communities and special habitat features required to support a high diversity and desired populations of wildlife species (USDI BLM, 1999a). In addition, perennial stream and riparian areas should be improved or maintained to provide satisfactory conditions to support native fish. Special status species and their habitats should be managed to increase or maintain populations at levels where their existence is no longer threatened and listing under the ESA is unnecessary. Grazing management practices should provide sufficient residual vegetation to improve, restore, or maintain the physical and biological conditions (e.g., hydrologic cycle, nutrient cycle, and energy flow) necessary to sustain wildlife habitats in properly functioning, structurally appropriate, and diverse native upland and riparian plant communities.

Idaho Standards for Rangeland Health
Rangeland Health Standards are interrelated, especially when addressing special status animal species requirements. Each Standard provides for the health of watersheds, riparian areas, wetlands, streams, native plan communities, and water quality. When any of these Standards are degraded, animal habitat is affected and certain animal species may not be able to survive. Standards 1- 7 provide the basis for general wildlife habitats that support Standard 8, Threatened and Endangered Animals. Wildlife habitat requirements specific to individual special status animal species are evaluated under Standard 8, as described in USDI-BLM 1997.

Standard 8 – Threatened and Endangered 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 plant species 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 plant and animal communities are 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.

3.1.6 Recreation and Visual Resources

Recreation

The Fossil Butte Group Allotments lie within three existing Special Recreation Management Areas (SRMA's), where recreation is one of the principal management objectives. A SRMA is an area where special or more intensive types of recreation management are needed and greater investments for recreation management are anticipated due to the intensity of use the area receives.

The Joyce and Murphy allotments lie entirely within the Owyhee Front SRMA, while the Fossil Butte allotment is split with the eastern half lying within the Snake River Birds of Prey SRMA, and the western half in the Owyhee Front SRMA. These SRMAs encompass approximately 181,500 acres and are made up of the plains and low foothills of the northern front of the Owyhee Mountain Range. The Owyhee Front is recognized for quality motorized Off-Highway Vehicle (OHV) opportunities due to its cool spring/fall weather conditions and dry soils, coupled with a diversity of terrain features. The SRMA includes hundreds of miles of roads, trails, and interconnecting sand washes traversing gentle to rugged hills and ridgelines. The area is used by OHV enthusiast year-round and for hunting in the fall. Mountain biking, horseback riding, hiking, sight-seeing, rock hounding, wild horse viewing, and camping all occur throughout the area as well.

The Sinker and Montini allotments lie completely within the Snake River Birds of Prey SRMA, as does the majority of the Con Shea allotment. This SRMA is approximately 7,590 acres in size and offers exceptional opportunities for recreationists to view birds of prey in their natural environment. The SRMA supports a variety of other popular recreation activities as well including fishing, motorcycle riding, mountain biking, horseback riding, hiking, and boating.

The Recreation Opportunity Spectrum (ROS) classification is used to characterize the type of recreational opportunity settings, activities, and experience opportunities that can be expected in different areas of public land. These areas provide for several different settings for recreationists, with the majority of the allotments being classified as Rural and Semi-primitive motorized, a portion of the Fossil Butte allotment along the western edge being classified as Roaded Natural, and a section within the southernmost Joyce allotment is classified as Semi-primitive non-motorized.

The Rural classification is an area that is characterized by a substantially modified natural environment. Resource modifications and utilization practices are obvious, the sights and sounds of man are readily evident, and the concentration of users is often moderate to high (USDI-BLM, July 1999).

The semi-primitive motorized and the semi-primitive non-motorized classifications are areas that are characterized by a primarily unmodified natural environment. There is evidence of other users in the area; however, management actions encourage limited contacts between users. Semi-primitive motorized classification permit motorized uses within the area, and semi-primitive non-motorized does not (USDI-BLM, July 1999).

The Roaded Natural classification is an area that is characterized by a generally natural environment with only moderate evidence of the sights and sounds of man. Resource modifications and utilization practices are evident, but harmonize with the natural environment (USDI-BLM, July 1999).

Joyce FFR, Murphy, and a portion of Con Shea pasture 3 and the Fossil Butte allotment, which reside on the south and west sides of Highway 78, lie within the Murphy Subregion which has undergone travel management planning (2009). Travel management planning is the proactive management of public access and natural/cultural resources in compliance with travel-related regulations and according to the best land use management principles.

The off-highway vehicle designations for those allotments that lie within the Murphy Subregion Travel Management Area (TMA) are limited to designated roads and trails. The remainder of the allotments are categorized as limited to existing roads and trails. However, the limited to existing designation will change within the next 5 years (roughly) to limited to designated, as all of Owyhee County is currently undergoing a travel management process as per the 2009 Ominbus Public Lands Management Act (OPLMA). The over-snow vehicle (OSV) designation in the area is open, with no special restrictions. OHV and OSV regulations apply to permitted uses such as livestock operations, as well as to general public use.

With their close proximity to the Treasure Valley, the allotments are popular destinations for motorized recreationists, especially in those allotments south of Highway 78 within the TMA. The Murphy Subregion TMA, which encompasses approximately 230,000 acres and 850 miles of designated roads and trails, receives an estimated 140,000 visitors annually. The Fossil Creek trail head, which is part of the TMA and lies within the Fossil Butte Allotment, receives roughly 6,000 visitors annually.

The allotments outside of the TMA receive far less use than those within, however, an extensive network of routes exists throughout all allotments. There's also a large unauthorized play area developing within the Fossil Butte Allotment that receives a moderate amount of use in the spring and fall months. This issue will be addressed in the upcoming Owyhee Travel Management Plan.

Events requiring Special Recreation Permits (SRPs) also exist within the allotments. Three motorcycle races and two equestrian endurance events have routes that cross the TMA and expand into areas north of Highway 78.

Portions of the Oregon Trail are located within the Fossil Butte, Sinker Creek, and Con Shea Allotments. In 1978, Congress designated the Oregon National Historic Trail as part of the National Trails System to identify and protect the route for future public use and enjoyment. The BLM National Scenic and Historic Trails Strategy and Work Plan's resource goal is to *"Protect and sustain trail resources to provide for enriching and inspiring experiences, scenic landscapes, or historic setting."* The Owyhee RMP states that the trail would be managed in accordance with the Oregon Trail Comprehensive Management and Use Plan.

Visual Resources

Public land visual classifications within these allotments range from class I to class IV.

The VRM class I objective is to preserve the existing character of the landscape. This class provides for natural ecological changes, however, it does not preclude very limited management activity. The level of change to the characteristic of the landscape should be very low and must not attract attention. Under this classification, construction of new rangeland (livestock, watershed, wild horse, and wildlife) facilities, roads, recreation sites, and vegetation treatment projects is not permitted.

The VRM class II objective is to retain the existing character of the landscape. The level of change to the characteristic of the landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Except within wilderness study areas, very limited construction of new rangeland facilities and vegetation treatment projects is permitted.

The VRM class III objective is to partially retain the existing character of the landscape and the level of change to the characteristic of the landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features or the characteristic landscape. This classification

occurs where the amount of use is relatively high and scenic quality is generally good. Maintenance, construction, and reconstruction of rangeland facilities, roads, and vegetation treatment projects are permitted. In this classification emphasis is placed on construction techniques that will reduce the projects visual impacts to the natural landscape (USDI-BLM, July 1999).

The objective for VRM class IV is to provide for management activities which would require major modifications to the existing character of the landscape. These activities may dominate the view and be the focus of attention. However, every attempt should be made to minimize impacts with careful location and minimal disturbances (USDI-BLM, July 1999).

Allotments containing VRM class I include:

- Con Shea – pasture 1 (roughly 15%)
- Con Shea – pasture 4 (roughly 35%)
- Sinker Butte – pasture 3 (roughly 25%)
- Sinker Butte – pasture 4 (roughly 25%)
- Fossil Butte (roughly 5%)

Allotments containing VRM class II include:

- Con Shea – pasture 1 (roughly 20%)
- Sinker Butte – pasture 1 (roughly 55%)
- Sinker Butte – pasture 2 (roughly 55%)
- Sinker Butte – pasture 3 (roughly 15%)
- Montini FFR – pasture 1 (roughly 45%)
- Montini FFR – pasture 2 (roughly 85%)
- Fossil Butte (roughly 2%)

Allotments containing VRM class III include:

- Con Shea – pasture 3 (roughly 75%)
- Joyce FFR – pasture 11 (roughly 85%)
- Joyce FFR – pasture 12 (roughly 50%)
- Fossil Butte (roughly 2%)

The remaining areas are categorized as class IV VRM.

3.1.7 Social and Economic Values

The Fossil Butte group allotments are located, in Owyhee County, Idaho. Owyhee County is the second-largest county in the state and covers 7,639 square miles. The population of Owyhee County in 2010 was 11,389, an increase of 7 percent from the year 2000, compared to an 18 percent increase throughout the state of Idaho over that same time period. The population density is only 1.5 people per square mile, and most of the county residents enjoy a largely rural lifestyle. Residents of the Treasure Valley come to the rangeland areas to recreate, hunt and fish. In 2010, the median age in the county was 35.3 years, almost three years older than the median age in 2000 and close to the median age of 36.3 for the entire state. Almost one-third of county residents are under the age of 18 and more than 20 percent of residents are age 45 to 64. The population in the “baby boomer” age range increased almost 26 percent from 2000 to 2010. Southwest Idaho is projected to grow by more than 95,000 people by the year 2020, and 77,000 of these people will live in Ada or Canyon Counties (Gardner and Zelus 2009).

Unemployment in Owyhee County in 2010 was 11 percent, compared to 8.8 percent in Idaho and 9.6 percent nationwide in the same year. Incomes are much lower in Owyhee County than in surrounding counties throughout Idaho, possibly due to employment primarily in lower-paying sectors like agriculture and social services. In 2010, the per capita income for Owyhee County was $17,373, with a median household income of $33,441; per capita income for the state was $22,518 and median household income was $46,423 (U.S. Census Bureau 2011). More than 20 percent of people in Owyhee County live below the poverty level, which is a higher rate than Idaho's poverty rate. Table 3.8 shows the unemployment rate, per capita income, median household income, and poverty rate of Owyhee County.

Table 3.8 - Economic statistics

Location	Unemployment rate	Per capita income	Median household income (2010 dollars)	All people below poverty rate
Owyhee County, ID	11%	$17,373	$33,441	22.2%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

Farming, natural resource management, education, and social services are the primary sectors for employment in Owyhee County, although manufacturing and retail trade also employ many residents (Table 3.9). Education, health care and social services together employ almost one-fourth of the county's residents (U.S. Census Bureau 2011.

Table 3.9 - County employment by industry

Industry	Owyhee County, Idaho	United States
Civilian employed population 16 years and over	4,448	141,833,331
Agriculture, forestry, fishing, hunting, and mining	19.4%	1.9%
Construction	12.6%	7.1%
Manufacturing	9.0%	11.0%
Wholesale trade	1.6%	3.1%
Retail trade	8.3%	11.5%
Transportation, warehousing, and utilities	6.3%	5.1%
Information	1.0%	2.4%
Finance, insurance, real estate rental, and leasing	4.2%	7.0%
Professional, scientific, management, administrative, and waste management services	2.9%	10.4%
Educational services, health care, and social assistance	19.7%	22.1%
Arts, entertainment, recreation, accommodation and food services	5.7%	8.9%

Industry	Owyhee County, Idaho	United States
Other services, except public administration	3.3%	4.9%
Public administration	5.9%	4.8%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

Economic Contribution of Livestock Grazing

The federal government manages 78 percent of the total land in Owyhee County; the BLM manages approximately 75 percent of all federal land in the county.

Table 3.10 - Number of Farms by Type, 2007

	Owyhee County, ID	U.S.
All Farms	620	2,204,792
Oilseed & Grain Farming	40	338,237
Vegetable & Melon Farming	10	40,589
Fruit & Nut Tree Farming	4	98,281
Greenhouse, Nursery, etc.	4	54,889
Other Crop Farming	185	519,893
Beef Cattle Ranching & Farming	247	656,475
Cattle Feedlots	8	31,065
Dairy Cattle & Milk Products	23	57,318
Hog & Pig Farming	4	30,546
Poultry & Egg Production	6	64,570
Sheep & Goat Farming	30	67,254
Animal Aquaculture & Other Animal Production	59	245,675
Percent of Total		
Oilseed & Grain Farming	6.5%	15.3%
Vegetable & Melon Farming	1.6%	1.8%
Fruit & Nut Tree Farming	0.6%	4.5%
Greenhouse, Nursery, etc.	0.6%	2.5%
Other Crop Farming	29.8%	23.6%
Beef Cattle Ranching & Farming	39.8%	29.8%
Cattle Feedlots	1.3%	1.4%
Dairy Cattle & Milk Production	3.7%	2.6%
Hog & Pig Farming	0.6%	1.4%
Poultry & Egg Production	1.0%	2.9%
Sheep & Goat Farming	4.8%	3.1%
Aquaculture & Other Products	9.5%	11.1%

Source: *(EPS-HDT 2012)*

Table 3.11 shows county-level economic information for 2011 based on data from the Bureau of Economic Analysis. More than half of the earnings generated in Owyhee County come from farming. In

terms of employment, the farming section accounts for more than one-quarter of the jobs in Owyhee County. More than half of the cash receipts generated by farms come from livestock and products.

Table 3.11 - Farm Earnings, Employment, and Cash Receipts (2011)

	Owyhee Co. (ID)
Total earnings by place of work (million dollars)[1]	$198.5
Farm earnings (million dollars)	$107.3
Farm earnings (%)	54.0%
Total employment[2]	4,262
Farm employment	1,123
Farm employment (%)	26.3%
Farm cash receipts and other income (million dollars)[3]	$345.3
Livestock and products (%)	58.6%
Crops (%)	37.6%
Other (%)	3.8%

Source:
1 Bureau of Economic Analysis, Regional Economic Information System (BEA-REIS). 2012. Table CA05: Personal income by major source and earnings by NAICS industry.
2 Bureau of Economic Analysis, Regional Economic Information System (BEA-REIS). 2012. Table CA25N: Total full-time and part-time employment by NAICS industry.
3 Bureau of Economic Analysis, Regional Economic Information System (BEA-REIS). 2012. Table CA45 Farm income and expenses.

Table 3.12 - Average Annual Wages, 2010 (2011 $s) and Total Employment, 2010

	Owyhee County, ID	**County Region**	**U.S.**
Total Private & Public	$25,885	$29,303	$48,218
Total Private	$25,566	$26,649	$47,917
Farm	$34,861	$29,355	$27,389
Crop Production	$37,729	$26,519	$25,896
Animal Production	$33,984	$32,997	$30,900
Non-Farm	*$35,668*	$25,483	$48,065
This table shows wage data from the Bureau of Labor Statistics, which does not report data for proprietors or the value of benefits and uses slightly different industry categories than those shown on previous pages of this report.			
Percent of Total Employment, 2010			
	Owyhee County, ID	**County Region**	**U.S.**
Total Private	76.7%	73.5%	83.1%
Farm	18.7%	8.1%	0.6%
Crop Production	4.2%	4.5%	0.4%
Animal Production	14.6%	3.5%	0.2%
Non-Farm	*10.7%*	40.2%	82.5%
This table shows employment data from the Bureau of Labor Statistics, which does not report data for proprietors or the value of benefits and uses slightly different industry categories than those shown on previous pages of this report.			

In 2010, livestock cash receipts in the state of Idaho totaled $3.23 billion, an increase of 29 percent over the previous year (USDA NASS 2011). According to the 2007 USDA Census of Agriculture, the most recent year the census was taken, (USDA NASS 2009) 134,732 cattle and calves were sold in Owyhee County that year, which brought almost $67 million to the county that year, an average of $497 per head. In the state of Idaho, 1.8 million cattle and calves were sold that same year, totaling more than $1.3 billion, an average of $756 per head. Research completed in 1999 estimated that livestock grazing contributed $66.94/AUM[9] to the Owyhee County economy (Darden, Harris, Rimbey, & Harp 1999). $46.85/AUM as a direct impact to ranches and $16.22/AUM as indirect/induced effects to other sectors in the local economy. Indirect and induced economic effects to the regional economy include supply purchases (such as hay, equipment, etc.) and from the labor income expenditures by ranch employees and by employees of suppliers. These numbers provide a means of comparing effects to the local economy from changes in livestock grazing management, but actual economic impacts may vary by ranch and county.

The BLM collects annual grazing fees from the operators based on the number of AUMs they are permitted. An AUM represents the amount of dry forage required to sustain one cow and her calf, one steer, one horse, five sheep, or five goats for one month. The ORMP provides 135,116 active permitted AUMs for all of the allotments in the Owyhee Resource (Field Office) Area. Active use is the current authorized use, which is calculated by subtracting suspended use (AUMs) from permitted use. Permitted use is the forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease. At the current rate of $1.35 per AUM, the Fossil Butte group allotments can generate as much as $5,008.50 per year from active-use AUMs. The BLM distributes 50 percent of the grazing revenues to range betterment projects, 37.5 percent remains in the U.S. Treasury, and 12.5 percent is returned to the state (43 USC Chapter 8A 1934). In addition, the federal Government contributes payments in lieu of taxes (PILT), which totaled more than $9.5 million in Owyhee County, for an average of about $956,000 per year[10].

Non-market values of ranching

Most environmental goods and services (e.g., clean air and water, fish and wildlife habitat, recreational and aesthetic values) are not traded in markets, so it is difficult to place a monetary value on the protection or degradation of natural resources that provide these goods and services. In many cases, a method called hedonic pricing can attempt to estimate a value of the goods and services an ecosystem provides by examining the amount of money that people would be willing to pay when the characteristics of the service change. For example, the value of the ecosystem services that support recreational activities (e.g., clean air and water that supports habitat for fish and wildlife, which in turn provides hunting, fishing, and wildlife watching opportunities) can be estimated by examining average expenditures for travel, equipment, and supplies for these recreational activities in an area (see tables SOCE-9 and 10 below). People may spend less time and money on recreational activities in areas where the natural resources have become degraded.

Other intangible values associated with ecosystems services include social values of natural resource use – the sense of community cohesiveness and belonging that comes from participating in recreational activities, as well as farming and ranching. Degraded conditions, as mentioned above and in the resource impact analysis sections of this EA, lessen the quality of the land and forage available for growing crops or feeding livestock, which can also have economic impacts on the producers of these goods in the

[9] This total includes Value Added as described in Darden et al. (1999), Table 5: Economic Value of a Single AUM to Owyhee Count Economy. The Total Economic Impacts include calculations of Regional Income Impact and Value Added.
[10] BLM data retrieved at http://www.doi.gov/pilt/county-payments.cfm?term=county&state_code=ID&fiscal_yr=2012

counties adjacent to the Fossil Butte Group allotments. Ecosystems services also have value beyond providing for the uses discussed in this EA. As noted in (Beschta, et al. 2012), providing for healthy, functioning ecosystems can contribute to a greater resilience to extreme events like fires and storms, as well as the long-term impacts of climate change.

Social Value of Ranching

As noted in the Owyhee County Natural Resources Plan (Owyhee County Comissioners 2009), livestock grazing often plays an important social role in this area, in addition to contributing economically. It has been an important component of the local economy in Owyhee County since the late 1860s, when the establishment of the southern Idaho railroad coincided with the migration of sheep through the Owyhee Mountains to Elko, Nevada. Horses and cattle grazing was also introduced in the Owyhee Mountains at that time, and residents of rural Oregon, Idaho, and Nevada have since identified with the tradition, land use, and history of ranching in these areas. Maintaining the land in agriculture and ranching preserves the rural character and small-community feel, keeps the cost of living lower, and provides ample opportunities for recreation. Harp and Rimbey (2004) found that in communities in Owyhee County where ranching was an essential component, community members felt a much greater connection to each other, to the ranchers, and to local business owners. Among the Owyhee County communities surveyed for the study, Marsing community scored high in terms of community cohesion, owed at least in part to the large role that ranching plays in the community. Closing a ranch in Marsing could have substantial negative effects socially.

Environmental Justice

The Executive Order 12898 of February 11, 1994, established the requirement to address environmental justice concerns within the context of federal agency operations. This means that agencies must:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;
- Ensure the full and fair participation by all potentially affected communities in the decision-making process; and
- Prevent the denial of, reduction in or significant delay in the receipt of benefits of the project by minority and low-income populations.

Evaluation of these impacts requires the identification of minority and low-income populations (including Native American tribes) within the affected area and evaluation of the potential for the alternatives to have disproportionately high and adverse impacts on such populations. Low-income populations are determined based on annual statistical poverty thresholds developed by the Bureau of Census. A low-income community may include either a group of individuals living in geographic proximity to one another or dispersed individuals (such as migrant workers or Native Americans) where the group experiences a common effect or environmental exposure. Minorities are individuals who are members of the following population groups: American Indian, Alaskan Native, Asian, Pacific Islander, Black, or Hispanic (Council on Environmental Quality 1997).

Table 3.8 above shows the median household incomes and poverty rates for the counties addressed in this document. Owyhee County is largely an agriculturally based economy, so incomes are lower and poverty rates are higher than national averages.

Table 3.13 shows the breakdown in race and ethnicity for the county. The minority population does not exceed 50 percent. However, the proportion of minorities in Owyhee County is higher than the proportion for Idaho (16 percent). Crop producers and livestock operations in the United States commonly and legally employ citizens of Mexico and various Latin American countries, and most of these individuals would be classified as minority. Some proportion of the minority populations in Owyhee County could be

employed by crop producers and livestock operators. Changes in livestock grazing in the county could affect some members of the minority communities there.

Table 3.13 - Race/ethnicity distribution

	Owyhee County
Total	11,389.0
Population by race	
White alone	69.2%
Black or African American alone	0.1%
American Indian and Alaska Native alone	3.1%
Asian alone	0.0%
Native Hawaiian and other Pacific Islander alone	0.0%
Some other race alone	0.0%
Two or more races	3.2%
Population by ethnicity	
Hispanic or Latino	24.4%
Minority	30.82%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

3.1.8 Cultural and Paleontological Resources

3.1.8.1 Cultural Resources

3.1.8.1.1 Archaeological Resources

Archaeological sites are associated items in a given locality that reflect past human behavior and environmental conditions. They may contain any combination of portable artifacts, non-portable features, and ecological remains usually found in or on a soil matrix. Sites were often used repeatedly, with occasional sediment deposition between occupational layers; thus allowing archaeologists to study chronological changes and often preserving perishable materials and contextual information. Buried site components are often significant for interpreting ancient behaviors, dietary preferences, shifts in mobility patterns, and details of daily life not described in histories.

Prehistoric and historic sites, isolated artifacts, and traditionally significant properties are all cultural resources that are protected under laws and executive orders (Section 1.8.4). The term historic property refers to any archaeological site whose values qualify it for listing on the National Register of Historic Places (NRHP). Buildings, structures, sites, districts, or even entire landscapes may also be eligible based on their classification as Traditional Cultural Properties or classified as sacred sites (Executive Order 13007) with or without the potential for NRHP eligibility. National Register Districts can be designated for groups of thematically related historic properties such as the Guffey Butte/Black Butte district that buffers the Snake River where it intersects the allotments discussed in this EA.

General Discussion of Impacts

Illegal digging (pot hunting or looting) may lead to the complete destruction of all context at sites, the rapid deterioration of perishable materials, and the eventual loss of knowledge of where looted artifacts came from. Looting of surface artifacts can also cause loss of site significance, since the most diagnostic materials (such as spear, dart and arrow points, and historic bottles) are most often those stolen. Though removing these kinds of items from public lands or digging at sites without a permit has been illegal since

the Antiquities Act of 1906, these activities have been the most serious threat to area resources from at least the 1950s. This activity appears to have decreased somewhat over the past few decades judging by site reports.

Sites within the area have also sometimes been impacted by roads, transmission lines, and fences that have been built through them, generally without affecting their NRHP eligibility. Bull-dozing, mining, dam construction and other ground-disturbing activities that took place before NEPA clearance had a much greater potential for impacts, including total site destruction. These earlier ground-disturbing activities were more likely to have caused harm to the elements of sites that made them NRHP eligible; current BLM policy and federal regulations require mitigation of impacts for more recent activities. More generalized and lower impact activities such as off-highway vehicle (OHV) use and grazing, have effects similar to trampling by wildlife, and are unlikely to result in changes to site eligibility. Fires may have burned over some prehistoric sites numerous times over hundreds or thousands of years with little or no long-term effects expected at most sites. Wildfires have increased in potential for site effects in recent times in the area partially due to the presence of cheatgrass and Russian thistle. Russian thistle can build up around features such as rock art panels and provides a hot-burning fuel that may cause rock surfaces to spall off. Even soot accumulation on panels can eventually cause deterioration of panels, and loss of surrounding lichen and vegetation can destabilize rock surfaces and surrounding sediments that may then erode from under panels and cause them to crack (Kelly and McCarthy 2012, Tratebas et al. 2004). Removal of surface vegetation increases the likelihood of site erosion, particularly on slopes, and may increase visibility of artifacts previously covered by vegetation, potentially increasing the chances of looting in some areas. Seeding, increased patrols, or other appropriate mitigation may be necessary after significant fires, while other fires will have characteristics that limit potential effects. Historic structures, including the Priest Ranch, have been destroyed by fire.

As new range improvements, recreation projects, or other potential disturbances are proposed, cultural resources will be evaluated, and mitigation of potential impacts will be considered for potentially affected sites. Sites subject to erosion along the corridor of the Snake River are monitored on a regular basis as part of the Swan Falls Dam relicensing process and other projects, and mitigation of any observed effects that are likely to destroy NRHP significant components will be considered on a case-by-case basis.
The majority of trailing routes currently proposed follow established roads or trails, many of which were in existence long before NEPA requirements. Grazing has had a long history in the study area. Local Native American tribes obtained horses in the 1700s. By the 1840s, the Oregon Trail was bringing thousands of people, horses, mules, oxen, and cattle through Idaho. These stock animals depleted a wide ribbon of vegetation along the Oregon Trail (Vale 1975, Yensen 1982). After gold was discovered in Idaho in 1862, miners and the businesses that supported them created mining districts and towns like Silver City and drovers like Con Shea began moving herds numbering into the thousands across Idaho to feed miners and for markets elsewhere (Hanley and Lucia 1973, Yensen 1982). As early as the 1860s, settlers removed acres of sagebrush to make fields for crops (Yensen 1982). By the mid-1860s, several bands of sheep had been trailed to Idaho from California and Nevada, and the 1890 census listed 357,712 sheep in Idaho (Yensen 1982). Ranchers also raised thousands of horses for work, transportation and freighting. These industries have resulted in both site impacts and in the presence of related historic sites.

Methodology

A Class I Literature Search was conducted using all major information sources listed below to determine what previous archaeological surveys and sites have been reported within a quarter mile of all allotment boundaries on the Owyhee County side of the Snake River. All available site forms and reports were reviewed, including reevaluation and monitoring reports, in order to assess the type and extent of past impacts to resources, particularly those relating to grazing. High resolution digital aerial imagery was examined over all allotments to determine whether visible impacts might be occurring in areas where no cultural resource surveys had yet taken place and probability for sites was high. The most likely areas for

the intersection of sites and impacts are around natural water sources where cattle tend to congregate and archaeological sites are likely. Topography, shelter, and other potential resources that would have played into site placement were also considered for site prediction. Areas where site disturbance seemed most likely based on these factors were scheduled for intensive pedestrian surveys and all proposed water haul locations were also surveyed. The results of the literature search and pedestrian surveys are presented to the Idaho State Historical Society in Reports 09-O-05 and 13-O-12 and summarized here.

Major Information Sources

- BLM and Idaho State Historic Preservation Office (SHPO) GIS layers for previous surveys and projects, archaeological sites, historic sites, and isolated finds
- Aerial Photography (Bing and Google)
- GIS layers for paleontological localities and strata
- ASI, site monitoring and reevaluation forms for archaeological sites supplied by the Idaho SHPO
- Cultural Resource Reports pertaining to specific projects various journal articles relating to specific sites and area history and prehistory referenced in Report 13-O-12

3.1.8.1.2 Cultural Resource Significance

Table 3.14 - Summary of Known Cultural and Paleontological Resources by Allotment

	Fossil Butte	Con Shea	Sinker Butte	Joyce FFR	Montini FFR	Murphy FFR	Total*
Sites/Isolates	34	31	28	2	11	0	104
Components							120
Pre-contact	27	21	22	1	8	0	79
Historic	12	15	9	1	6	0	41
Unknown Age	0	0	1	0	0	0	1
Land Status							104
BLM	26	5	10	1	0	0	42
BOR/BLM	8	26	16	0	7	0	57
State	1	0	0	0	1	0	1
Private/IPC	1	0	2	1	3	0	6
NRHP Eligibility							103
Register Listed	4	8	6	0	4	0	22
Eligible	6	13	11	0	4	0	32
Undetermined	15	6	3	1	3	0	28
Not Eligible	6	2	2	0	0	0	10
Isolated Find	3	2	6	1	0	0	12
Paleontological localities	19	15	8	0	2	0	44

*Note: Seventeen sites contain both pre-contact and historic components. One crosses land ownership boundaries and numbers also include the Oregon Trail, South Alternate Route, an NRHP Eligible site that crosses the Fossil Butte, Sinker Butte and Con Shea Allotments through BLM, state, and private land.

3.1.8.1.3 Prehistoric Sites

Due to topography, management practices, and fencing, not all of the sites discussed are readily accessible by cattle. Most national register eligible and listed prehistoric sites in the allotments are recommended on the basis of their ability to contribute significant information to our understanding of prehistory. Sites with undetermined eligibility may have been recorded before the advent of the NRHP, before recommendations became common on site forms, or a determination may not be possible without conducting additional archival research or subsurface excavations to determine research potential. Such sites are treated as if they are eligible until another determination is made in the field and approved by the SHPO. Sites are not eligible for the NRHP unless they meet at least one register criterion. However, lack of eligibility does not necessarily mean lack of significance for other purposes. A location, object, or asset may be a sacred, traditional, or cultural resource that is significant but does not meet NRHP criteria. These could include important plant or animal resources or landscapes, and can usually only be identified through consultations with affiliated groups rather than archaeological survey. Potential effects on access and condition are therefore assessed under NEPA review as concerns are identified during consultation, in addition to potential scientific or historic values.

Significant prehistoric sites within the allotments include a small cave excavated in 1929 that contained artifacts related to fishing and housewares; sites with rock art, lithic artifacts, shell and/or remains of hearths, cairns, campsites, burials, house pits, and rockshelters, (including some with fishing and hunting artifacts, shell and faunal remains and other subsistence related items that were professionally excavated in the 1950s through 1970s). The sites reflect thousands of years of human occupation and resource use in the area

Examples of isolates within these allotments include one or a few pieces of lithic waste flakes and/or fragments of dart or arrow points that aid in reconstructing the chronology, trade and mobility patterns , and subsistence behaviors.

3.1.8.1.4 Historic Sites

Historic sites listed on the NRHP include mining prospects, tailings, and remains of wood flumes, dugouts and other mining related artifacts and structural remnants. NRHP eligible sites include portions of the South Alternate Route of the Oregon Trail, sites with dugouts, and historic debris, mining sites with placer mining areas and mining tailings, wooden flume troughs, mining equipment, and other mining-related features, prospect pits, and homesteading related sites including a stone cabin with outbuildings, cairns, and a cistern. Some trail segments, graves, cairns, fences, corrals, artifact scatters, and a site that was once thought to possibly be the Utter Massacre site are left unevaluated or require further information to determine eligibility status. Sites that do not meet any NRHP criteria include a historic ferry crossing, trash dumps (one of which was likely left by Civilian Conservation Corps workers), a mining site with a grizzly screen and other debris, a sheep camp, a hand forged cow bell, and a short wooden bridge spanning a ditch. The Swan Falls Dam was built in 1901 and the associated historic plant and related features are located along the Snake River east of the Sinker Butte Allotment. The historic sites demonstrate over 150 years of migration, settlement, mining, ranching, and industry.

3.1.8.1.5 Multicomponent Sites

3.1.8.1.5.1 Listed

In determining NRHP status or National Register District listing at sites with both pre-contact and historic remains, one component may be considered as contributing to the site's merits for eligibility or listing, while the other may not due to a lack of potential new data, condition or significance of artifacts or features, association with important events., etc. Prehistoric components include house pits, lithic scatters, shell remains, hunting-related artifacts, rock art (petroglyphs) Some historic site components present on multi-component NRHP listed sites include mining tailings, a mining flume, dug-outs and

wooden structures, bottle and can scatters, a cairn. National Register eligible sites include an historic placer mining area with associated features and an ineligible prehistoric cobble tool; a prehistoric fishing site with historic debris, prehistoric site at a mining site and another associated with ranching components. No multicomponent sites within the area encompassed by the EA have been recommended as Not Eligible for the NRHP, and there are no isolated finds with both a historic and a prehistoric artifact present.

3.1.8.2 Culturally Significant Resources

To date, no Traditional Cultural Properties have been officially designated within any of the allotments and specific information on such properties is usually exempt from disclosure. Resources that may be related to important prehistoric subsistence and cultural activities are present in the general area. The Snake River provided a variety of rare resources including fish and shell fish, riparian plants, aquatic birds, as well as water, shelter, and boulders suitable for rock art left over from the Bonneville Flood. It continues to be an important area for recreation and subsistence. Access to and condition of such resources is not expected to be impacted under any of the alternatives discussed in this EA.

3.1.8.3 Paleontological Resources

Several locations throughout the allotments evaluated in this EA have yielded vertebrate and invertebrate fossils. Collections made from these localities are cataloged and maintained by the Idaho Museum of Natural History (IMNH) at Idaho State University and catalog data was used in this report, along with GIS data maintained by the BLM. A long history of research, access, and geological characteristics have resulted in a number of important studies relating to Pliocene fauna similar in type, if not in quality or abundance, to those found at the Hagerman Fossil Beds. Most date to the late Blancan to early Irvingtonian Epochs (approximately 2.6 million to less than two million years ago). In order to protect the scientific value of such finds, the Paleontological Resources Protection Act (PRPA) has made it illegal to collect fossil bones, teeth, or any other vertebrate remains or significant fossils without a permit, though small quantities of common shell, plant, or insect fossils are generally collectable.

3.1.8.3.1 Formations

Named geologic formations of types and ages that could contain fossil remains are mapped across most areas within the allotments discussed in this EA. However, fossils may not be exposed, may not be well preserved, or may not have been discovered due to lack of survey. The most common formation over the area is the Glenns Ferry Formation that dates from Pliocene to Pleistocene times and may contain fossils of camelids, peccaries, mastodons, ground sloths, and other large and small mammals, reptiles, fish, and amphibians (Sankey 2002). The Glenns Ferry Formation is present over most of the Con Shea, Sinker Butte, and the Murphy and Montini FFRs as well as over much of the Rabbit Creek/Peters Gulch and Fossil Butte Allotments and a large portion of Joyce FFR. The Black Mesa Gravel along with the Glenns Ferry Formation is distributed across about half of the Fossil Butte and Joyce FFR Allotments whereas the Bruneau formation and Glenns Ferry Formations together are found within small portions of the Montini FFR and Fossil Butte. Those areas could contain fossils typical of the Glenns Ferry Formation. Finally, the Sucker (or Succor) Creek Formation is mapped over a large are of the Rabbit Creek Peters Gulch Allotment, and a very small portion of the Murphy FFR. This formation is Pliocene in age and is associated with ancient varieties of moles, shrews, bats, fish, three-toed horses, animals similar to deer and sheep, and others.

3.2 Environmental Consequences Common to All Allotments

3.2.1 Alternative A

3.2.1.1 Vegetation, including Noxious Weeds

Alternative A describes livestock grazing management under the current permits for the Con Shea and Sinker Butte allotments. Under this alternative, grazing would occur as authorized under the existing permit.

The impacts of livestock use to plant communities and individual plants are related to the season in which livestock graze a vegetation community, as well as the intensity, duration, and frequency of use in a given year (Reed et al. 1999). See the Vegetation Specialist Report (Corbin 2013) for detailed information on each of these factors, which are summarized below. Specific values of indicators for each of these factors are presented for individual allotment and alternative-specific sections.

Season of Use
Alternative A (Con Shea and Sinker Butte allotments only) includes only winter grazing (November through February). Effects from winter grazing are as follows.

Winter Grazing
Winter grazing of upland vegetation communities generally is a period of minimal impacts. Herbaceous plants are dormant (except for limited warmer spells, primarily on south-facing exposed slopes), so there are virtually no impacts to photosynthesis, carbohydrate reserves, or reproduction. Cattle generally consume dried herbaceous vegetation, which may reduce thermal insulation and snow-capture on perennial bunchgrasses. Forage quality of cured standing herbaceous vegetation is moderate to low, improving when mixed with new growth or browse from palatable shrubs. Light to moderate utilization of standing cured herbaceous vegetation is not detrimental to health and vigor of plants, and may somewhat increase new growth the following spring because of reduced shading from residual material on the plant crown. In the Fossil Butte Group area, snow depths are often shallow, with extensive wind-blown open areas, so snow cover does not generally preclude winter use of herbaceous vegetation. Grazing of fall-sprouting annual species (such as cheatgrass) may reduce competition with desirable perennial herbaceous species during the following growing season.

With winter grazing, shrub use may be higher than when green grass is available. Salt desert shrub areas are often used as winter range, and living twigs of dormant browse plants provide much of the feed (Holmgren and Hutchings 1972). Heavy winter shrub utilization can reduce production of the more palatable shrubs such as budsage or winterfat and increase less palatable shrubs such as shadscale or rabbitbrush (Holmgren and Hutchings 1972). No heavy use of shrubs in the Fossil Butte group allotments has been observed.

Cattle tend to use uplands more than riparian areas in the winter because virtually all vegetation is dormant and cold air sinks into low-lying riparian areas.

Winter grazing effects on soils and biological soil crust depend on the soil texture and whether there is sufficient moisture and cold temperatures to freeze. Wet, clay soil would be subject to compaction and churning, as described in spring grazing, while wet sandy soil would be less subject to damage than when dry. Solidly frozen soils have fewer effects on soils and biological soil crusts. Light to moderate utilization levels will retain adequate standing material and litter for soil protection from wind erosion, rainfall impact, and late winter and spring runoff. Heavy utilization levels will expose the soil surface to these negative impacts, especially on sites with marginal potential to produce a reasonable vegetation cover and in years with limited growth of protective vegetation cover. The potential for repeated grazing

of localized areas, resulting in heavy utilization, is present with severe weather conditions and snow accumulation reducing livestock distribution. Negative impacts intensify on palatable shrub species when snow accumulation makes herbaceous species unavailable. Livestock management actions to maintain animal distribution are oftentimes limited by weather and accessibility.

Late winter/early spring grazing use results in additional impacts to vegetation and soil resources as compared to winter use. Early growth of herbaceous species, primarily cool season species, occurs with rising soil temperatures. Minimal impacts to plant vigor and health occur with light to moderate utilization of early growth when adequate soil moisture is available for regrowth and completion of the annual growth cycle. Moderate utilization, in years with minimal soil moisture available for regrowth after use, could deplete plant vigor and health, especially during periods of critical growth. Heavy to severe defoliation can expose the soil surface to future erosive forces of wind and water. Use of palatable annual species (such as cheatgrass) early in this period may reduce competition with desirable native perennial species when grazing is removed and adequate soil moisture remains to complete perennial plants' growth cycles. Early growth of herbaceous vegetation contains high water content and thus, when combined with leached old growth, has only moderate forage quality. The hazard of compaction of wet soils with hoof action of livestock may be present, resulting in a reduction of infiltration and soil moisture holding capacity in fine-textured soils. Opportunities for good livestock distribution are present with more locations of available water and cool air temperature.

Intensity of Use

Intensity of grazing use can be indicated by utilization, total use (AUMs), or stocking rate (as shown by acres per AUM). Grazing intensity can affect plant communities by affecting plant vigor and reproduction, species composition, soil structure, and weeds.

Utilization is defined as the proportion or degree of current year's forage production that is consumed or destroyed by animals (USDI-BLM 1999b). For purposes of analysis, slight utilization is generally defined as up to 20 percent, light utilization from 21 to 40 percent, moderate utilization from 41 to 60 percent, heavy utilization from 61 to 80 percent, and severe utilization greater than 81 percent. Generally, the vigor of forage grass species can be sustained with light or moderate utilization, while heavy utilization reduces photosynthetic tissue below levels needed to maintain root reserves, diminishing the vigor of utilized species. However, the timing of grazing use relative to plant phenology and the occurrence of repeat grazing of individual plants combine with utilization levels to affect the health and vigor of key species, as well as changes to vegetation community composition. Moderate utilization during periods when reserves and photosynthesis are limited for initial growth, during regrowth, or during seed formation will impact herbaceous species greater than the same level of utilization during periods when the plant is not actively growing (Anderson 1991). A review of the literature by Anderson (1991), pertaining to the effects of defoliation and vigor recovery of bluebunch wheatgrass, and research by Ganskopp (1988), pertaining to similar effects to Thurber's needlegrass, revealed a high sensitivity to utilization during the active growing season. Grazing use that occurred when the plant was entering the boot stage, a period early in its seed producing stage of growth, was the period of highest sensitivity. Utilization levels of 30 to 40 percent under deferred grazing systems or one time utilization levels greater than 50 percent during the growing season have been shown to cause significant reductions in vigor and productivity (Mueggler 1975). Time frames necessary for recovery may extend beyond the average 2 to 4-year cycle frequently used in grazing rotations. Researchers have recommended that desert ranges be stocked for around 30 to 35 percent use of forage production in an average year to meet both vegetation management and livestock production objectives (Holechek et al. 1999). With increasing intensity of use, individual perennial grass vigor declines because of the reduction in available photosynthetic material and carbohydrate reserves (Koerner et al. 2013). As large bunchgrasses decline, the productivity of the site declines because large bunchgrasses are generally more productive than the shallow-rooted grasses that replace them. Hanson et al. (1994) found heavy grazing reduced herbage yield and litter and increased

bare ground, but found no significant difference between moderately grazed and ungrazed plots; frequency of perennials was mostly static, but where a change was seen, bunchgrass frequency increased in ungrazed plots.

Forb species tend to not have the ability to regrow following grazing. While grasses tend to have growing points close to the soil surface, growing points of forbs are elevated with growth. As a result, grasses are less likely to have growing points removed with light to moderate levels of grazing while growing points of forbs are easily removed, even with light grazing. Additionally, some forbs are highly palatable and sought out by grazing animals.

Total AUMs used per year in an allotment is an indication of overall use and is useful for comparing alternatives and comparing actual use in an allotment between years. The stocking rate (animals per unit area for a given length of time) in rangelands is normally indicated by an inverse metric: acres per AUM. Thus, a higher acres/AUM figure corresponds to a lower stocking rate. In the OFO, acres/AUM values have been approximately 6 to 25 AUMs/acre on different allotments. When comparing stocking rates for different areas allotments or pastures, consideration must be given to the ecological sites present (and thus the potential vegetation types and productivity), condition of the range and existing vegetation (actual available forage), the topography (land available to cattle), water sources (affecting cattle distribution and land actually used), as well as season of use and particular allotment or pasture objectives. It is usually more useful to compare acres/AUM figures between alternatives for a given pasture or allotment than between different areas.

Long-term impacts of moderate to heavy utilization are dependent on the individual plant species' ability to maintain health and vigor, recover from impacts, and remain competitive while being utilized by grazing animals. The composition of a vegetation community, as it relates to the relative palatability of different plant species available for grazing, will affect measured utilization and subsequent levels of competition between individual plants. Although stocking rates are usually established to limit utilization to light or moderate levels, factors affecting livestock distribution will cause some areas where animals tend to concentrate to be utilized to a heavy degree, while other areas may remain unused or only slightly used. Concentrated use areas would have a larger extent and be more widespread under alternatives with a higher intensity of use.

The intensity of livestock use will also affect standing vegetation material and ground cover remaining after use. As utilization levels are increased, canopy cover of grazed and browsed plants declines. Additionally, deposition of protective plant litter to the soil surface, incorporation of litter into the soil, and the density and distribution of plant roots in the soil profile are decreased. As a result, increased utilization can reduce cover of bare ground by vegetation material and litter, increase puddling of clay soils with raindrop impact, reduce rates of infiltration of precipitation, and reduce permeability and moisture storage of soils. High utilization levels can contribute to increased overland flow of precipitation and snowmelt, soil erosion, siltation of streams, and a decline in surface water quality affecting beneficial uses. All these adverse impacts to soil properties and availability of soil moisture from high levels of utilization result in long-term reduced plant vigor and productivity.

Intensity of grazing use and trampling affects biological soil crusts; higher intensity areas generally have lower biological soil crust than low use areas. A reduction in biological soil crust would have potential effects of increased wind and water erosion, loss of topsoil, and reduced nutrient and moisture capture.

Increased grazing intensity would produce more trampling. These trampled areas have more bare ground (from reductions in biological crusts, stable litter, and native perennial vegetation), which are more conducive for invasive annual plant establishment, such as cheatgrass (Banks and Baker 2011). Cheatgrass and other invasive weeds are also favored by reductions in native perennial plant vigor,

because a healthy native plant community is more competitive with weeds and better able to resist invasion. Cheatgrass alters the plant communities in several ways. As a winter/early spring germinating annual, it uses soil moisture and nutrients earlier than most natives, putting them at a competitive disadvantage, so cheatgrass often replaces desirable native perennials and annuals. It often creates a thick annual litter layer that inhibits biotic soil crusts and the germination of native plant seed, and creates a continuous fuel layer allowing fires to spread almost yearly, greatly altering the natural fire regime and perpetuating a burn/cheatgrass cycle (Balch et al. 2013). Cheatgrass has shallower roots than large, native bunchgrasses (Pellant 1996), so it is poorer at holding soil and reducing wind and water erosion, compared to native perennials, resulting in increased soil loss from cheatgrass invasion.

Grazing intensity can affect both above- and below-ground biomass (Koerner et al. 2013). With increased grazing intensity and the reduction of large bunchgrasses which provide primary structure to the expected vegetation of these ecological sites, the herbaceous community structure changes to one dominated by shallow-rooted species such as Sandberg bluegrass and/or cheatgrass. These shallow-rooted grasses do not provide the below-ground biomass of the large bunchgrasses, and soil stability, nutrient cycling, and carbon storage are all reduced compared to reference conditions.

Grazing intensity also affects the physical integrity of perennial plants. Under higher intensity grazing, there is more plant trampling, causing crown displacement, uprooting of seedlings, and breakage of brittle stems, all of which affect individual plant vigor.

Increased intensity (depending on the season of use) can affect plant reproduction by reducing seed production, redistribute seed, and affecting seedling establishment by altering seedbed litter and seedling trampling. Grazing can also affect plant reproduction by potentially impacting pollinators, such as trampling of ground-nesting native bees (Kearns and Inouye 1997). Kimoto (2010) found that the abundance, richness, and diversity of native bumble bees reduced with increased grazing intensity, due to the decrease of floral resources. This could be especially important for rare or special status plant species, which often have specific pollinators (e.g. bumble bees on a rare plant in the northwest, per Lesica 1993).

The intensity effects to individual plants and differing responses between species can cause changes in plant community composition over time. Because cattle prefer to graze on large bunchgrasses, this selective pressure will over time reduce the more palatable species and increase less palatable ones. Native perennial forbs can also be sensitive to grazing intensity, and reduce in abundance and species richness under more intense grazing. Shrubs and trees generally competitively increase as large bunchgrasses decrease, although the season of use and specific palatability of the shrub (like willows or bitterbrush, which are considered highly palatable) may affect their trends as well. Intense grazing can also facilitate an increase in invasive weeds. These factors can combine to cause a shift in structure within a plant community by altering the proportions of shrubs, large bunchgrasses, small bunchgrasses, native forbs, and weedy annuals. The season, duration, and frequency of use (in addition to intensity) will also affect this plant community shift.

Table 3.15 - Plant Community Structural Changes With More Intense Grazing

Structural Group	Direction of change
Large bunchgrasses (e.g. bluebunch wheatgrass, Idaho fescue, Thurber's needlegrass, Indian ricegrass)	Decrease
Small bunchgrasses (e.g. Sandberg bluegrass, squirreltail)	Increase
Shrubs	Increase (depending on season and palatability)
Native perennial forbs	Decrease
Weedy annuals	Increase

Intense grazing can reduce bunchgrass cover, increase gaps between bunchgrasses, reduce the diversity of bunchgrass species, and reduce biological soil crusts, all of which combine to affect cheatgrass (and other weedy annuals) dominance; reducing grazing intensity may be one of the most effective ways to limit cheatgrass dominance (Reisner et al. 2013).

Duration and Frequency of Use

The duration of use may be related to the intensity, but there are differences. For example, the use of 100 AUMs by one cow/calf for 100 months would have different effects than 100 animals for one month. Duration can be indicated by the number of days per pasture; this metric can be useful for comparing between alternatives. With longer times in a pasture, particularly during the growing season, there is more chance of an individual plant being grazed multiple times within a season as it re-grows, reducing plant vigor. The duration of use may also affect the opportunity for regrowth; if a pasture is used the entire growing season, there is little or no time for plant recovery.

Reed et al. (1999) provided a grazing response index based on the frequency of grazing forage plants, intensity of removal of active photosynthetic material, and opportunity to grow prior to grazing or to regrow. Generally, a positive index resulting from grazing less than 7-10 days, removal of less than 40 percent of photosynthetically active material, and most or all of the growing season to grow or regrow is beneficial to the health, structure, and vigor of plants. Conversely, a negative index results from grazing longer than 14 to 20 days, removal of more than 55 percent of photosynthetically active material, and little or no chance to grow or regrow, indicating that management practices are harmful.

Frequency can indicate the number of times a pasture is used within a year (such as spring and fall use), or the number of times a pasture is used in a multi-year period, particularly during the growing season, relating to the amount of rest or deferment. Use of a pasture at more than one season would compound effects from each season of use. Conversely, incorporating rest or deferment into a multi-year rotation would provide an opportunity for undisturbed regrowth, recovery of plant vigor, and a chance for increased reproduction (seed set and seedling establishment) over the term of the permit.

Season-long grazing of a pasture generally begins during the growing season and extends to the end of the period of authorized use, typically into the fall period. Many of the impacts associated with use during the growing season occur with season-long use. Additional impacts occur from localized livestock concentration late in the season as sources of water diminish, as forage quality declines in upland communities, and as ambient temperatures rise. The effects of season-long grazing on species composition are largely dependent on the degree of utilization on the key species. Although the stocking rates that are generally implemented with season-long grazing are designed to achieve moderate levels of utilization on most areas, factors such as terrain, location of fences and water, and vegetation types available, prevent uniform patterns of grazing. Heavy grazing will inevitably occur in some areas while light utilization will occur in others. A trend away from desired future conditions is expected in areas receiving moderate to heavy utilization on an annual basis, especially when that use occurs during active growing periods.

Distribution of Use

In addition to the season, intensity, duration, and frequency of grazing use in a pasture or allotment, how cattle use is distributed within a pasture will affect vegetation. Forage modeling and stocking rates usually assume uniform use of a pasture, but this is almost never the case in native rangelands. Cattle use areas near water more heavily than more remote locations, repeatedly utilize travel-ways (roads, trails, along fence lines), use areas with more herbaceous vegetation heavier than wooded areas, use gentle slopes more than steep slopes, and prefer less rocky or boggy areas. As a result, a variable pattern of use occurs, with higher and lower use areas. This may result in the overuse of some areas, and grazing management can alter this behavior to some extent by altering the availability of water (water haul sites,

spring developments, riparian fencing), fence placement, and active herding. Use distribution will also be affected by the season of use (e.g. riparian areas used more during the hot season). The effectiveness of herding, and ability to gather at the end of the season, are affected by the overall size of the pasture, topography, and density of screening vegetation (such as juniper cover).

Weed Introduction

Grazing management affects weed increase within an allotment primarily by affecting plant community structure/health/competitive ability, the amount of bare soil created, and movement of weed seed within an allotment, as described in the Intensity of Use section. However, another discrete factor is the amount of weed seed potentially brought into the allotment from elsewhere at the beginning of the grazing season by various vectors. An indicator of this potential for weed seed introduction is the number of cattle and horses (in these allotments) turned out on the allotment each year, because a higher number of animals could carry more weed seed in their fur, hooves, or rumen. The actual introduction of weed seed would also depend on where the livestock came from (what weeds are present at the previous location), what the animals were eating, the time of year (relative to seed set, seed drop, muddiness), and the dispersion adaptations of the specific weed species (e.g. seeds with barbs on fur).

This indicator is not as useful for FFR allotments, where the number of animals is not specified because generally a large proportion of them are on private lands at any given time. The total number of animals in the pasture is generally much larger than that permitted on BLM lands alone, but any of those animals could be using public lands at times. So although the total number (which BLM does not manage) would be an indicator of the risk of weed seed introduction, that information is generally not available for FFR allotments. Also, this indictor is less useful for permits that limit AUMs but allow flexibility in the number of animals (such as more cattle for a shorter period of time), which is true of the Fossil Butte Group allotments.

Effects to Biological Soil Crusts

A potential impact of grazing on soils and vegetation is the disruption of biological soil crusts that influence nutrient cycling and stabilize surface soils (Belnap and Gillette 1998). Biological soil crusts are fragile when dry and are easily crushed and trampled by humans or livestock (Belnap and Gardner 1993, Cole 1990). While the surface crust can be regenerated by living filaments when the soil is again wet, the structure of soil and the abandoned sheaths below the surface are permanently destroyed (Belnap and Gardner 1993). Since biological soil crusts are a primary contributor of nitrogen in arid and semiarid regions, loss of soil crusts can result in serious degradation of soil fertility and resultant reductions in plant community vigor. Biological soil crusts can affect species composition; Wicklow-Howard et al. (2003) found that intact biological crusts inhibit cheatgrass germination.

Domestic livestock trampling can results in compaction and disturbance of the surface soil, with resulting negative impacts on biological soil crusts. Marble and Harper (1989) determined that season of use by livestock had a significant effect on biological soil crust coverage values and species richness. Decreases in these two parameters can be observed in areas used by livestock during both early and late winter as opposed to areas used only during the early winter. Reduced trampling during late winter and spring, when soil moisture is high and soil crust species are metabolically active, might permit the organisms to recover from the disturbance enough to reduce soil erosion. Concostrina-Zubiri et al. (2013) found that biological soil crusts are a major factor in soil heterogeneity, and heavy grazing pressure may alter this natural pattern. Soil heterogeneity affects soil chemistry and water retention and thus influences plant productivity and vascular plant establishment.

Disturbance timing 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 compressional stresses when dry.

Crust components are brittle when dry, and the connections they make between soil particles are easily crushed. Thus, compressional disturbances can 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 (Belnap and Eldridge 2003). On silty soils of the Great Basin, early wet season (winter) use by livestock has been shown to have less impact on crust cover and species composition than late winter or spring use. Crusts on clay soils can be an exception, as they are generally more vulnerable when wet. Fine-textured, clay soils or those with inorganic crusts are more vulnerable to compressional disturbance when wet because these soils tend to be hard and more stable when dry. Winter grazing as defined under the applicable alternatives, in the Fossil Butte Group allotments, would be expected to maintain biological soil crusts.

Recovery depends on the composition of the soil crust, severity and timing of the disturbance, climatic events during and following disruption, and proximity of surrounding inoculant sources (Anderson et al. 1982, Johansen and St. Clair 1986, Marble and Harper 1989, Belnap and Gardner 1993, Belnap 2000). Although partial recovery from trampling by livestock can occur in less than 20 years, estimated time for full recovery may range from 30 to 40 years for cyanobacteria, 40+ years for mosses, and 50 to 100+ years for lichen where the crust is entirely removed (Belnap et al. 2001).

Transitional State

Though these allotments have transitioned from large bunchgrass community to shallow rooted perennial and annual grass communities the management of livestock grazing is essential to maintaining the intact native components and watershed function. It would take decades to notice any significant (defined as measurable and/or observable changes to the indicators) progress toward meeting Standards. Any progress in these lower elevation areas would be slow (would take decades) and climatically dependent. As outlined in the transitional models in the USDA NRCS (2005) Ecological Site Descriptions for these vegetative communities, a transition back to a state that is dominated by deep rooted cool season plants is unlikely. According to other research (Laycock 1991), these communities have crossed a threshold into a different vegetation state and the transition back to a perennial grass understory is "difficult to cross, and is highly unlikely if annuals are adapted to the area."

3.2.1.2 Soils

Changes in livestock management, overall, would maintain riparian-wetland areas under all alternatives. The proposed grazing strategies would: 1) limit grazing intensity and season of use to provide sufficient rest to encourage plant vigor, regrowth, and energy storage; 2) ensure sufficient vegetation during periods of high flow to protect streambanks, dissipate energy, and trap sediments; and 3) control the timing of grazing to prevent damage to streambanks when they are most vulnerable to trampling. Timing of grazing (winter, spring), intensity (light to moderate), and duration (short-term) would maintain and/or improve riparian-wetland conditions. All allotments, where Standards 2, 3, and 7 apply, would be expected to meet or make progress toward meeting Standards. Allotment management would not result in a measureable difference for Standard 1 due to the reasons described below.

Overall condition (being closely tied to the health of the biotic community and soil surface stability) is exhibiting little measurable change. The areas which currently are not fully meeting the Watershed Standard for Rangeland Health (up to 80 % or more of these allotments) are showing little progress towards meeting this standard. As stated in the evaluation/determination the Sinker Butte, Montini FFR, Joyce FFR, Murphy FFR, and Con Shea allotments were not meeting this standard and current livestock grazing management practices were not found to be a significant factor.

Areas that are currently meeting the standard would continue to do so under normal climatic fluctuations. Soil degradation around watering facilities would continue to be the most noticeable direct impact

associated with livestock grazing and would be most prominent generally in the initial ¼ mile from the facility and then lessen with distance radially out from the facility.

Direct negative impacts to the soil surface from livestock hoof action (physical destruction of surface structure and compaction) would continue where livestock tend to trail and congregate (within ¼ mile of water sources, at mineral licks, along fence lines and gates, and in unmanaged riparian corridors). This represents less than 10% of the analysis area based on 2004 digital photo coverage, 2005 Rangeland Health Assessments, and field visits within the last 2 years.

None of these allotments progress measurably toward meeting or making progress towards meeting Standard 1 although the grazing periods that are proposed in the majority of the alternatives consist of winter grazing that is expected to minimize damage to soils through compaction or displacement. The current transition state that supports a shallow rooted cool season perennial grass and annual grass dominated system is most likely an indicator that the site has passed a threshold.

3.2.1.3 Riparian/Water Quality

Impacts from grazing are similar for riparian areas and water quality, since water quality impacts in the project area are increased sediment and water temperature above natural baseline conditions. Reducing riparian vegetation and bank trampling are the main vectors for water quality impacts. By reducing deep-rooted vegetation and decreasing bank stability, stream channels have more erosion that gets into the water; and reduced shading from less shrubs and tall grasses increases direct sun which increases water temperature in the summer months.

Parameters that are measurements for water quality related to the project area issues outlined by DEQ can be described via riparian vegetative conditions, stream PFC ratings, stream bank stability, stream substrate, and water temperature. Water quality impacts in the project area are attributed to all upstream uses that include irrigation, livestock grazing, reservoirs, roads, and wildfires. Livestock grazing may have an effect on water quality only when there is an observed impact to the riparian function and therefore, Standards 2 and 3 are used as surrogate indicators for potential changes to water quality.

Details regarding the direct and indirect effects of livestock grazing under Alternative A in Sinker Butte and Con Shea Allotments are provided in the allotment specific sections that follow.

3.2.1.4 Special Status Plants

Winter grazing to special status plants would have effects similar to those described in Section 3.2.1.1. There would be no direct effects to annual species and few effects dormant perennials.

3.2.1.5 Wildlife and Special Status Animals

Alternative A is the Current Permit alternative for the Con Shea and Sinker Butte allotments. Under this alternative, grazing use would occur as allowed under the existing permit.

The consequences of livestock impacts to wildlife species and their habitats are generally related to the season in which livestock graze a vegetation community and the life history requirements of individual or focal species. Specific effects common to upland and riparian wildlife habitats and appropriate wildlife species are given in allotment and alternative specific sections.

Season of Use

Specific dates and levels of use are discussed for each allotment for Alternative A in Section 3.3 below. Alternative A (Con Shea and Sinker Butte allotments only) includes only winter grazing (November through February). Effects from winter grazing follow:

Winter Grazing

Studies have shown that winter grazing has maintained or improved riparian conditions in sites with contrasting elevation, vegetation communities, and precipitation patterns (Masters 1996). However, heavy utilization of riparian vegetation during the winter months may result in a reduced ability to protect existing streambanks and trap existing sediment during early spring runoff (Kovalchik et al., 1992). ORMP objectives and Terms and Conditions of the permits are expected to preclude heavy utilization in upland and riparian wildlife habitats except in isolated pockets.

Consequences to Focal Special Status Animal Species

Greater Sage-grouse
Potential effects of light to moderate winter grazing on sage-grouse and associated upland habitats would be negligible due to the maintenance of current upland habitat conditions and lack of physical impacts to sage-grouse. However, heavy winter utilization could reduce production of the more palatable shrub species and increase less palatable shrubs. A reduction in palatable shrubs could reduce available sage-grouse winter forage and protective cover. Effects to sage-grouse brood-rearing habitat in riparian pastures resulting from light to moderate winter grazing would also be negligible due to the maintenance or improvement of current riparian habitat conditions and lack of physical impacts. However, effects to brood-rearing habitat resulting from heavy winter grazing would be similar to those discussed under heavy fall grazing. Potential effects in sage-grouse habitats would be expected to exceed the term of the permit. Therefore, alternatives incorporating winter grazing resulting in heavy utilization would be inconsistent with objectives stated within the BLM special status species policy in Manual 6840 (USDI-BLM 2008b), in particular "to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA."

Columbia River Redband trout
Under heavy winter grazing, effects to redband trout and other fish species would be similar to those discussed under summer grazing. Under light to moderate winter grazing, habitat for redband trout and other fish species would be similar to those discussed under fall grazing. Conditions for fish populations downstream of the allotment boundaries also would improve due to reduced sediment loads and lower water temperatures from inflowing streams.

Migratory Birds, Raptors, and other Birds (including Special Status Species)
Potential effects of light to moderate winter grazing on birds and associated upland habitats would be negligible due to the maintenance of current upland habitat conditions and lack of physical impacts. However, heavy winter utilization could reduce production of the more palatable shrub species and increase less palatable shrubs. A reduction in palatable shrubs could reduce available bird nesting and forage cover during the subsequent spring. Under light to moderate winter grazing, habitat conditions for many bird species in the allotment, especially species associated with riparian areas, would be similar to those discussed under fall grazing. Under heavy winter grazing, effects to avian riparian habitats would be similar to those discussed under fall grazing.

Big Game and other Mammals (including Special Status Species)
Potential effects of light to moderate winter grazing on mammals and associated upland habitats would be negligible due to the maintenance of current upland habitat conditions and lack of physical impacts. However, studies suggest that heavy late fall and winter cattle grazing can be detrimental to the availability of forage for deer (Chaikina et al., 2006). Potential effects of winter grazing in riparian areas would be similar to those discussed under fall grazing.

3.2.1.6 Recreation and Visual Resources – All Grazing Alternatives

Hunting is the most likely recreational activity to be affected under any of the grazing alternatives in those allotments/pastures where grazing schedules overlap with hunting seasons. OHV use could also be impacted slightly, especially in areas where livestock tend to congregate around the trail, temporarily slowing or impeding OHV travel. These impacts however are considered to be negligible.

Under all grazing alternatives, the Owyhee Field Office would continue to work with permittees on the coordination of event dates for motorized events (i.e. motorcycle races) in order to prevent any overlap/interference with livestock operations and vice versa. Non-motorized events such as equestrian endurance rides which occur within the area are not typically impacted by grazing operations.

Livestock trailing activities would not impact recreational resources or public safety because trailing events would be of low frequency and would generally be of short duration. Buffers extending beyond the existing roadways also provide an opportunity for livestock to get off of roadways which allow traffic to pass through. Additionally, most trailing activities occur on existing routes made up of gravel or native materials, which also help reduce traffic speeds. Effect of trailing on visual resources would also be negligible due to the fact that livestock trailing occurs on existing roads.

Water haul sites tend to distribute livestock more evenly throughout the area, decreasing the likelihood of livestock on roads and trails, thus minimizing recreationists' interactions with livestock. The water haul sites are located outside of areas categorized as VRM I, additionally the sites are not located within the vicinity of the Oregon Trail, and thus there would be no impacts to these areas. There are no proposed fence projects for any of the alternatives, which would maintain the existing opportunities for hikers and equestrian users to travel cross country. This also prevents the creation of new disturbance as fences are constructed in relationship to visual resources, and the potential for new trails along fence lines.

All grazing alternatives appear to be in conformance with the VRM classifications throughout the allotments. The allotments were identified as containing VRM I though IV, in areas of VRM class III and IV, any impacts due to livestock grazing activities or from water haul sites are considered acceptable with the VRM objectives. There are no projects or water haul sites in areas of VRM class I and II, therefore there are no impacts to these areas as a result. There are areas throughout the allotments in VRM class I and II that were identified as not meeting VRM objectives; however grazing does not seem to be the causal factor in not meeting these standards.

Management objectives would also be met under all alternatives in relation to the segments of the Oregon Trail that are located within the allotments, as all grazing alternatives would sustain the trail resources. There is also a direct correlation with VRM class I and the Oregon Trail, the ORMP classifies those areas along the trail as VRM class I. With the grazing schedules meeting the VRM class I objectives throughout the allotments, the existing character of the landscape and trail segments are persevered.

Due to the fact that impacts to recreation are negligible from any of the grazing alternatives, and all grazing alternatives are in conformance with the VRM classifications throughout the allotments, recreation and visual resources will not be discussed further in this document.

3.2.1.7 Social and Economic Values

The following three tables show the change in AUMs for each alternative on the Fossil Butte Group allotments and the value of those changes. These values assume that the animals use all of the active use AUMs authorized. In the table, the net annual effect—which is equal to the dollar value of the change in total AUMs plus or minus the resulting difference in grazing fees—represents the market value of the change in AUMs for hypothetical livestock operations. It should not be construed as an estimate of the

actual economic impact on actual individual ranches within the study area. Ranchers have a wide range of options available to them in terms of how they respond to changes in the permitted number of AUMs on their range allotment(s). Depending on the length of their allowed grazing season and the specific change in permitted AUMs, a rancher might choose to increase or decrease herd size, change grazing months, retain or sell animals at their headquarters, lease new ground or cancel one or more leases on private rangeland, switch to irrigated pasture, adjust feed lot contracts or completely change operation types. Given the number of uncertain variables and the range of possibilities, it is not feasible to anticipate how individual ranches will react to changes in their specific grazing permits. Also unknown are any and all associated business decisions made in response to prevailing markets, federal and state agricultural policies, and personal values.

BLM acknowledges that as a result of any changes in permitted AUMs, there are likely to be multiplier effects within the economy that serves the associated ranching community. Because it is not possible to quantify the specific monetary impacts on individual ranches, it is also not possible to accurately estimate the resulting multiplier effects. It is possible, however, to state qualitatively, for example, that a reduction in AUMs would result in a corresponding reduction in regional economic activity if ranches choose to reduce herd numbers and then in turn reduce their spending within the regional economy.

Table 3.16 - Total change in AUMs and value of AUMs for all of the Con Shea allotment

Alternative	% Change in AUMs	Change in Total AUMs	Total Active AUMs	Annual Dollar Value of Change	Net Annual Effect (Dollar Value of Change +/- Diff. in Grazing Fees)	Value of AUMs to community
A	0%	0	990	$0	$0	$66,270.60
B	25%	250	1,240	$3,168	$2,830	$83,005.60
C	0%	0	990	$0	$0	$66,270.60
D	0%	0	990	$0	$0	$66,270.60
E	-100%	-990	0	-$12,543	-$11,207	$0

Table 3.17 - Total change in AUMs and value of AUMs for all of the Sinker Butte allotment

Alternative	% Change in AUMs	Change in Total AUMs	Total Active AUMs	Annual Dollar Value of Change	Net Annual Effect (Dollar Value of Change +/- Diff. in Grazing Fees)	Value of AUMs to community
A	0%	0	707	$0	$0	$47,326.58
B	1%	10	717	$127	$113	$47,995.98
C	12%	84	791	$1,064	$951	$52,949.54
D	1%	10	717	$127	$113	$47,995.98
E	-100%	-707	0	-$8,958	-$8,003	$0

The reduction in AUMs could result in additional cost to livestock operators because of a change in livestock numbers or management practices. These costs could include:

- Different AUM fees: Private land AUM fees in 2011 were $14.50/AUM in Idaho and $14.80/AUM in Oregon, plus transportation costs. AUM fees on state-owned land in 2012 are $5.25/AUM in Idaho and $8.48/AUM in Oregon. The 10-year (2002-2011) average market value of an AUM in Idaho is $12.67/AUM, which is an estimate based on survey indications of monthly lease rates for private, non-irrigated grazing land.
- Feeding hay on the ranch instead of grazing on pastures: The operators would need 780 lbs. (0.4 tons) dry forage/month for each cow and her calf if the herd were moved back to the ranch instead of to other grazing land. The 10-year (2003-2012) average price for alfalfa hay

was $138/ton in Idaho and $148/ton in Oregon. This means that the operator would spend up to $58/month ($693/year) on dry forage for each cow and her calf.

There may be other costs associated with changes in livestock numbers or management practices that could affect the operators' bottom lines and the community as a whole. For example, Torell and others (2002) found that a 50 percent reduction in BLM AUMs in the Jordan Valley[11] area of eastern Oregon resulted in a reduction in net annual ranch returns of $2.41 per AUM removed; reductions of 75 percent and 100 percent resulted in net ranch return reductions of $2.94 per AUM removed and $3.44 per AUM removed (respectively). The authors also found that removing spring grazing on BLM land in the Jordan Valley area would reduce an operator's net cash income by $24.17 per AUM removed. If the operator grazed on private pasture or fed the animals at the ranch during the spring, the negative impact would be lower ($5.34/AUM removed) (Torell, et al. 2002). However, it is possible that one or more operators would find that such a large percentage of the herd would need to be moved or sold that operating the ranch would no longer be economically feasible. Any cuts in AUMs would lead to increased expenses for grazing and/or feed that could be detrimental to the viability of the ranch. This could lead to losses in jobs, income to the community, and tax revenue for the county and state. Additionally, ranching is so intimately connected to the overall culture in the areas in and around Owyhee County that the closing of a ranch would lead to a substantial loss of community cohesion. The closing of a ranch in the county could be viewed by community members as an adverse effect on the social conditions of the local community.

3.2.1.8 Cultural and Paleontological Resources

Under the current grazing permit minor detrimental effects to any historic properties could occur over the long term if sediments are compromised due to significant vegetation loss, erosion, or bank alteration. Although these are unlikely to compromise NRHP eligibility over the life of a grazing permit, they would likely represent irreversible impacts at a few archaeological sites that could eventually lead to significant damage. The hundred-plus year history of grazing and trail use in the area means that surface effects within the top several centimeters of sites have probably already occurred where sites are exposed and these would be unlikely to affect intact subsurface deposits or change NRHP site eligibility characteristics in the uplands. Sites on drainage terraces with intact buried deposits may be subject to erosion that could be increased with heavy cattle trailing, though the need to meet rangeland health standards and terms and conditions to limit stream bank alteration and maintain vegetation would mitigate this to some extent. Regular site monitoring near the Snake River would generally allow for the identification and mitigation of such affects. Most archaeological and paleontological resources are situated away from likely congregation areas and are unlikely to incur effects over the course of the permit. Winter grazing would likely cause the least disturbance to site sediments, though artifact exposure could be greater due to already sparse vegetation.

3.2.2 Alternative B

Specific utilization measurements (2003-2012, as available) for each allotment are found in Appendix F. Continuation of the current situation would be expected to result in similar utilization figures.

3.2.2.1 Vegetation, including Noxious Weeds

Alternative B is the Current Situation alternative. Under this alternative, grazing use would be permitted at the same level and season of use as has been occurring in recent years. The permit would be based on actual use since the last determination, rather than AUMs and dates from the current permit.

[11] Jordan Valley is in Malheur County, Oregon, and is relatively representative of the communities in Owyhee County, Idaho.

See Alternative A (3.2.1.1) for general effects to vegetation relating to winter grazing , intensity of use, duration and frequency of use, distribution, weed introduction, and effects to biological soil crusts. Alternative B includes spring, summer, and fall grazing, as well as winter grazing. General effects from grazing in these seasons follow.

Spring Grazing

Alternative B authorizes spring grazing in FFR allotments only. Spring grazing is often considered the most detrimental to upland vegetation because it occurs during the critical growing period for the majority of herbaceous plants in these ecological sites. The critical growing period is defined as the time period when plants are most actively growing, allocating carbohydrates from roots and crowns and from limited photosynthetic surface area to early growth, photosynthesizing, then storing carbohydrates, and setting seed. In bunchgrasses, this is just prior to the boot stage through flowering and early seed set (Anderson 1991). In these relatively low elevation allotments, the critical growing period is typically March through early June. Herbaceous plants are susceptible to defoliation impacts as a result of the depletion of carbohydrates, especially with moderate to heavy utilization, repeated grazing, and/or frequent growing season use. Grazing during this period reduces perennial grass vigor by removing active photosynthetic material and reducing carbohydrate production, at a time when below-ground carbohydrate reserves are generally lowest. Grass species are especially susceptible to impacts from defoliation during seed formation and seed stalk elongation, due to the high requirement for carbohydrate from remaining plant material and photosynthesis. Defoliation at this time inhibits reproduction by reducing culm production and subsequent seed set. Spring grazing in repeated years can lead to mortality of desirable large bunchgrasses like bluebunch wheatgrass (Quinton 1982). The spring critical growing period grazing also has similar effects on native perennial forbs.

Because different perennial bunchgrasses green-up at slightly different times, the particularly timing of spring grazing may affect some species more than others. Sandberg bluegrass is generally the first native bunchgrass to green-up (break dormancy) and the first to dry up and enter summer dormancy. Bluebunch wheatgrass, Thurber's needlegrass, and basin wildrye mature next, while Indian ricegrass, needle-and-thread, and Idaho fescue mature a little later in the spring.

Annual plants can be sensitive to spring grazing, particularly the native annual forbs (including several special status plant species) that germinate and flower in the spring. Annuals can be impacted by herbivory (less likely for small annuals) or trampling which could dislodge and kill plants before they have a chance to set seed and complete their lifecycle.

Cheatgrass germinates in fall through spring, and early spring grazing can reduce cheatgrass in areas where it greens up earlier than perennial bunchgrasses and would be preferred by cattle at that time. However, cheatgrass also sets seed earlier than most perennials, and cattle will generally not graze cheatgrass after it sets seed (USDA-Forest Service 2012).

In the spring, cattle preferentially graze on the new, green growth of perennial grasses, forbs, and annual grasses. Little use on shrubs is expected with spring grazing. Upland shrub species reach maximum growth withdrawing shallow soil moisture early and deeper water reserves as the season progresses. Because of grazing selective pressure on different species groups, spring grazing can affect species composition by reducing large perennial bunchgrasses and most forbs, and increase dominance by shrubs and cheatgrass. Repeated use during the growing season can be expected to reduce vigor and health of desirable perennial herbaceous species and lead to trends away from desired future conditions.

Spring-long grazing would not allow for regrowth within the season of adequate soil moisture and temperatures. A short, early season of use that allows for regrowth during most of the critical growing period would provide better for plant vigor and reproduction.

Spring grazing may also affect soils because wet soils are more subject to compaction from trampling in high use areas. Wet clay soils are also more prone to displacement and churning than when dry; this also affects the biological soil crusts on those soils, along with general soil structure (Belnap and Eldridge 2003).

In the spring, cattle generally prefer to use upland areas more than riparian areas because vegetation in the uplands is succulent and green and temperatures are relatively cool, so upland vegetation is used disproportionally high compared to riparian vegetation. This presents opportunities for improved livestock distribution away from riparian areas.

Summer Grazing

With summer grazing, perennial grasses are generally past their critical growing period. They are either mature but still green, photosynthesizing, and completing seed set during the non-critical growing period, or going dormant as upland plants dry out in the hot season. Carbohydrate reserves have been replenished as photosynthetic products are moved into below-ground biomass in perennial grasses and forbs. Grazing at this time is less detrimental than spring grazing to most perennial grass and forb species, although biomass removal of any green vegetation would reduce photosynthesis somewhat. A deferred season of use provides for livestock grazing after most of the upland species have reached the growth stage of late seed development and replenished carbohydrate reserves. There is little opportunity for perennial plant regrowth during the summer after grazing because soil moisture is low.

Summer grazing on forbs has similar effects to perennial grasses. Perennial forbs with growing points below-ground (such as many milkvetch, lilies, hawksbeard) would have virtually no effects from summer grazing once leaves have dried in summer dormancy. Plants with above-ground growing points and brittle stems (many buckwheats, penstemons) would be subject to stem herbivory and physical damage (breakage) at all times of year, including summer, which could reduce plants' vigor. Summer grazing would have no effect on most annual forbs which complete their lifecycle and have set seed by early summer, although there are a few annual forb species (such as turtleback) that germinate and mature later, into summer and could be affected by summer grazing.

Summer grazing can cause cheatgrass to increase. By summer, most of the cheatgrass biomass is in the seedheads, which cattle generally avoid because of the bristly awns (USDA Forest Service 2012). Therefore, cattle will select perennial grasses over cheatgrass, potentially affecting perennial grass vigor and tipping the competitive balance toward cheatgrass.

Summer grazing and trampling effects on soils and biological soil crusts would depend on soil texture. Clay soils are more stable/less subject to displacement when dry, so there would be fewer trampling effects on clay soils from summer grazing than other seasons. However, sandy soils are more stable when moist, so trampling effects from summer grazing on these soils would cause more soil and biological soil crust displacement than wetter seasons. Effects on loamy soils would be intermediate as far as physical displacement. Because soil crust species are only metabolically active when wet and are brittle when dry, summer disturbance is more destructive and organisms are less able to recover, than wet season disturbance (Belnap and Eldridge 2003).

With summer grazing, cattle would be using pastures after seed maturity, so this could increase seed spread within the pasture/allotment because cattle may spread seed by ingesting and deposing seed in manure or carry seed in their fur and in mud on hooves (Belsky and Gelbard 2000). This could distribute both native and weed species' seeds within the allotment, but the spread of weed seeds is likely to have a large effect on the native plant community.

As herbaceous plants go dormant, upland communities have declining forage quality and lower palatability to wildlife and domestic herbivores after the growing season and during the summer. Livestock will tend to turn to palatable browse species, especially when herbaceous utilization levels become heavy late during this period, to maintain a given level of nutrition when mixed with lower quality herbaceous feeds.

In the summer, cattle tend to use riparian areas disproportionally more than uplands because riparian vegetation is still green while the uplands have dried out, and because higher temperatures cause cattle to seek water more often. Localized impacts from defoliation and the physical presence of livestock intensify near water sources and other areas of concentrated activity. Additionally, nutrient concentration will occur in areas of concentrated livestock activity.

Fall Grazing

During the fall, many herbaceous plants are dormant and dry so grazing effects on photosynthesis, carbohydrate reserves, or reproduction at this time would be minimal. Upland herbaceous health and vigor is not impaired with light to moderate utilization of cured standing materials. However, some bunchgrasses have a fall green-up period of regrowth if fall rains coincide with enough above-freezing temperatures. This second flush of growth can provide additional carbohydrate reserves to benefit spring vigor, and provide additional biomass cover to the plant crown for winter protection. Tausch et al. (1993) found that removal of fall regrowth from perennial grasses favored cheatgrass by reducing the ability of perennial plants to compete with cheatgrass the next spring. Ellison (1960) cites a study that found fall clipping reduced bluebunch wheatgrass yield the second year. Removal of biomass cover from the plant crown can reduce thermal insulation which prevents frost damage or winter desiccation of growing points. Removal of standing dead vegetation also reduces the amount of wind-blown snow captured by these plants, which may be a substantial proportion of the moisture available to plants in these very low-precipitation zones. Heavy to severe use may expose soils to erosion from wind and water for an extended period through the initiation of spring growth.

Cattle tend to use shrubs more in the late summer and into fall than in the spring or early summer, as grass and forbs dry up, so fall grazing has a proportionately higher use on shrubs than spring grazing.

Most of the native annuals germinate in spring, so fall grazing has little effect on them. However, because cheatgrass germinates in fall though spring, fall grazing on newly-germinated cheatgrass could potentially reduce this weed, although early-growth grazing on cheatgrass without killing the plants may simply cause tillering or producing additional stems, which will then set abundant seeds (Pyke 2000). Fall grazing can also be used to reduce cheatgrass litter biomass and potential fuel loading (Perryman and Zick 2013). Reisner et al. (2013) raise concerns about using grazing to control cheatgrass in systems where remnant bunchgrass communities exist because the bunchgrasses and biological soil crusts are important components for resisting cheatgrass invasion.

Fall grazing effects on soils and biological soil crusts depend on soil moisture. Normally, soils are dry to somewhat moist, so soils and biological soil crust effects are similar to summer grazing. Unusually heavy fall rains could produce temporarily wet soils, in which case effects would be similar to early spring.

Use of riparian versus upland areas in the fall can be variable. Because temperatures are cooler, cattle may disperse farther from the riparian areas than in summer, but because riparian vegetation is usually more green and succulent than dormant upland vegetation, riparian may be more heavily used than uplands. Riparian shrubs, in particular, may be more heavily used in the fall than other times of year. Water distribution is often a limiting factor in the fall, as many reservoirs and streams are dry at that time.

3.2.2.2 Soils

The environmental consequences for Standard 1 (Watersheds)that represent common impacts to the soils resource are considered the same for all alternatives and all allotments and are described in full detail within Alternative A, above (Section 3.2.1.2).

3.2.2.3 Riparian/Water Quality

The effects of livestock grazing under Alternative B to riparian areas are discussed in the individual allotment sections that follow. The environmental consequences for Standard 7 (Water Quality) that represent common impacts to water quality are considered the same for all alternatives and all allotments and are described in full detail within Alternative A, above (Section 3.2.1.3).

3.2.2.4 Special Status Plants

General SSP Effects

Grazing effects to special status plants would be very similar to those described for other upland vegetation species, above. Impacts to perennial forb special status plants from grazing would consist of growing season herbivory, and trampling (displacement, stem breakage) on growing points at any time. Impacts to annual special status plants would be limited to growing season use, because disturbance before germination or after seed set would have no direct effects to these plants.

Special status plants differ from other upland vegetation species in that they normally grow in specialized, localized habitats. Therefore, effects to these plants depend on how intense the grazing and trampling activities are at specific occurrence locations, which depends on the distance from water and forage areas, slope, rockiness, fence locations, and travel routes, as well as overall use of the allotment.

In addition to direct grazing and trampling effects, special status plant habitats are subject to indirect effects from grazing-related increases in invasive weeds. An increase in weeds (as described above), particularly exotic annual grasses, can negatively affect rare plant habitat by competing with the special status plants for space, moisture, and light, and by increasing litter cover which affect germination and soil nutrients, and increases fire frequency (Rosentreter 1992).

3.2.2.5 Wildlife and Special Status Animals

Alternative B is the Current Situation alternative. Under this alternative, grazing use would be permitted at the same level and season of use as has been occurring in recent years. The permit would be based on actual use since the last determination, rather than AUMs and dates from the current permit, where there is a difference.

Specific dates and levels of use are discussed for each allotment for Alternative B in Section 3.3 below. Alternative B includes spring, summer, and fall grazing, as well as winter grazing. See Alternative A (3.2.1.5) for general effects to wildlife relating to winter grazing. General effects from grazing in the remaining seasons follow.

<u>Spring Grazing</u>

A recommended approach is to graze riparian areas in the spring, then remove all livestock and allow forage plants to regrow for the remainder of the season. This would provide vegetation cover for streambank protection during the following winter and early spring high streamflow periods (Clary et al. 1989). However, as discussed previously, spring grazing in upland areas can result in increased soil erosion which would impact water quality in adjacent riparian areas, as well as those downstream.

Consequences to Focal Special Status Animal Species

Greater Sage-grouse

Potential effects of annual spring grazing on sage-grouse and associated upland habitats include egg trampling, nest desertion, and the degradation of current habitat conditions during the breeding season. Spring grazing would result in negligible effects to sage-grouse riparian late brood-rearing habitat due to the ability of riparian vegetation to regrow before the habitat is typically used by sage-grouse (July-Sept.). Effects to sage-grouse and their habitat would be expected for the term of the permit and could persist for decades.

Grazing management in sage-grouse habitat should include the long-term objective of promoting desirable plant communities and the annual objective of retaining a standing crop that adequately provides cover for sage-grouse (Cagney et al. 2010). Although the trampling of eggs and nests by livestock and subsequent displacement and nest abandonment have been documented (Coates et al. 2008), these direct effects are rare and isolated, and more than likely have a negligible influence on population levels. Specifically, current scientific literature identifies adequate canopy cover of sagebrush and tall grasses for nesting, abundant and diverse forbs and insects for brood rearing, and access to succulent and herbaceous riparian vegetation for summer foraging as critical components of healthy sage-grouse habitats (Crawford et al. 2004). Greater sagebrush and herbaceous cover provides vertical and horizontal concealment of nests from predators and has been demonstrated to result in higher nest success (Connelly et al. 1991) (Gregg et al. 1994) (DeLong et al. 1995) (Moynahan et al. 2007) (Coates & Delehanty 2010).

As discussed previously, selective grazing pressure from spring grazing on different species groups can affect species composition by reducing large perennial bunchgrasses and most forbs, and increase dominance by shrubs and cheatgrass. Repeated use during the growing season can be expected to reduce vigor and health of desirable perennial herbaceous species and lead to trends away from desired future conditions. These impacts would result in a reduction of suitable nesting and brood-rearing habitat and prevent improvements to conditions resulting in marginal and unsuitable habitats. Therefore, alternatives incorporating annual spring grazing resulting in heavy utilization would be inconsistent with objectives stated within the BLM special status species policy in Manual 6840 (USDI-BLM 2008b), in particular “to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA.”

Columbia River Redband Trout

Potential effects of spring grazing on redband trout, other aquatic wildlife species, and their habitats include increased levels of surface fines due to increased sediment levels resulting from increased runoff and soil erosion. As a result, the prey base for redband would decrease and sediment would likely suffocate or entomb incubating eggs and emerging fry. Reduced macroinvertebrate diversity and abundance and increased sedimentation would negatively affect redband trout and other aquatic species. Habitat conditions for redband trout and other aquatic species could deteriorate in streams within the allotment boundaries and for several miles downstream of the allotment Direct effects from cattle trampling redds while eggs or fry are present (typically April-mid July) may occur in the form of mortality. Surface fines degrade spawning substrates and reduce reproductive success and available prey base. Fines can suffocate eggs or trap newly hatched fry in the substrate. Effects to redband trout and other aquatic species would be long-term and potentially last for more than 10 years because degraded conditions would continue through the term of the permit.

Migratory Birds, Raptors, and other Birds (including Special Status Species)

Potential effects of spring grazing on avian species and their habitats include egg trampling, nest desertion, increased nest parasitism, and the degradation of upland habitats. Effects to avian species would persist through the short and long term because effects would continue through the term of the permit.

The trampling of eggs and nests by livestock and subsequent displacement and nest abandonment by ground-nesting migratory birds has been documented in numerous studies. These direct effects have been shown to result in significant disturbance to ground-nesting birds at stock densities above 2.5 AU/ha (Jensen et al. 1990). Also, grazing near riparian areas attract Brown-headed Cowbirds that parasitize the nests of many songbirds. Cowbirds will travel several miles from feeding sites to lay their eggs in other species' nests (IDPF 1998).

Research has shown that livestock grazing can cause a decline in habitat for bird species by altering vegetative structure and habitat complexity, reducing cover, diversity, native vegetation, and forage, and spreading weeds and undesirable annuals (Mosconi et al., 1982) (Taylor D. M., 1986) (Bock et al., 1993) (RHJV 2004). The loss of canopy structure at various heights affects nesting habitat and increases the likelihood of predation and nest parasitism. The loss of grasses and forbs affects species that forage on seeds and insects. The fragmentation and degradation of sagebrush habitats connected with the spread of invasive plants, altered disturbance regimes, and the associated state transitions from stable native vegetation communities are some of the most important factors affecting long-term and regional population dynamics of sagebrush-obligate bird species (Knick et al 1995, 2000, 2002, 2003, and 2005).

Effects of grazing on raptors would mainly result from effects to habitat of prey species. Conditions for prey species in upland habitats could deteriorate from current conditions and prey species populations may decline. Reduced numbers of prey can influence reproductive efforts and success of raptors. For instance, golden eagles lay fewer eggs or do not breed during years when jackrabbit numbers are low and lay more eggs and produce more young when jackrabbit numbers are high (Steenhof et al., 1997). Although livestock may disturb or trample ground nests of northern harriers and short-eared owls, these incidents more than likely would be rare and isolated. Burrowing owls might be disturbed by cattle, but their nests are protected from trampling by being deep in burrows and effects to reproductive success due to the effects of livestock grazing would be negligible

Big Game and other Mammals (including Special Status Species)

Potential effects of spring grazing on big game and other mammals include changes in habitat structure, decreased forage availability, and changes in behavior and habitat selection. Effects to big game and other mammals would persist through the short and long term because degraded conditions would continue through the term of the permit.

As discussed previously, selective grazing pressure from spring grazing on different species groups can affect species composition and lead to trends departing from desired future conditions. These impacts would reduce available forage and cover in important breeding and natal (e.g., fawning, whelping, etc.) habitats for various mammal species in the area. A reduction in cover could expose fawns and other young animals to greater predation and increase mortality rates.

Many studies have found potential forage competition between cattle and big game animals, but there is great variation in results depending on game species, location, and season of use. Even though cattle and wild ungulates generally focus on different kinds of vegetation, diet overlap increases when forage is less available in early spring (Chaikina et al. 2006).

Grazing, as well as the physical presence of cattle, can have negative impacts on wild ungulates not only through forage competition, but by causing behavioral changes and altering activity budgets that make foraging less productive (Chaikina et al. 2006). Bissonette and Steinkamp (1996) reported that California bighorn sheep in Big Cottonwood Canyon, Idaho, avoided cattle and decreased use of areas when cattle were in a close proximity. Stewart et al (2002) reported cattle avoidance behavior by elk and mule deer, who adjusted their use of the area, moving away from cattle, possibly to avoid forage competition.

Wild ungulates can also exhibit changes in habitat selection because of the presence of cattle. Loft et al (1991) studied female mule deer distribution in the Sierra Nevada of California in relationship to cattle grazing. The study showed that in the absence of cattle, deer preferred meadows and riparian habitat whereas, on moderately and heavily grazed ranges, deer used more montane shrub habitat. Yeo et al (1993) reported that elk and mule deer changed their habitat use as a result of rest–rotation cattle grazing in east-central Idaho (Chaikina et al. 2006).

Summer Grazing

Consequences to Focal Special Status Animal Species

Greater Sage-grouse

Potential effects of summer grazing on sage-grouse and associated upland habitats would be negligible due to the maintenance of current upland habitat conditions and lack of physical impacts to sage-grouse. Effects to sage-grouse brood rearing habitat in riparian pastures that have the potential to occur include deteriorated wet meadow hydrology and xeric species invasion, low forb abundance and diversity, and reduced amounts of herbaceous riparian vegetation. Improving juvenile survival rates by maintaining or increasing the quantity and quality of early brood-rearing habitat as suggested by Connelly and Braun (1997) appear to have more influence on sage-grouse populations than other factors related to overall reproductive success (i.e., nest success and breeding success) (Aldridge & Brigham, 2001) (Aldridge & Brigham, 2002). Potential effects in sage-grouse habitats would be expected for the term of the permit and could persist for decades. Therefore, alternatives incorporating summer grazing in riparian areas resulting in heavy utilization would be inconsistent with objectives stated within the BLM special status species policy in Manual 6840 (USDI-BLM 2008b), in particular "to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA."

Columbia River Redband Trout

Riparian utilization levels exceeding 35% in the late summer have been shown to degrade fish habitat (McInnis and McIver 2009).When riparian areas are utilized in this manner, effects to fish habitat include increased levels of surface fines, increased width-to-depth ratios, loss of cover, and reduced stream shading. Surface fines degrade spawning substrates and reduce reproductive success. Fines can suffocate eggs or trap newly hatched fry in the substrate. Direct effects from cattle trampling redds while eggs or fry are present may occur in the form of mortality. Increased width-to-depth ratios lead to simplified channels, which reduces hiding cover and leads to warmer water. Loss of overhead cover increases exposure to sunlight, which also reduces hiding cover and increases water temperatures. Loss of hiding cover increases the likelihood that individual redband trout will be preyed upon, and increased water temperatures are likely to result in decreased survival of individual redband trout.

Habitat conditions for redband trout and other fish species could deteriorate in streams within the allotment boundaries and for several miles downstream of the allotment. Bank trampling, reduced macroinvertebrate diversity and numbers, loss of desirable riparian vegetation, increased sedimentation, and reduced overhead cover would negatively affect redband trout and other fish species. As a result, the prey base for redband would decrease, sediment would likely suffocate or entomb incubating eggs and emerging fry, and reduced overhead cover would likely increase predation on redband trout. Without deep-rooted riparian vegetation, streams would be more susceptible to degradation from livestock and high water events. There would be a loss of habitat complexity important for redband trout such as fewer pools, undercut banks, and woody debris, which would likely result in increased vulnerability to predation. Width-to-depth ratios also would increase, which means streams would become wider and shallower. Wide, shallow streams provide less suitable habitat for redband trout, and would likely result

in decreased survival. Effects to redband trout and other fish species would be long-term and potentially last for more than 10 years because the degraded condition would continue through the term of the permit.

Migratory Birds, Raptors, and other Birds (including Special Status Species)
Summer grazing is not expected to deteriorate bird habitat conditions in the uplands due to the minor impacts to upland vegetation and lack of physical impacts to birds. Research has demonstrated that riparian area grazing has an effect on migratory bird species richness; for many species, as grazing increases, species richness decreases (Taylor D. M., 1986) (Krueper et al., 2003) (Earnst et al., 2005). Grazing effects on riparian habitat specialists tend to be greater than on habitat generalists (Bock et al., 1993). Maintenance of and improvements in structural diversity and herbaceous understory cover in riparian-wetland areas are not expected to occur under summer grazing. Degradation of conditions in riparian areas could result in lower nesting densities and success, higher rates of nest parasitism, and decreased foraging habitat.

As discussed previously, effects of grazing on raptors would mainly result from effects to habitat of prey species. Conditions for prey species in upland habitats are not expected to deteriorate from current conditions and prey species populations, more than likely, would remain relatively static. However, under summer grazing, prey species (i.e., primarily rodents and voles) found in riparian areas most likely would decline as these areas deteriorate due to the removal of herbaceous plant biomass and the subsequent lack of litter accumulation. Reduced numbers of prey can influence reproductive efforts and success of raptors.

Big Game and other Mammals (including Special Status Species)
Summer grazing would reduce forage and cover in riparian areas, while maintaining conditions in the uplands. In general, livestock grazing is a competitive action with other herbivores that reduces available forage and reduces cover and habitat structure needed by smaller herbivores (Medin & Clary, 1989) (Schulz & Leininger, 1990) (Hayward et al., 1997). Effects of livestock grazing on big game and mammals under summer grazing in riparian areas would include reduced amounts of forage (e.g., grasses, forbs), browse (i.e., willows), protective cover, and changes in behavior and habitat selection. These effects could lead to lower winter survival due to a reduction of high-quality forage that deer and elk require in order generate winter fat reserves.

Under summer grazing, habitat conditions for bighorn sheep would most likely remain similar to current conditions because current conditions in upland habitat are expected to be maintained over the term of the permit. Therefore, summer grazing is expected to have negligible effects on the local bighorn sheep population and their canyon habitats.

Fall Grazing

Upland Habitat
During the fall, many herbaceous plants are dormant and dry so grazing effects on photosynthesis, carbohydrate reserves, or reproduction at this time would be minimal. Upland herbaceous vegetation health and vigor is not impaired with light to moderate utilization of cured standing materials. Cattle tend to use shrubs more in the late summer and into fall than in the spring or early summer, as grass and forbs dry up, so fall grazing has a proportionately higher use on shrubs than spring grazing.

Riparian Habitat
Use of riparian versus upland areas in the fall can be variable. Because temperatures are cooler, cattle may disperse farther from the riparian areas than in summer, but because riparian vegetation is usually more green and succulent than dormant upland vegetation, riparian areas may be more heavily used than uplands. Riparian shrubs, in particular, may be more heavily used in the fall than other times of year.

Kauffman et al. (1983) suggested late-season grazing for some riparian areas based on the maintenance of plant vigor, plant production, and minimizing disturbances to wildlife populations. Clipping studies by Pond (1961) showed a similar response from plant communities. Others, however, feel that fall grazing is not necessarily the optimum on many sites (Leonard et al. 1997). A fall-grazed plant community, particularly a heavily grazed plant community, has a reduced ability to protect existing banks and to trap new sediments as part of the streambank building process (Clary 1989).

Consequences to Focal Special Status Animal Species

Greater Sage-grouse

Potential effects of fall grazing on sage-grouse and associated upland habitats would be negligible due to the maintenance of current upland habitat conditions and lack of physical impacts to sage-grouse. Effects to sage-grouse brood-rearing habitat in riparian pastures resulting from light to moderate fall grazing would also be negligible due to the maintenance of current riparian habitat conditions and lack of physical impacts. However, effects to brood-rearing habitat resulting from heavy fall grazing that could occur include deteriorated wet meadow hydrology, low forb abundance and diversity, and reduced amounts of herbaceous riparian vegetation required for protective cover. Improving juvenile survival rates by maintaining or increasing the quantity and quality of brood-rearing habitat as suggested by Connelly and Braun (1997) appear to have more influence on sage-grouse populations than other factors related to overall reproductive success (i.e., nest success and breeding success) (Aldridge & Brigham, 2001) (Aldridge & Brigham, 2002). Potential effects in sage-grouse habitats would be expected for the term of the permit and could persist for decades. Therefore, alternatives incorporating fall grazing resulting in heavy utilization would be inconsistent with objectives stated within the BLM special status species policy in Manual 6840 (USDI-BLM 2008b), in particular "to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA."

Columbia River Redband trout

Under heavy fall grazing, effects to redband trout and other fish species would be similar to those discussed under summer grazing. Under light to moderate fall grazing, habitat for redband trout and other fish species would improve in streams in comparison to spring or summer grazing because more woody and herbaceous vegetation would be present during the spawning and hot seasons and less streambank trampling would likely occur. Increased vegetation would result in improved hiding cover, which would reduce predation on redband trout and increase macroinvertebrate prey availability, both of which would likely increase redband survival. Because use would occur outside of the spawning season for most fish species, the direct effects of livestock on spawning fish during the spring would not occur. Shade and cover would improve and there would be an increase in stream channel characteristics including pools, undercut banks, and habitat complexity that would improve in-stream habitat for fish compared to summer grazing. Studies have suggested that streambanks were most stable, and associated sediment losses were at their lowest levels, when riparian areas were grazed in the fall (Agouridis et al 2005). Improvements to in-stream habitat would decrease predation on redband trout and increase refuge areas during high water events resulting in increased survival. Sediment levels probably would be reduced, making gravel areas more suitable for spawning which would likely increase egg-to-fry survival and create better habitat for macroinvertebrates which would increase the prey base for redband trout. Conditions for fish populations downstream of the allotment boundaries also would improve due to reduced sediment loads and lower water temperatures from inflowing streams.

Migratory Birds, Raptors, and other Birds (including Special Status Species)

Potential effects of fall grazing on birds and associated upland habitats would be negligible due to the maintenance of current upland habitat conditions and lack of physical impacts. Under heavy fall grazing, effects to bird species and their habitat would be similar to summer grazing. Under light to moderate fall

grazing, habitat conditions for many bird species in the allotment, especially species associated with riparian areas, would experience improvements in comparison to spring or summer grazing. Cover would increase in riparian areas overall and any grazing impacts to upland nesting substrates and cover would occur outside of the nesting season. Habitat structure and complexity from the current season of growth would be improved. An increase in structural complexity of woody species and the herbaceous understory in riparian areas due to fall grazing would provide greater nesting and foraging opportunities because of an increase in cover and prey. Increases in herbaceous vegetation density are associated with increases in species richness and relative abundance, especially in Neotropical migrants (Dobkin et al., 1998). Forage would likely be more abundant and reproductive success probably would increase. Expected light to moderate utilization of herbaceous and browse species in riparian areas would increase nest-screening cover. Reproductive efforts would not be disturbed by livestock or management activities during the spring breeding season in most lotic riparian areas along perennial streams. Disturbance to nesting birds in most riparian areas would not occur, as most migratory bird breeding is completed by fall.

Raptors would benefit from improved or maintained habitat conditions and increased levels of prey species. Effects to most raptors would be minimal as the territories of most species extend beyond the allotment boundaries. Raptor reproduction probably would increase over time as conditions improved for prey species across the allotment.

Big Game and other Mammals (including Special Status Species)
Potential effects of fall grazing on mammals and associated upland habitats would be negligible due to the maintenance of current upland habitat conditions and lack of physical impacts. Under heavy fall grazing, effects to mammal species and their habitat would be similar to summer grazing. Under light to moderate fall grazing, habitat for big game, particularly deer, would improve in comparison to spring or summer grazing. The amount of upland forage and cover would be maintained, and use of browse species in riparian areas would be less than that resulting from summer grazing. Light use of riparian areas would increase cover for deer fawns during spring and summer months. Herbivores would benefit from the increase in cover and forage throughout riparian areas due to larger quantities of the current year's growth. However, displacement between livestock and big game would continue in riparian areas as fall use would continue. Competition may cause displacement of deer during a time when it is important to build up winter fat reserves.

3.2.2.6 Social and Economic Values

The effects to Social and Economic Values are as described in Section 3.2.1.7. The tables below describe the economic impacts to Fossil Butte and Joyce FFR allotments for all alternatives.

Table 3.18 - Total change in AUMs and value of AUMs for all of the Fossil Butte Allotment

Alternative	% Change in AUMs	Change in Total AUMs	Total Active AUMs	Annual Dollar Value[1] of Change	Net Annual Effect (Dollar Value of Change +/- Diff. in Grazing Fees)	Value of AUMs[2] to community
B	0%	1,328	1,328	$16,826	$15,033	$88,896.32
C	22%	1,622	1,622	$20,551	$18,361	$108,576.68
D	0%	1,328	1,328	$16,826	$15,033	$88,896.32
E	-100%		0			$0

[1]Ten-year average market value of forage per AUM in Idaho, 2002 - 2011 (non-irrigated private ground) is $12.67
[2]Based on estimates by Darden et al

Table 3.19 - Total change in AUMs and value of AUMs for all of the Joyce FFR Allotment

Alternative	% Change in AUMs	Change in Total AUMs	Total Active AUMs	Annual Dollar Value[1] of Change	Net Annual Effect (Dollar Value of Change +/- Diff. in Grazing Fees)	Value of AUMs[2] to community
B	0%	0	246	$0	$0	$16,467.24
C	0%	0	246	$0	$0	$16,467.24
D	-50%	-122	124	-$1,546	-$1,381	$8,300.56
E	-100%	-246	0	-$3,117	-$2,785	$0
F	-50%	-122	124	-$1,546	-$1,381	$8,300.56

[1]Ten-year average market value of forage per AUM in Idaho, 2002 - 2011 (non-irrigated private ground) is $12.67
[2]Based on estimates by Darden et al

3.2.2.7 Cultural and Paleontological Resources

Effects common to all allotments for alternative B are similar to those described for Alternatives A and C because effects to sediments, stabilizing vegetation, or soil crusts may likewise affect site matrix at both archaeological and paleontological sites across all alternatives and allotments. This is particularly true for grazing effects that may act to destabilize and compact soils, limit vegetation and influence artifact exposure. Declines in vegetation that can occur due to spring grazing (Section 3.2.2.1) can work to disturb site sediment matrix, expose fragile artifacts, and disrupt scientific potential. Increased congregation at water sources because of summer grazing can lead to trampling of artifacts and features, soil erosion and compaction if watering locations are adjacent to sites.

3.2.3 Alternative C

3.2.3.1 Vegetation, including Noxious Weeds

Alternative C is the permit as applied for by the permittee(s) for each allotment.

See Alternative A (Section 3.2.1.1) for general effects to vegetation relating to winter grazing , intensity of use, duration and frequency of use, distribution, weed introduction, and effects to biological soil crusts. See Alternative B (Section 3.2.2.1) for spring, summer, and fall grazing effects. Specific dates and levels of use are given as indicators and discussed for each allotment for Alternative C in Section 3.3 below.

3.2.3.2 Soils

The environmental consequences for Standard 1 (Watersheds) that represent common impacts to the soils resource are considered the same for all alternatives and all allotments and are described in full detail within Alternative A, above.

3.2.3.3 Riparian/Water Quality

The effects of livestock grazing under Alternative C to riparian areas are discussed in the individual allotment sections that follow. The environmental consequences for Standard 7 (Water Quality) that represent common impacts to water quality are considered the same for all alternatives and all allotments and are described in full detail within Alternative A, above (Section 3.2.1.3).

3.2.3.4 Special Status Plants

See general effects to vegetation (Sections 3.2.1.1 and 3.2.2.1) and to SSP (Section 3.2.2.4) for effects to SSP common to all allotments for Alternative C.

3.2.3.5 Wildlife and Special Status Animals

Alternative C is the permit as applied for by the permittee(s) for each allotment.

See Alternative A (Section 3.2.1.5) for general effects to wildlife relating to winter grazing. See Alternative B (Section 3.2.2.5) for spring, summer, and fall grazing effects. Specific dates and levels of use are discussed for each allotment for Alternative C in Section 3.3 below.

3.2.3.6 Social and Economic Values

The effects to Social and Economic Values are as described in Sections 3.2.1.7 and 3.2.2.6

3.2.3.7 Cultural and Paleontological Resources

Effects will be as described for Alternatives A, B above for Cultural and Paleontological Resources (Sections 3.2.1.8 and 3.2.2.7).

3.2.4 Alternative D

3.2.4.1 Vegetation, including Noxious Weeds

Alternative D is the Preferred Alternative, which would renew grazing permits with specified seasons of use in order to address specific resource concerns.

See Alternative A (Section 3.2.1.1) for general effects to vegetation relating to winter grazing , intensity of use, duration and frequency of use, distribution, weed introduction, and effects to biological soil crusts. See Alternative B (Section 3.2.2.1) for spring, summer, and fall grazing effects. Specific dates and levels of use are given as indicators and discussed for each allotment for Alternative D in Section 3.3 below.

3.2.4.2 Soils

The environmental consequences for Standard 1 (Watersheds) that represent common impacts to the soils resource are considered the same for all alternatives and all allotments and are described in full detail within Alternative A, above.

3.2.4.3 Riparian/Water Quality

The effects of livestock grazing under Alternative D to riparian areas are discussed in the individual allotment sections that follow. The environmental consequences for Standard 7 (Water Quality) that represent common impacts to water quality are considered the same for all alternatives and all allotments and are described in full detail within Alternative A, above (Section 3.2.1.3).

3.2.4.4 Special Status Plants

See general effects to vegetation (Sections 3.2.1.1 and 3.2.2.1) and to SSP (Section 3.2.2.4) for effects to SSP common to all allotments for Alternative D.

3.2.4.5 Wildlife and Special Status Animals

Alternative D is the Preferred Alternative, which would renew grazing permits with specified seasons of use in order to address specific resource concerns.

See Alternative A (Section 3.2.1.5) for general effects to wildlife relating to winter grazing. See Alternative B (Section 3.2.2.5) for spring, summer, and fall grazing effects. Specific dates and levels of use are discussed for each allotment for Alternative D in Section 3.3 below.

3.2.4.6 Social and Economic Values

The effects to Social and Economic Values are as described in Section 3.2.1.7 and 3.2.2.6

3.2.4.7 Cultural and Paleontological Resources

The specified seasons of use under Alternative D would involve effects common to winter grazing as discussed under Alternative A, and spring summer and fall grazing, as discussed under Alternative B Effects will be as described for Alternatives A, B above for Cultural and Paleontological Resources (Sections 3.2.1.8 and 3.2.2.7). Influences on soils, soil crusts, and vegetation will also potentially affect archaeological site sediment matrix and exposure of artifacts.

3.2.5 Alternative E

3.2.5.1 Vegetation, including Noxious Weeds

Under Alternative E, no grazing would be authorized in any of the allotments for the 10-year period. As a result, there would be no livestock grazing effects to upland vegetation, noxious and invasive weeds, and special status species.

Native plant vigor and reproduction, soil nutrient and water cycling, and special status plants and their habitat would not be limited by livestock grazing. Native plant community health and biological soil crusts would be expected to slowly improve over time, limited only by the low precipitation zone, ongoing disturbances (OHV impacts, fires), and extent of cheatgrass and other invasive plants. Large bunchgrasses would be expected to increase where an adequate seed source is available, although restoration to reference conditions is unlikely in most areas because the plant communities have been so highly altered (Rosentreter 1999). Noxious weeds would be expected to remain static or decline, based on continued treatment activities and on increased competition from improving native perennial vegetation. Cheatgrass would continue to be dominant or subdominant over large areas. Increased competition from improving native perennial vegetation may impede its dominance somewhat (Blank and Morgan 2012), but without grazing to reduce its biomass, cheatgrass production is likely to be high, resulting in a higher, continuous, flashy fuel loading, potentially increasing wildfire size and intensity (Davies et al 2009). No weed seeds would be introduced into the allotments from livestock vectors. Previous livestock concentrated use areas would eventually become revegetated. Special status plant occurrences in all allotments would be expected to be maintained.

Vegetation would improve faster under this alternative than under any other alternative. Increases in plant community health, residual vegetation, energy flow, nutrient cycling, and ground cover would be near optimum for the site (limited only by weeds, soil/climate conditions, existing plant community structure/available seed sources, and non-grazing disturbances) over the 10-year term.

Exclusion of livestock grazing removes impacts to vegetation resources resulting from authorized use. Defoliation of herbaceous and shrub species is limited to that which occurs from insect and native herbivore use. Except in instances when native herbivore numbers are high, upland utilization levels during the growing season and dormant seasons are light. In any year, small areas of concentrated native herbivore use may have moderate to high utilization levels. Residual standing herbaceous material and litter accumulation is greater than with scheduled use by livestock in any season. Soil protection from rain impact is high, limiting erosion and improving soil structure and infiltration. The initiation of herbaceous growth with warming spring soil temperatures may be slightly delayed due to greater interception of solar radiation by standing and down litter.

3.2.5.2 Soils

The environmental consequences for Standard 1 (Watersheds) that represent common impacts to the soils resource are considered the same for all alternatives and all allotments and are described in full detail within Alternative A, above.

3.2.5.3 Riparian/Water Quality

The effects of no livestock grazing under Alternative E to riparian areas are discussed in the individual allotment sections that follow. The environmental consequences for Standard 7 (Water Quality) that represent common impacts to water quality are similar to the effects for grazing alternatives and all allotments and are described in full detail within Alternative A, above (Section 3.2.1.3). However, in the Con Shea and Sinker Butte Allotments the rate of recovery is faster as is described in the specific allotment analyses.

3.2.5.4 Special Status Plants

See Vegetation (Section 3.2.5.1).

3.2.5.5 Wildlife and Special Status Animals

The effects to wildlife habitat would be as described in the vegetation and riparian sections above. Implementation of Alternative E would result in significant progress towards meeting Standard 8 for riparian wildlife habitat within the Fossil Butte Group allotments. Indirect effects from extended rest on riparian vegetation and stream function would lead to short and long-term (2 to >10 years respectively) improvements in riparian plant community health and structure as well as stream function. Improvements to riparian wildlife habitat are expected to occur faster in this Alternative when compared to Alternatives A-D. However, due to de-watering caused by upstream water diversions, it is likely that Sinker Creek will continue to fail to meet IDEQ water quality standards and fail to fully support cold water aquatic life beneficial uses.

Alternative E would improve conditions for all species of wildlife throughout the Fossil Butte Group allotments compared to Alternatives A-D. Vegetative structure and diversity, perennial herbaceous vegetation heights, residual cover, and available forage would increase in all habitat types. However, without grazing to reduce its biomass, cheatgrass production is likely to be high, resulting in a higher, continuous, flashy fuel loading, potentially increasing wildfire size and intensity (Davies et al 2009). The reduction in shrubs and deep-rooted perennial grasses in burn areas resulting from wildfire would limit concealment cover for shrub-steppe obligate, ground nesting, and foraging wildlife species.
Riparian habitats would expand and improve because disturbance from livestock and associated management activities would not occur. Overall, the allotments would become more diverse and productive as wildlife habitats improved and population numbers for most species increased. In general, the majority of negative effects associated with grazing identified in this EA would not occur across the allotments. However, private landowners within the Fossil Butte Group allotments may choose to build additional fencing throughout their holdings in order to continue grazing private lands at their discretion. An increase in fencing on private lands could potentially lead to an increase in wildlife fence collisions in areas of the allotment.

Focal Special Status Animal Species

<u>Greater Sage-grouse</u>
Under Alternative E, habitat for sage-grouse would improve more quickly in comparison to any other alternative, primarily because the negative effects of livestock grazing would no longer occur to the species or their habitat. With the removal of livestock, nesting structure and cover are expected to increase faster compared to all other alternatives in uplands, along with an increase and improvement of late brood-rearing habitat in meadows and riparian areas. Under Alternative E, improved habitat conditions could result in higher nesting success, juvenile survival, and productivity, which could increase local population numbers.

As discussed above, implementation of Alternative E could result in increased fencing on private lands within the Fossil Butte Group allotments. An increase in fencing could potentially lead to an increase in sage-grouse fence collisions within sage-grouse habitat in the allotments, particularly in areas in close proximity to active leks. A recent fence collision risk model, created from a randomized sampling of fences near sage-grouse leks in Idaho (Stevens 2011; Stevens et al. 2012), identifies the risk of sage-grouse fence collisions on private lands within the Fossil Butte Group allotments as negligible throughout all pastures except in portions of Joyce FFR Pasture 5. The risk of fence collision on private lands within this pasture is rated low to moderate due to local topography and proximity to leks. The mortality resulting from potentially increased private fencing in Joyce FFR Pasture 1 is expected to have negligible effects on the local sage-grouse population and their habitats due to the negligible risk of fence collision found on the majority of land within the allotments overall, the small proportion of private land within Pasture 1 that would require fencing, and the potential for improved habitat conditions discussed above.

Columbia River Redband Trout

The removal of livestock grazing would promote the return and increase of herbaceous and woody plant vegetation along streambanks, creating greater stabilization, which would reduce sediment inputs and lead to improved channel conditions. Habitat features such as pools, undercut banks, and overhead cover, which are critical to redband production (Muhlfeld and Bennett 2001), are expected to increase. Increased shade and reduced sediments would also improve aquatic habitat by lowering stream temperatures which has been shown to increase density and biomass of redband trout (Lamberti et al. 1994; Tait et al. 1994; Zoellick 2004). As habitat improves, the redband trout populations within the allotment are expected to increase over the term of the permit.

Migratory Birds, Raptors, and other Birds (including Special Status Species)

Existing riparian areas would improve and expand and streams would eventually experience an increase in riparian areas, resulting in increased levels of riparian habitat across the allotments. Bird diversity and numbers increase when livestock are removed from an area (Taylor 1986; Bock et al. 1993; Dobkin et al 1998; Krueper et al. 2003; Earnst et al. 2005). Nesting structure and cover in both uplands and riparian areas would increase and lead to greater reproductive success and improved population numbers. Improved habitat conditions under Alternative C also would benefit all raptor species; nesting conditions would improve and prey numbers would increase, leading to greater levels of successful reproduction and survival of offspring.

Big Game and other Mammals (including Special Status Species)

As a result of removing livestock grazing, available forage and protective cover for all herbivorous species would increase. Desirable perennial bunchgrass and forb species could increase over time and competition between cattle and other herbivores would not occur. Habitat for bighorn sheep would be maintained or improved. Willow and cottonwood would be expected to increase across the allotment at suitable sites. This most likely would lead to increased numbers of beaver in the area and lead to habitat creation or improvements for many species, including redband trout.

3.2.5.6 Recreation and Visual Resources

This alternative would provide the greatest benefit to recreationists and visual resources. There would be no interaction between livestock and recreationists, and as the overall conditions of the area improve so would visual quality, thus creating a more enjoyable recreation experience. There would be no effects to upland vegetation and riparian areas from livestock, thus improving the overall health and visual quality throughout the allotments. Improved wildlife habitat conditions would increase wildlife viewing opportunities and potentially result in increased hunting success.

3.2.5.7 Social and Economic Values

The effects to Social and Economic Values are as described in Section 3.2.1.7 and 3.2.2.6

3.2.5.8 Cultural and Paleontological Resources

Over the proposed length of the permit, the best benefit to prehistoric sites and paleontological localities would likely be from Alternative E, since it would offer the greatest potential for sediment, soil crust, and vegetation stability, thus aiding in the recovery of site matrix surfaces and increasing site stability. However, it is possible that the lessened presence of local ranchers and BLM monitoring crews would increase the potential for site destruction by looters or vandals, thus this could also be a detriment to some sites. Additionally, some local ranching facilities are of historic value, and if their use is limited or ended due to decreased grazing in the area, this could lead to deterioration of historic ranch sites on nearby private lands as well as potential access to oral histories, historic photographs, and local historic knowledge of their occupants.

3.2.6 Alternative F

3.2.6.1 Vegetation, incl. Noxious Weeds

Alternative F applies only to the Joyce FFR Allotment. See Alternative A (Section 3.2.1.1) for general effects to vegetation relating to winter grazing , intensity of use, duration and frequency of use, distribution, weed introduction, and effects to biological soil crusts. See Alternative B (Section 3.2.2.1) for fall grazing effects.

3.2.6.2 Soils

The environmental consequences for Standard 1 (Watersheds) that represent common impacts to the soils resource are considered the same for all alternatives and all allotments and are described in full detail within Alternative A, above.

3.2.6.3 Riparian/Water Quality

The effects of livestock grazing under Alternative F to riparian areas in Joyce FFR are discussed in the individual allotment section that follows. The environmental consequences for Standard 7 (Water Quality) that represent common impacts to water quality are considered the same for all alternatives and all allotments and are described in full detail within Alternative A, above (Section 3.2.1.3).

3.2.6.4 Special Status Plants

See general effects to vegetation (Sections 3.2.1.1 and 3.2.2.1) and to SSP (Section 3.2.2.4) for effects to SSP.

3.2.6.5 Wildlife and Special Status Animals

Alternative F applies only to the Joyce FFR Allotment. See Alternative A (Section 3.2.1.5) for general effects to wildlife relating to winter grazing. See Alternative B (Section 3.2.2.5) for fall grazing effects.

3.2.6.6 Social and Economic Values

The effects to Social and Economic Values are as described in Section 3.2.2.6.

3.2.6.7 Cultural and Paleontological Resources

The specified seasons of use under Alternative F would involve effects common to winter grazing as discussed under Alternative A, and fall grazing, as discussed under Alternative B. Effects will be as described for Alternatives A, B above for Cultural and Paleontological Resources (Sections 3.2.1.8 and

3.2.2.7). Influences on soils, soil crusts, and vegetation will also potentially affect archaeological site sediment matrix and exposure of artifacts.

3.3 Allotment-specific Affected Environment and Environmental Consequences

3.3.1 Fossil Butte

3.3.1.1 Fossil Butte Affected Environment

3.3.1.1.1 Vegetation, including Noxious Weeds

Upland Vegetation
The Fossil Butte Allotment consists mostly of the Calcareous Loam ecological site, with smaller areas of Sandy Loam, Saline Bottom, and Loamy ecological sites. Unmapped inclusions within the allotment include riparian areas (Sinker Creek, Snake River), rocky bluffs, and ash soil outcrops. There are also several large polygons in this allotment without an ecological site labeled that presumably are also the same or similar to other ecological sites mapped in the allotment, but also include shallow or clay soil "badlands" areas that are naturally sparsely vegetated.

Table 3.3.1 - Fossil Butte Ecological Sites

Ecological Site	Acres (per GIS)	Percent of allotment
Calcareous loam 7-10" ATCO-ARSP5/ACHY-ACTH7	29,456	67%
Sandy loam 8-12" ARTRW8/ACHY	2,964	7%
Saline bottom 8-12" SAVE4/LECI4	2,755	6%
Loamy 8-12" ARTRW8/PSSPS-ACTH7	1,621	4%
Silty 7-10" KRLA2/ACHY	30	<1%
No ecological site identified	6,944	16%
Total:	**43,770**	**100%**

Figure 3.3.1 - Fossil Butte Calcareous Loam site with Salt Desert Shrubs (foreground) and ash soil outcrops (background). September 2011.

Current vegetation in the Fossil Butte Allotment has been highly altered from reference conditions in that the expected large bunchgrasses in each ecological site have been highly reduced, having been largely replaced by Sandberg bluegrass and/or cheatgrass. Cheatgrass is dominant or subdominant throughout most of the lower, northeast half of the allotment, while in the upper slopes to the southwest Sandberg bluegrass is the predominant grass. The native shrub component is intact in most of the allotment, although shrubs are absent or reduced in parts of the lowest elevations in the allotment and in recent fire areas.

Table 3.3.2 - Fossil Butte Allotment (all ownerships) Cover Types Based on PNNL Data

Cover Type	Percent of Allotment
Salt desert shrub	57%
Big sagebrush and mixes	22%
Sparse vegetation	13%
Exotic annuals	3%
Greasewood	3%
Miscellaneous others	1%

Three large wildfires have been recorded within the Fossil Butte Allotment: a 125-acre fire in 1985, a 70-acre fire in 1997, and more recently a 783-acre fire in July 2012. None of these fires burned trend monitoring sites. Although specific information on recovery from the earlier fires is not available, from aerial photographs it appears that the 1985 fire area looks fairly similar to its surrounding areas, while the 1997 fire has lost most of its shrub component. Much of the shrub component was killed in the 2012 fire; no post-fire seeding is planned. Each of these fires is roughly within the center third of the allotment, which is a transition zone between weedy, low elevation areas and more intact upper slope parts of the allotment.

Utilization of perennial bunchgrasses was up to 70% and often over 50% before 2008, while since 2008 utilization of perennial bunchgrasses has not exceeded 50%. See Appendix F.

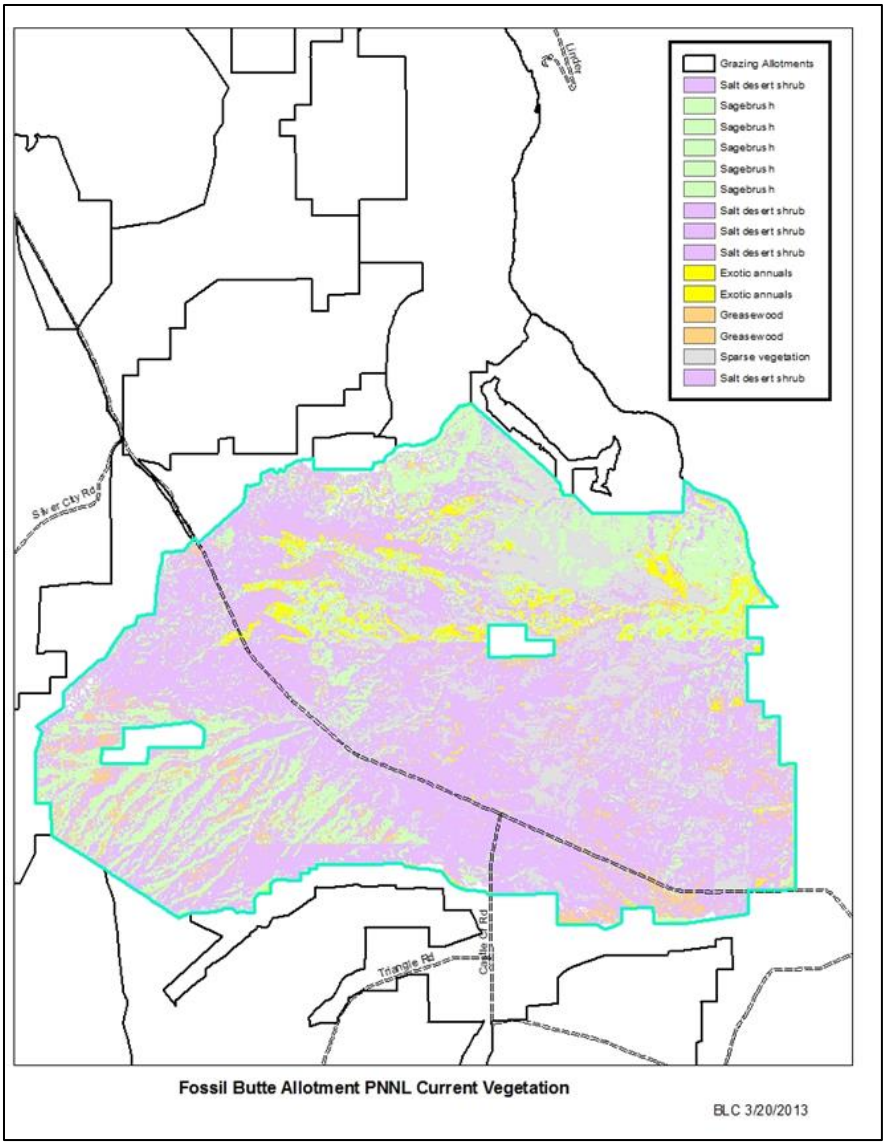

Figure 3.3.2 – Current Vegetation on the Fossil Butte Allotment

Trend Data

Three frequency trend sites were read in the Fossil Butte Allotment in 2002, 2008, and 2011 (as well as earlier) (Corbin 2013). Data show that the shrub layer is not highly altered from reference conditions, but deep-rooted bunchgrasses and forbs are highly reduced. Sandberg bluegrass on calcareous loam sites was stable to increasing, as was needle-and-thread grass on the sandy loam site. Ground cover by herbaceous perennial vegetation and biological soil crusts was lower than expected, but stable or increased between 2008 and 2011. Ground cover by stable ground cover elements (rock, gravel, biological soil crusts, persistent litter, and perennial vegetation, combined) increased at two of three sites (unchanged at one) between the last two readings. Overall, these suggest stable to improving trends.

Figure 3.3.3 - Fossil Butte Calcareous Loam Trend Site, July 2008

Figure 3.3.4 - Fossil Butte Sandy Loam Trend Site, August 2011

Noxious and Invasive Weeds

Several infestations of seven different noxious weeds are recorded in the Fossil Butte Allotment, mostly along roads. Whitetop is scattered in numerous patches across the allotment. Scotch thistle and tamarisk are also scattered, but only a few infestations are mapped. Russian knapweed is recorded from a few infestations along Sinker Creek and at the edge of Highway 78. Perennial pepperweed is recorded along the Snake River, at the edge of the allotment. Russian olive is recorded along Sinker Creek at the edge of

the allotment. In addition, bindweed was recorded at a field assessment site in 2012. Many of these infestations have been and continue to be chemically treated by the Boise District weed crew.

Invasive weeds not listed as noxious are common across many areas of the allotment. Cheatgrass is present to subdominant in many areas. The lower perhaps third of the allotment, northeast of Highway 78 and extending to the Snake River, have substantial areas dominated by cheatgrass. The upper slopes, generally southwest of Highway 78, have more areas of intact shrub and grass communities; cheatgrass is affecting many of these communities, but perennials are providing the primary community structure and ecological functions in many areas.

Bur buttercup, an invasive annual forb, is frequent in salt desert shrub areas in the allotment; it was present at 40-79% frequency at the two calcareous loam trend sites in 2011, but not at the sandy loam site. Other frequent invasive annual forbs in 2011 include Russian thistle (50% frequency at one calcareous loam site), tumble-mustard (24% frequency at the same site), and flixweed (13-49% frequency at the two calcareous loam sites). Less frequent invasive annuals recorded at the trend sites include clasping pepperweed and halogeton. No non-native (invasive) annual forbs were recorded at the sandy loam site.

Biological Soil Crusts

Biological soils crusts are present in varying degrees throughout the Fossil Butte Allotment. Biological soil crusts in this allotment consist of soil moss and a large variety of soil lichens. In the upper slope areas less dominated by cheatgrass, the biological soil crusts are only slightly reduced from reference conditions, while at the lower, weed-dominated areas and more disturbed sites the biological soil crusts have been highly reduced. Biological soil crust cover ranged from 1-5% at the three nested frequency trend sites in 2011, while sage-grouse habitat assessments in 2012 found biological soil crust cover of 0-18% at eight assessment sites.

Crust cover has likely been reduced at least somewhat due to past livestock trampling and other soil disturbance, and has not recovered probably due to continued trampling and the abundance of cheatgrass, which has likely had a negative effect on the open soil habitat required by biological soil crusts.

Standards/Idaho S&Gs

Fossil Butte Allotment was evaluated for Standard 4. Standard 5 does not apply (no seedings in this allotment), and Standard 6 was not evaluated because cheatgrass and weed-dominated areas make up only a small proportion of the allotment, in more or less scattered areas not managed separately from the native plant communities, so all of the upland vegetation was evaluated under Standard 4. See Appendix A.

Standard 4, Native Plant Communities

Standard 4 is not being met in the Fossil Butte Allotment, as indicated by less than desirable occurrence of large bunchgrasses and biological crusts than expected for the dominant ecological sites. Significant progress is indicated by improvements between 2008 and 2011 in large bunchgrass frequency, basal perennial vegetation, and biological soil crusts. This improvement corresponds to a change in management after 2007, with a reduction in actual use. The fall and winter season of use occurs mostly during perennial plants' dormant season, which has fewer effects than growing season grazing. However, bunchgrasses that green-up in the fall would be utilized in October to early November, so there are some, limited growing season effects. Cheatgrass, which often germinates in the fall, would also be utilized during that time period and through the winter, potentially reducing its dominance. Large, deep-rooted bunchgrasses in this allotment have been largely replaced by Sandberg bluegrass and/or cheatgrass. Cheatgrass is dominant or subdominant throughout mostly the northeast half of the allotment, while in the upper slopes to the southwest Sandberg bluegrass is the predominant grass. Native shrubs are largely intact, except in parts of the lower elevation portion of the allotment and in recent fire areas. Ground

cover data indicate that basal vegetation and biological crusts are lower than expected, while bare ground and non-persistent litter are higher than expected.

3.3.1.1.2 Soil

The hazard of water erosion on soils in these allotments depends on slope and surface texture and ranges from slight to high. The hazard of erosion from wind which is based on surface soil texture also ranges from slight to high.

A majority of the deeper soils occur on structural benches, fan piedmonts, fan terraces, and foothills. The main body of soils formed in mixed alluvium and loess derived predominantly from lacustrine deposits and basalt. In general, the soils are shallow to deep (predominantly deep) and well drained. Surface textures are dominantly silty loams and sandy loams. Soils in these allotments have weak to moderate subsurface development. The main soils present in the area include the McKeeth, Escalante, Tindahay, Royal, Bruncan, and Scism. There is also a badlands component scattered throughout the area. The main ecological sites associated with these soils are the Calcareous Loam 7-10", Loamy 7-10", and the Shallow-Claypan 11-13".

Areas in degraded ecological condition are subject to increased erosion and impaired watershed health. As vegetative cover is depleted and species composition is changed, the productivity of a site can be reduced through erosion and lack of biological diversity (Blackburn et al. 1986). Also affecting watershed health is the amount of mechanical disturbance to the soil surface resulting in compaction and structural breakdown.

3.3.1.1.3 Riparian/Water Quality

See Section 3.1.3 above.

Riparian Areas and Wetlands
While this allotment does contain riparian areas and wetlands and stream channel/floodplains, the BLM has no control of the inflow and outflow to these areas. Therefore there are no applicable effects to either of these standards. Refer to the affected environment for more detail.

Stream Channel/Floodplain
While this allotment does contain riparian areas and wetlands and stream channel/floodplains, the BLM has no control of the inflow and outflow to these areas. Therefore there are no applicable effects to either of these standards. Refer to the affected environment for more detail.

Water Quality
While this allotment does contain riparian areas and wetlands and stream channel/floodplains, the BLM has no control of the inflow and outflow to these areas. Therefore there are no applicable effects to either of these standards nor is there the capability to measure the cause of an effect to water quality. Refer to the affected environment for more detail.

This resource discussion will not be carried further in the Environmental Consequences Section.

3.3.1.1.4 Special Status Plants

Seven species of special status plants are known from the Fossil Butte Allotment. Five are small annuals that grow in open, often sandy or cindery areas. One biennial grows in sparsely vegetated clay soil (ash/sediment outcrops), and a perennial grows on sandy or gravelly openings within salt desert or Wyoming sagebrush communities. Occurrences of these species are scattered across the allotment, but more concentrated in the lower elevations on the north and east. Some occurrences (ex: Malheur prince's

plume) are on steeper slope of bluffs, while others are on more gentle slopes. Records for these occurrences date from about the 1980s to 2011.

Table 3.3.3 - Special Status Plants in the Fossil Butte Allotment

Species	Number of Known Occurrences
Snake River milkvetch *Astragalus purshii* var. *ophiogenes*	7
Desert pincushion *Chaenactis stevioides*	4
White eatonella *Eatonella nivea*	1
White-margined wax plant *Glyptopleura marginata*	5
Rigid threadbush *Nemacladus rigidus*	3
Turtleback *Psathyrotes annua*	4
Malheur prince's plume *Stanleya confertifolia*	2

Standard 8, for threatened and endangered plants is not being met in the Fossil Butte Allotment because habitat for these species is being negatively impacted by invasive weeds (primarily cheatgrass) and OHV (ATV and motorcycle) use in occupied habitat.

Figure 3.3.5 - Malheur prince's plume after fruiting – September 2011

Current grazing management is not a significant causal factor for not meeting Standard 8 for special status plants in this allotment. Fall and winter grazing have no direct effects on the annual special status plants, which have completed their lifecycle and germinate in the spring (generally March to May). The perennial special status plant in the allotment, Snake River milkvetch, is a low forb which is dormant

during the grazing period. Because all its growing points are below ground, it is not subject to grazing impact at this time. Heavy trampling (as recorded in 2000 at one occurrence) could dislodge individual plants. Because there are several occurrences of Snake River milkvetch within the allotment, most of which have few cattle impacts, trampling at one site does not significantly affect the population as a whole. The biennial Malheur prince's plume has green rosettes that overwinter and could be subject to winter grazing; however, very little cattle activity is noted within occupied habitat, presumably because of the sparse vegetation and distance from water.

3.3.1.1.5 Wildlife and Special Status Animals

In addition to the general overview of the Affected Environment for Wildlife Resources in the Fossil Butte Group allotments presented above, descriptions of the current condition of species and their habitats within the Fossil Butte allotment are based on the 2013 Rangeland Health Evaluation and Determination Report (USDI BLM, 2013a), Affected Environment sections of the Vegetation and Water and Riparian Resources Specialist Reports, recent personal observations, current element occurrences in IFWIS and consultation with local wildlife professionals.

Standards/Idaho S&Gs

Standards 1- 7 provide the basis for general wildlife habitats within the Fossil Butte Allotment that support Standard 8, Threatened and Endangered Animals. Wildlife habitat requirements specific to individual special status animal species are evaluated under Standard 8, as described in USDI-BLM 1997.

Upland Habitat

Information used to evaluate Standard 8 for upland habitats include 2002 Rangeland Indicators, the 2007 Assessment, 2012 Rangeland Indicators, trend data, BLM's noxious weed GIS layer, and 2012 sage-grouse habitat assessments. Conditions remain similar to the 2007 Rangeland Indicators, with the greatest departures in invasive plants (cheatgrass), soil compaction (at two sites), and functional/structural groups (lack of large bunchgrasses). However, trend frequency data displayed static to increasing large bunchgrass frequency between 2008 and 2011 at two sites and static frequency at one site. Sandberg bluegrass frequency was increasing at two sites. Utilization of perennial bunchgrasses was up to 70% and often over 50% before 2008, but since management changes made in 2008, utilization of perennial bunchgrasses has not exceeded 50%.

The Fossil Butte Allotment is managed as a native plant community and is not meeting Standard 4. Large stature perennial bunchgrasses have been reduced or lost across the allotment and have been replaced by Sandberg bluegrass and/or cheatgrass. This vegetation community shift reduces effective nesting, escape, hiding, travel, and foraging cover values for wildlife species associated with sagebrush steppe communities. This allotment is failing to provide suitable upland habitat conditions for sagebrush steppe-associated wildlife, including sage-grouse, and therefore is not meeting Standard 8.

However, significant progress toward meeting Standard 8 is indicated by recent (post-2008) improvements in the occurrence of large bunchgrasses and basal perennial vegetation ground cover collected at two trend sites in 2011. Continuing improvements in the amount and distribution of basal perennial vegetation ground cover, biological soil crusts, and structural diversity of native upland plant communities will provide suitable upland habitat conditions for sagebrush steppe-associated wildlife, including sage-grouse, in the long-term.

Current livestock grazing management practices are not a significant causal factor for not meeting Standard 8 because utilization of perennial bunchgrasses has not exceeded 50% since the 2007 change in management, which is suitable to maintain native plant communities. The majority of the season of use also occurs during perennial plants' dormant season, which results in fewer impacts to upland vegetation than growing-season grazing. A significant causal factor for not meeting Standard 8 is the presence of

invasive weeds, primarily cheatgrass. The invasive weeds have increased due to the reduction in large bunchgrasses as a result of historic grazing practices.

Figure 3.3.6 - Fossil Butte field evaluation of rangeland indicators – June 2012

Riparian Habitat

Information used to evaluate Standard 8 for riparian habitats include 2001 riparian inventory and assessments, the 2007 assessment, 2012 site visits, and BLM's noxious weed GIS layer. As discussed above, riparian areas include approximately 2.5 miles of the Snake River, 1.9 miles of Sinker Creek, and 2.0 miles of Fossil Creek.

The Snake River flows east to west and is the northeast border of Fossil Butte Allotment. Livestock have limited access to the Snake River due to bluffs, steep terrain, and fencing. Consequently, livestock grazing has little effect on the river and adjacent riparian vegetation, so the Snake River is not analyzed for Standard 8.

Sinker Creek is a perennial stream that flows west to east into the Snake River, and is the northwestern border of the Fossil Butte Allotment. Sinker Creek has upstream diversions approximately 5.5 miles upstream on private land that affects stream channel and floodplain functionality along the 1.9-mile reach. The Fossil Butte allotment has minimal interaction with Sinker Creek due to steep topography, cliffs, and gap fences. Livestock access is limited to one water gap on public land; therefore Sinker Creek will not be analyzed within the Fossil Butte Allotment.

Approximately 22 miles of Fossil Creek are located on public lands in the Fossil Butte Allotment and are either intermittent or ephemeral. Fossil Creek and its tributaries flow from west to east across the middle of the Fossil Butte Allotment. A 2.0-mile reach between Rye Patch Ranch and a canal is the only perennial flow and can be attributed to irrigation runoff. Stream flow rarely reaches the canal, and no water from the drainage reaches the Snake River. Stream flows are ephemeral downstream of the canal diversion.

The majority of Fossil Creek is either intermittent or ephemeral and is not considered to exhibit riparian characteristics. There is a small reach of perennial flow, as described above, which has been identified as a riparian area due to the presence of hydric vegetation. As this reach contains hydric vegetation, it is expected to provide some degree of riparian-obligate wildlife habitat. However, this reach is entirely controlled by irrigation runoff as its source and is then dewatered again at its lowest extent. This irrigation runoff is in no way managed by the BLM and therefore, the BLM has no control over the long-

term health of the artificially created riparian system. Therefore, Fossil Creek will not be part of a determination regarding livestock use within a naturally occurring riparian area.

Figure 3.3.7 - Fossil Creek riparian PFC Assessment sites – August 2012

Focal Special Status Wildlife Species

Greater sage-grouse

In addition to the general discussion of sage-grouse, the majority of the Fossil Butte allotment provided suitable habitat for sage-grouse historically and may have supported significant populations (USDI-USFWS 2013b). Currently, suitable sage-grouse habitats are very limited or absent within the Fossil Butte allotment. As discussed previously, in most of the allotment the shrub structure is more or less intact, but large bunchgrasses have been lost and have been replaced by Sandberg bluegrass and/or cheatgrass.

Based on an interim, updated (2011) version of the Idaho Sage-grouse Habitat Planning Map (ISHPM) completed by the Idaho Sage-grouse Advisory Committee (ISAC 2006), approximately 9% (3,636 acres) of BLM managed lands within the Fossil Butte Allotment is currently classified as key sage-grouse habitat, 0% (0 acres) is classified as perennial native and non-native grasslands with high restoration potential, and 0% (0 acres) is classified as conifer encroachment areas with high restoration potential (Table 3.3.4). The remaining 91% (36,456 acres) of BLM managed lands within the Fossil Butte Allotment are not considered sage-grouse habitat. Makela and Major (2012) identified approximately 3% (1,023 acres) of BLM managed lands within the Fossil Butte Allotment as PGH and 9% (3,636 acres) as PPH. The habitat identified as PPH was further classified as 100% (3,636 acres) sagebrush, 0% (0 acres) perennial grassland, and 0% (0 acres) conifer encroachment areas.

Table 3.3.4 - Sage-grouse habitat acreage on public lands within the Fossil Butte Allotment

Idaho Sage-grouse Habitat Planning Map				Habitat Designation	
Sagebrush	**Perennial Grassland**	**Conifer Encroachment**	**Total**	**PGH**	**PPH**
3,636	0	0	3,636	1,023	3,636

Typically, sage-grouse in the vicinity of the Fossil Butte allotment congregate on communal strutting grounds (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 as 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 data acquired through lek

surveys, telemetry studies, and incidental observations, sage-grouse nesting, early and late brood-rearing, and winter habitats currently occur within the allotment and surrounding areas to varying degrees.

As discussed above, approximately 9% of the Fossil Butte Allotment is classified as key sage-grouse habitat (ISAC 2006) and 12% of the allotment is classified as either PPH or PGH (Makela and Major 2012). Pre-2008 livestock grazing practices in the Fossil Butte Allotment have limited sage-grouse use in previously suitable areas because heavy livestock utilization likely caused shifts in vegetation functional-structural groups which resulted in the underrepresentation of dominant large-statured bunchgrass species across virtually the entire allotment and an overrepresentation of shallow-rooted, short-statured Sandberg bluegrass and the dominance of cheatgrass. This shift in vegetation functional-structural groups can reduce suitable breeding habitat, protective cover, and foraging areas for sage-grouse and other shrub steppe-obligate wildlife species.

Based on an interim, updated (2012) version of the BLM's sage-grouse Landscape Importance Model (LIM), lands within the Fossil Butte Allotment are currently classified as areas of low to moderate relative importance to sage-grouse. The LIM is based on a combination of breeding bird density (lek density and attendance), lek connectivity, and population persistence models. The intent of the LIM is to provide an index of the relative importance of areas within PPH and PGH across Zone IV. Generally, the southwestern portion of the allotment is rated as low to moderate importance due primarily to low sagebrush persistence values resulting from local vegetative community shifts and distance from active leks.

Sage-grouse have been shown to select brood-rearing habitat with taller grasses and increased herbaceous cover; increased herbaceous biomass is correlated with invertebrate prey abundance, and the increased vertical and horizontal cover it affords most likely imbues greater protection from predators, both of which could increase juvenile survival (Kaczor et al. 2011). No late brood-rearing habitat assessments are known to have been conducted within the Fossil Butte Allotment.

However, BLM personnel made five stops along Fossil Creek in 2012. The first three stops noted that FOS 1 and FOS 2 reaches were dry and inundated with salt cedar. Two other reaches had water present and were well vegetated with riparian obligate species. No livestock grazing impacts were observed. Based on these observations, some reaches of Fossil Creek and adjacent agricultural lands may provide marginal to suitable sage-grouse late brood-rearing habitat.

In 2012, BLM personnel conducted eight sage-grouse habitat assessments within the Fossil Butte Allotment (Table 3.3.5). Four habitat assessments were conducted within PPH. Additional sage-grouse habitat assessments were conducted outside of PPH in order to assess areas where field evaluations of Rangeland Indicators had been previously conducted. Habitat assessments indicate that the Fossil Butte Allotment is providing unsuitable (missing the majority of necessary indicators) to marginal (missing some necessary indicators) sage-grouse breeding and upland summer habitats due to a reduction in large stature perennial bunchgrasses, dominance of Sandberg bluegrass in the understory, and low preferred forb diversity and abundance. Habitat assessments also indicate that the Fossil Butte Allotment is providing suitable (necessary food/cover indicators are present) sage-grouse winter habitat at all sites assessed within PPH.

Table 3.3.5 - 2012 Fossil Butte Allotment sage-grouse habitat assessment seasonal habitat summary

Site ID	Ecological Site	Sage-grouse Seasonal Habitat Type		
		Breeding	Upland Summer	Winter
0535-1-04S02W01b-2012	Loamy 8-12"	Unsuitable	Unsuitable	Suitable
0535-01-04s02w13h-2012	Saline Bottom 8-12"	Unsuitable	Unsuitable	Suitable
0535-1-04S01W19c-2012	Loamy 8-12"	Unsuitable	Unsuitable	Suitable

Site ID	Ecological Site	Sage-grouse Seasonal Habitat Type		
		Breeding	Upland Summer	Winter
0535-1-04S01W19d-2012	Loamy 8-12”	Marginal	Marginal	Suitable
0535-01-03S01W31a-2012	Calcareous Loam 7-10”	Unsuitable	Unsuitable	Unsuitable
0535-01-04S01W03g-2012	Sandy Loam 8-12”	Unsuitable	Unsuitable	Suitable
0535-01-04S01W12f-2012	Sandy Loam 8-12”	Unsuitable	Unsuitable	Suitable
0535-01-04S01W24e-2012	Sand 8-12”	Unsuitable	Unsuitable	Unsuitable

One inactive lek and three leks with undetermined status are known to occur within the Fossil Butte Allotment. The Fossil Butte Allotment is located within the 75% breeding bird density (BBD) buffer (4 miles) of three occupied leks (based on the presence of 2 or more males observed during surveys in the last five years), six leks with undetermined status, and one unoccupied lek (Table 3.3.6). The 75 % BBD buffer is highly correlated to breeding habitat surrounding leks and encapsulates 75% of male lek attendance along with 60% of currently occupied habitat within Zone IV (Makela and Major 2012). The remaining 40% of currently occupied habitat (which occurs outside the 75% BBD buffer) is likely the more fragmented habitat (Doherty et al. 2011). Because counts at these leks have only recently been conducted with any annual regularity via helicopter, long-term trends in lek attendance are difficult to extrapolate.

Table 3.3.6 - Attendance at leks within 4 miles of the Fossil Butte Allotment, 2008-2012

Lek	Lek Status	Survey Year[1]				
		2008	2009	2010	2011	2012
2O441	Undetermined	--	--	--	--	0
2O442	Undetermined	--	--	0	--	0
2O442a	Undetermined	--	--	--	--	--
2O504	Occupied	--	--	14	--	--
2O505	Occupied	29	21	26	40	28
2O506	Undetermined	--	--	--	0	0
2O507	Occupied	--	--	10	--	0
2O508	Unoccupied	0	0	0	0	0
2O629	Undetermined	--	--	--	0	0
2O278	Undetermined	--	--	0	--	--

[1]Surveys were not conducted in years indicated by dashes (--).

Columbia River Redband Trout

In addition to the general discussion of redband trout, affected environment conditions within the Fossil Butte allotment, as they relate to Sinker Creek, are the same as those discussed for the Con Shea Allotment in section 3.3.2 below. In addition, Fossil Creek also occurs within the Fossil Butte allotment.

Fossil Creek has limited perennial flow provided by irrigation runoff and all stream flow is diverted by a canal; no water from the drainage reaches the Snake River. Fossil Creek has not been assigned specific beneficial uses by IDEQ and is not known to contain fish species of any kind.

Migratory Birds, Raptors, and other Birds (including Special Status Species)

In addition to the general discussion of migratory birds, raptors, and other bird species and their habitats, a variety of bird species have the potential to occur or have been documented within and in the vicinity of the Fossil Butte allotment (Appendix E).

Big Game and other Mammals (including Special Status Species)

In addition to the general discussion of big game and other mammal species and their habitats in Section 3.1.5, various big game and special status mammal species use a variety of habitats in the Fossil Butte allotment for some or all of their seasonal needs.

Approximately 437 acres of BLM land within the Fossil Butte allotment has been identified by the IDFG as bighorn sheep habitat. A small bachelor herd of eight rams were observed approximately 4.0 miles from the allotment boundary, along the Snake River canyon near the lower Swan Falls pump station, in 2009. However, based on occurrence records, it does not appear that bighorn sheep have made use of this part of the allotment historically.

3.3.1.1.6 Social and Economic Values

The socioeconomic environment for the Fossil Butte Allotment is as described in Section 3.2.2.6.

3.3.1.1.7 Cultural and Paleontological Resources

3.3.1.1.7.1 Fossil Butte Allotment Cultural Resources

Extensive survey has been done within the Fossil Butte Allotment, mainly as linear pedestrian surveys along roads and trails and at likely cattle congregation areas including existing and proposed range improvements. Site density is generally low except near water sources or other resources, roads, or trails. In addition to site monitoring and survey by BLM and other permitted organizations, significant sites along the Snake River are regularly reevaluated as part of the Swan Falls Dam relicensing process and during the last round of reevaluations several sites were listed as having minor cattle impacts. Minor impacts will not change NRHP eligibility status. During monitoring, if impacts are found that may threaten NRHP qualities in the future, mitigation measures will need to be developed on a case-by-case basis.

In 2006 grazing was listed as a minor impact at four significant archaeological sites within the Fossil Butte Allotment. Three had both prehistoric and historic artifacts and/or features and one was pre-contact in age. Two sites were newly recorded in 2006 with minor grazing and erosional impacts (IPC 2008). A variety of non-grazing impacts have been noted since the early 1970s at these and other sites: water erosion, a transmission line, a canal, roads, highway disturbance, mining, agricultural run-off, recreation, looting, minor effects from animal burrowing and deflation, and an ATV trail.

3.3.1.1.7.2 Fossil Butte Allotment Paleontological Resources

About two dozen fossil localities are mapped within the Fossil Butte Allotment, all dating to the late Blancan to Irvingtonian of the Pliocene Epoch. No apparent impacts are listed at any of the fossil localities.

3.3.1.2 Fossil Butte Environmental Consequences

3.3.1.2.1 Alternative A

Alternative A is not being analyzed in detail for the Fossil Butte Allotment because this management would not meet all applicable Standards.

3.3.1.2.2 Alternative B

3.3.1.2.2.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table. These figures indicate the degree of effects relating to the season, intensity, duration, frequency, and distribution of use, as well as the weed introduction potential and effects to biological soil crusts, all as described in Section 3.2.

Table 3.3.7 - Fossil Butte Allotment Vegetation Indicators for Alternative B

Indicator	Fossil Butte
Season of use (Dates)	10/15 – 2/28
Duration (Days per pasture)	137
Frequency	Once, every year
Total AUMs	1,328
Acres/AUM	30.7
Utilization	Expected and limit <50%
Water haul sites	8
Number of livestock	316 cows

With implementation of Alternative B, conditions would continue as they currently are, as described in the affected environment. This alternative includes no rest for an entire season, but has only fall/winter use that allows for undisturbed regrowth during nearly all of the growing season. Utilization levels up to 50% would be allowed, and based on recent years' data would be expected to generally be 20-50%. The allotment would have a relatively long duration of use, but because this use is generally during the dormant period, growing plants would not be re-grazed and the entire early/mid growing season would be available for plant recovery. This alternative's stocking rate is light compared to other allotments (over 30 acres/AUM), but would be appropriate based on the expected utilization, and reflects both vegetation (such as the extent of sparsely vegetated soil inclusions) and cattle distribution, highly influenced by the availability of water sources. Eight water haul sites would be authorized, and certain push ponds would be maintained, producing localized disturbance areas (due to both hauling and maintenance activities and the subsequent cattle use), but resulting in widespread cattle distribution within the allotment. With no change in livestock intensity or distribution, concentrated use areas would be expected to be the same as current conditions. The potential for weed seed introduction (based on the number of livestock) would be the same as current conditions.

The Fossil Butte Allotment would continue to not meet Standard 4, but significant progress toward meeting the Standard is expected to continue under this grazing management (see Appendix A). The late fall/winter season of use and <50% utilization would continue to have only minor negative effects on upland vegetation, biological soil crusts, and weeds. Perennial bunchgrasses would be expected to continue to increase, given adequate precipitation, while shrubs would be expected to be maintained along with the current reduced abundance of native forbs. Cheatgrass and other invasive annuals would be expected to continue to dominate extensive patches in lower parts of the allotment. Noxious weeds are expected to remain static as ongoing noxious weed treatment and competition with Sandberg bluegrass and other native perennials limit their spread. Biological soil crusts would be expected to continue to increase from the current, reduced level.

3.3.1.2.2.2 Soils

Water haul sites are proposed in the Fossil Butte allotment under Alternatives B - D. A long-term localized direct negative impact to the soil resource would result where these are established. Impacts would be in the form of soil compaction, physical disturbance to the soil surface, loss of cover and organic matter inputs. These direct impacts would generally be confined to the immediate area around the development, initial ¼ mile, and dissipate radially out from the development. These projects are designed to aid in the distribution of livestock thereby reducing direct negative impacts associated with grazing these areas as a whole and resulting in a long-term direct positive effect in the area. This positive impact would result from more uniform use in the allotment thereby leaving more residual material on the ground for watershed protection and aid in better hydrologic function.

3.3.1.2.2.3 Special Status Plants

Under Alternative B, special status plants and their habitat would continue to be similar to current conditions, as described in the affected environment. Grazing effects would be as described in Section 3.2 for vegetation and special status plants.

The Fossil Butte Allotment would continue to not meet Standard 8 (special status plants), but current grazing would not be a significant causal factor. The late fall/winter season of use and <50% utilization would continue to have only minor negative effects on special status plants. Special status plant species would continue to be impacted by OHVs and invasive weeds, but not substantially by grazing because dormant season use has little effect on these species.

3.3.1.2.2.4 Wildlife and Special Status Animals

Under Alternative B, the allotment would continue to not meet Standard 8 for threatened and endangered animals in upland habitats, but significant progress toward meeting Standard 8 is expected to continue under this grazing management. The late fall/winter season of use and <50% utilization would continue to have only minor negative effects on wildlife species and upland habitats. Perennial bunchgrasses would be expected to continue to increase, given adequate precipitation, while shrubs would be expected to be maintained along with the current reduced abundance of native forbs. Adequate ground cover would be maintained. Cheatgrass and other invasive annuals would be expected to continue to dominate extensive patches in lower parts of the allotment. Noxious weeds are expected to remain static as ongoing noxious weed treatment and competition with Sandberg bluegrass and other native perennials limit their spread.

Effects to individual wildlife species and their habitats resulting from Alternative B in the Fossil Butte Allotment are detailed under Fall (Section 3.2.2.5) and Winter (Section 3.2.1.5) Grazing in Environmental Consequences Common to All Allotments.

3.3.1.2.2.5 Social and Economic Values

No short (<1 year) or long term (>3 years) effect to socioeconomics is expected since there would be no reduction in AUMs or change in grazing management. There should also be no impact to any minority population since there is no change in AUMs and would therefore not directly reduce the ability of individuals to find work.

3.3.1.2.2.6 Cultural and Paleontological Resources

Alternative B would result in stability or very minor improvement to the current condition for archaeological sites. Eight existing water haul locations will draw cattle to areas where archaeological surveys have shown there to be no significant sites, and much of the congregation activity, and thus predicted impacts, would occur around those locations. Similarly, this alternative will continue to limit the numbers of cattle expected at known paleontological localities due to the use of water haul locations that are away from fossil-rich formations.

3.3.1.2.3 Alternative C

3.3.1.2.3.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table.

Table 3.3.8 - Fossil Butte Allotment Vegetation Indicators for Alternative C

Indicator	Fossil Butte
Season of use (Dates)	10/1 – 2/28
Duration (Days per pasture)	151
Frequency	Once, every year

Indicator	Fossil Butte
Total AUMs	1,622
Acres/AUM	25.1
Utilization	Expected and limit <50%
Water haul sites	8
Number of livestock	339 cows

Effects to vegetation from Alternative C would be similar to the current situation (Alternative B) with the following differences. The Fossil Butte Allotment would have a slightly longer season of use than Alternative B, with an additional 14 days of fall use, and thus somewhat increased effects on utilization of grasses during fall green-up, but otherwise similar winter season use without growing season effects. There would be an increase in AUMs (and stocking rate) by 22%, so the level of use would be higher. Utilization would be limited to 50% use (as in Alternative B), and the expected utilization would be 30-50%. This alternative would not be expected to make significant progress toward meeting Standard 4 because it is the same level of use that did not meet Standard 4 under the 2007 Determination. Perennial bunchgrasses and biological soil crusts would be maintained but not increase under this level of use, while cheatgrass and other invasive annuals would continue to dominate extensive patches in the lower part of the allotment. There would be the same number and locations of water haul sites and push ponds as Alternative B, so use distribution would be the same as current conditions. There would be a 7% increase in the number of cattle compared to Alternative B as a result of less duration of time but retained AUMs, therefore increasing the weed introduction potential. Effects on upland plant communities, weeds, and biological soil crusts would be similar to effects described in Alternative B except with a higher intensity because of the increased use.

3.3.1.2.3.2 Soils

The environmental consequences are considered no different than that described in Alternative B.

3.3.1.2.3.3 Special Status Plants

Due to habitat effects from invasive weeds and OHVs, the Fossil Butte Allotment would not meet and would not make significant progress toward meeting Standard 8 (special status plants). Dormant season livestock use would not be a causal factor for not meeting the Standard.

3.3.1.2.3.4 Wildlife and Special Status Animals

Under Alternative C, the allotment would have the same season of use as Alternative B (winter season of use without growing season effects), but an increase in AUMs (and stocking rate) by 22%. Utilization would be limited to 50% use. This alternative would not be expected to make significant progress toward meeting Standard 8 for threatened and endangered animals in upland habitats because it is the same level of use that did not meet Standard 8 under the 2007 Determination. Perennial bunchgrasses would be maintained but not increase under this level of use, while cheatgrass and other invasive annuals would continue to dominate extensive patches in the lower part of the allotment. There would be the same amount of water haul sites as Alternative B.

Grazing effects to individual wildlife species and their habitats would be the same as Alternative B but with a higher intensity because of the increased use.

3.3.1.2.3.5 Social and Economic Values

This alternative includes a 22 percent increase in active use AUMs compared to Alternative B. There would no adverse effects to the socioeconomic values of Owyhee County as a result of this increase. The value to the community would be as shown in Table 3.18. The ranch would continue contributing to employment and the purchase and sale of goods and services in the county.

3.3.1.2.3.6 Cultural and Paleontological Resources

Impacts from Alternative C would be similar to Alternative B, though improvements may not be as great. Cows would be present slightly earlier with increased AUMs and a greater likelihood of presence during fall rains that could allow for post-holing in wet soils around sites. However, the hundred-plus year history of grazing in the area means that such surface effects have probably already occurred and would be unlikely to affect intact subsurface deposits or change NRHP site eligibility characteristics. There would be the same amount of water haul sites as Alternative B. Thus under this alternative cattle congregations and cattle presence at archaeological or paleontological sites is the same.

3.3.1.2.4 Alternative D

3.3.1.2.4.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table.

Table 3.3.9 - Fossil Butte Allotment Vegetation Indicators for Alternative D

Indicator	Fossil Butte
Season of use (Dates)	11/1 – 2/28
Duration (Days per pasture)	120
Frequency	Once, every year
Total AUMs	1,328
Acres/AUM	30.7
Utilization	Expected and limit <50%
Water haul sites	6
Number of livestock	349 cows

The Fossil Butte Allotment would have a shorter season of use (120 days versus 137 or 151 days in Alternatives B and C, respectively) starting later in the year and thus reducing the fall season of use, compared to those alternatives. As a result, there would be less impact from grazing on fall green-up of native perennial bunchgrasses (Tausch et al. 1993, Ellison 1960). The overall use (AUMs, stocking rate, and utilization limit) would be the same as Alternative B, so intensity effects would be as described in that alternative. There would be two fewer water haul sites than the current situation, so cattle would be distributed somewhat less than in Alternatives B or C, with greater concentration of use around the sites. Less use would be expected in the southwest part of the allotment and in T.4S, R.1E, Section 19 (without water haul sites there) compared to Alternatives B and C, resulting in increased vigor of the existing large bunchgrasses in those areas, such as the stand of needle-and-thread grass in Section 19. Push ponds would not be maintained, reducing soil and vegetation disturbance around these areas, but increasing use around other water sources. Cattle numbers would be 10% higher than the current situation, so the weed introduction potential would be slightly higher under this alternative. With the same intensity of use as current management, but reduced growing season effects, Alternative D is expected to continue to make significant progress toward meeting Standard 4. Biological soil crusts, invasive weeds, and native shrub conditions are all expected to remain similar to current conditions.

3.3.1.2.4.2 Soils

The environmental consequences are considered no different than that described in Alternative B.

3.3.1.2.4.3 Special Status Plants

Environmental consequences would be similar to those described in Alternative B. There would be no growing season grazing effects to special status plants, so occurrences would continue to be limited primarily by weeds and OHV damage. Current livestock management would not be a causal factor for failing to meet Standard 8 for special status plants.

3.3.1.2.4.4 Wildlife and Special Status Animals

The effects to wildlife and special status animal species habitat are as described in the vegetation and riparian sections. Effects to individual wildlife species and their habitats resulting from Alternative D in the Fossil Butte Allotment are detailed under Fall (Section 3.2.2.5) and Winter (Section 3.2.1.5) Grazing in Environmental Consequences Common to All Allotments.

3.3.1.2.4.5 Social and Economic Values

This alternative does not propose any change in active use AUMs compared to Alternative B. There would no adverse effects to the socioeconomic values of Owyhee County as a result of this alternative. The value to the community would be as shown in Table 3.18. The ranch would continue contributing to employment and the purchase and sale of goods and services in the county.

3.3.1.2.4.6 Cultural and Paleontological Resources

Alternative D would have a shorter grazing season than Alternative B, but without at least two water haul locations than proposed in low site density areas in Alternatives B and C, thus cattle would be slightly more likely to congregate around natural water sources or other watering locations where sites may be nearby. Effects that may warrant future treatment from such congregations are still unlikely except in situations where site components become exposed erosional surfaces and significant site elements might be lost. This can occur along rivers and drainages where slope and wind and water erosion, facilitated by hoof action and grazing, are the major causal factors. The sites that might be subject to these conditions undergo regular monitoring and mitigation measures which, if developing impacts of that nature are discovered, will be considered on a case-by-case basis.

3.3.1.2.5 Alternative E

3.3.1.2.5.1 Vegetation, including Noxious Weeds

Effects to vegetation from Alternative E in the Fossil Butte Allotment are described in Section 3.2.5.1 (Environmental Consequences Common to All Allotments).

3.3.1.2.5.2 Soils

Refer to Section 3.2.1.2 for description of environmental consequences related to the soils resource.

3.3.1.2.5.3 Special Status Plants

Effects to Special Status Plants from Alternative E in the Fossil Butte Allotment are described in Sections 3.2.5.1 and 3.2.5.4 (Environmental Consequences Common to All Allotments).

3.3.1.2.5.4 Wildlife and Special Status Animals

Effects to individual wildlife species and their habitats resulting from Alternative E in the Fossil Butte Allotment are detailed in Section 3.2.5.5 of Environmental Consequences Common to All Allotments.

3.3.1.2.5.5 Social and Economic Values

This alternative would cancel all authorized use AUMs on the allotment for a period of 10 years, after which applications for grazing permits would be accepted. This would likely have a substantial socioeconomic impact on the ranch operators, the people they employ, the businesses where the operators purchase supplies, and the communities that are supported by livestock operation activities. The ranchers would have to relocate their livestock to other private or state land, possibly outside of Owyhee County, sell their livestock, and/or close the ranch completely. The ranchers already likely purchase supplies from stores closer to the new grazing locations, so income from taxes and sales in these communities would decrease, and the income from the livestock sales would go to the counties where the base ranches are

located. The people previously employed by the ranches would have to look for new jobs if any of the ranches closed; the agricultural sector in the county is large enough that they may not have much trouble finding similar work elsewhere, but they may have to relocate or commute long distances, which could be costly. Finding work in other sectors may be difficult because unemployment is so high. The greatest loss to the local communities as a result of ranch closures would be the loss of social cohesion. As noted above, researchers have found that ranchers have more social networks throughout the community, and closing a ranch can lead to a disruption in these networks.

However, not all socioeconomic impacts could be negative. Land on the allotments could be more available for recreational opportunities, which could bring more money to the stores, restaurants, and hotels that provide goods and services for people from the Treasure Valley who come to hunt, fish, camp, boat, and watch wildlife throughout the Owyhee Mountains. This could also provide more employment opportunities in other sectors throughout the county. However, as noted in the ORMP EIS (USDI BLM, 1999b), the number of businesses that provide recreational goods and services in Owyhee County is minimal. Most residents, as well as those visiting from other counties, purchase their goods outside of Owyhee County. Thus, although some recreation fees could be collected, the influx of recreation to the county would not add much to the revenue from sales or taxes there and could actually negatively affect the financial resources of the county through additional requests for help in the backcountry.

3.3.1.2.5.6 Cultural and Paleontological Resources

Effects to Cultural and Paleontological Resources for Alternative E are listed under Environmental Consequences Common to All Allotments (Section 3.2.5.8).

3.3.2 Con Shea

3.3.2.1 Con Shea Affected Environment

3.3.2.1.1 Vegetation, including Noxious Weeds

Upland Vegetation

The Con Shea Allotment is mostly a Loamy ecological site, with smaller amounts of Sandy Loam and Calcareous Loam sites. Unmapped inclusions within the allotment include riparian areas (Sinker Creek, Snake River, and agriculture runoff drainages), rocky bluffs, and ash soil outcrops. There are also several large polygons in this allotment without an ecological site labeled that presumably are also the same or similar to other ecological sites mapped in the allotment. Because the ecological sites are similar in the Con Shea Allotment between all ownerships and pastures, only the total for the allotment is shown.

Table 3.3.10 - Ecological Sites in the Con Shea Allotment (all ownerships and all pastures combined)

Ecological Site	Loamy 8-12" ARTRW8/ PSSPS-ACTH7	Sandy Loam 8-12" ARTRW8/ ACHY	Calcareous Loam 7-10" ATCO-ARSP5/ ACHY-ACTH7	Unlabeled site	Total Acres
Total Acres	9,713	790	981	1,487	12,971
Percent of total	75%	6%	8%	11%	100%

The loss of shrub cover and extent of exotic annuals (primarily cheatgrass) are reflected in mapping done by the Pacific Northwest National Laboratory (PNNL) from 2000/2001 Landsat satellite imagery, although more recent fires have further reduced shrub cover.

Table 3.3.11 - Current Vegetation Cover Type in the Con Shea Allotment (all ownerships & pastures) based on PNNL Data

Cover Type	Percent of Allotment
Big Sagebrush (big sage, big sage mix, mountain big sagebrush)	51%
Exotic Annuals	30%
Salt Desert Shrub (salt desert shrub, greasewood, winterfat)	9%
Miscellaneous Developed or Wetlands (water, wet meadow, agriculture, urban)	4%
Bunchgrass (primarily crested wheatgrass seeding)	4%
Sparse Vegetation	2%
Miscellaneous Shrubs (rabbitbrush, juniper, mountain shrub, bitterbrush, stiff sage)	<1%
Total:	100%

Utilization measurements are not available for every year. For Pasture 1, utilization of Sandberg bluegrass was measured at 30% in 2006 and 7-9% in 2009, while utilization on bluebunch wheatgrass was 29% in 2009, and squirreltail utilization was 6-26% in 2011. All recorded utilization values in Pasture 1 since 2003 are <35%.

Trend Data

Upland trend plots in the Con Shea Allotment were monitored in 2002, 2008, and 2011(Corbin 2013). At the nested frequency plot, data show a total lack of shrub and perennial forb recovery, highly altered from reference conditions this long after the fire. The current grass layer also differs greatly from reference conditions, with a complete lack of the expected dominant bluebunch wheatgrass, replaced by Sandberg bluegrass and cheatgrass dominance. The moderate to high frequency of annual weed forbs (Russian thistle and tumble-mustard) is also an indication of a highly departed site. Although Sandberg bluegrass is not highly desirable for the site, compared to the expected bluebunch wheatgrass and Thurber's needlegrass, it is at least of relatively high frequency, providing a native co-dominant. Sandberg bluegrass

appears to be stable between 2002 and 2008, and somewhat waning between 2008 and 2011. This indicates that conditions are not improving, and may be declining. Recovery is probably limited at this point by a deficit of native seeds to improve diversity, competition with weedy annual plants, and grazing.

Ground cover data indicate that herbaceous perennial vegetation and biological crusts, which combined should provide substantial ground cover, are moderately lower than expected. Their trend, along with other more stable ground cover elements, is statistically stable to declining. The high percentage of non-persistent litter which has replaced these elements provides little substantial soil protection, although non-persistent litter is marginally better at erosion control than bare ground. The proportion and relative dominance of bare ground compared to non-persistent litter can vary greatly depending on yearly precipitation.

Figure 3.3.8 - Nested Frequency Site – August 2011

At the photo point site, the photos also show a site dominated by Sandberg bluegrass, cheatgrass, Russian thistle, and in 2011 tumble-mustard. Crested wheatgrass is evident in the background and in notes. Cheatgrass litter appears to be the predominant ground cover, followed by bare ground, with little sign of biological soil crusts and low basal perennial vegetation. Note that the site has not been revisited since the 2012 fire.

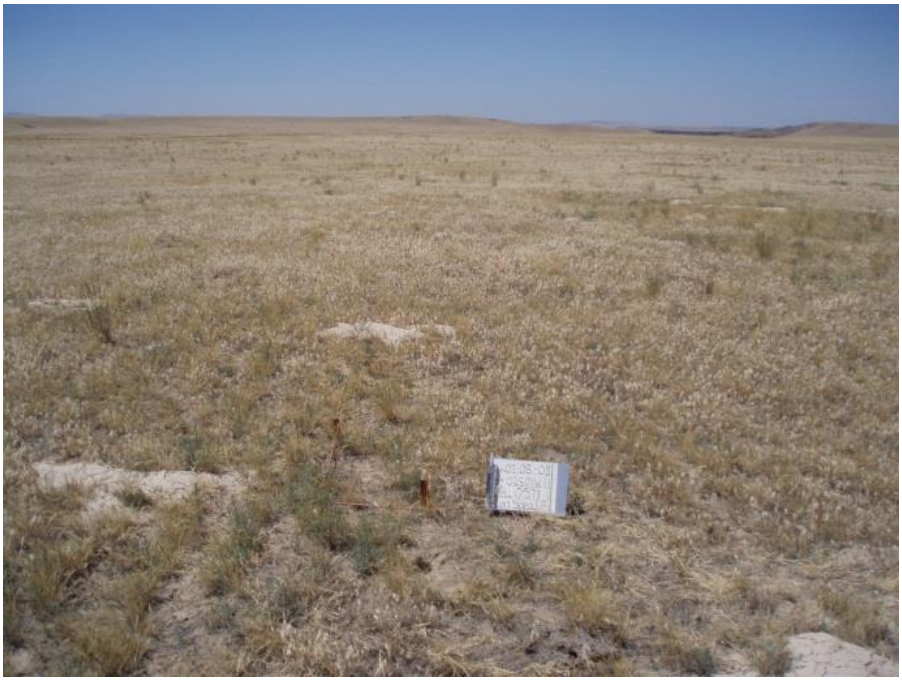

Figure 3.3.9 - Photo Point Site – July 2008

Noxious and Invasive Weeds

Noxious weeds are widely distributed and fairly abundant across the Con Shea Allotment. Russian knapweed is recorded from numerous infestations in the allotment, although the overall cover by this noxious weed is low (estimated at <1% of the whole allotment). Several infestations of whitetop are also present, as well as a few records of rush skeletonweed (an infrequent invader on the Owyhee Field Office), tamarisk, perennial pepperweed, purple loosestrife, Canada thistle, puncturevine, and Russian olive. Most infestations are small (<1 acre), although the diversity of noxious weeds and number of infestations present is an indicator of degraded conditions. The number of known infestations in the allotment is increasing, but this is probably a function of increased inventory rather than actual noxious weed increase.

Besides noxious weeds, invasive plants are abundant to dominant across much of the Con Shea Allotment. Cheatgrass is the primary invasive, as described in the Current Vegetation and Rangeland Health Standards sections, and is dominant (or co-dominant with Sandberg bluegrass) in old burn areas and co-dominant with shrubs (mostly Wyoming sagebrush) elsewhere in the allotment. Other invasive plants, such as Russian thistle, tumble-mustard, clasping peppergrass, halogeton, prickly lettuce, and flixweed are also found extensively across the allotment, especially in old burn areas, along roads, and adjacent to agricultural fields. Because of the disturbance history (especially fires), this allotment is particularly weedy with non-native invasive plants.

Biological Soil Crusts

Biological soils crusts have been highly reduced in the Con Shea Allotment compared to reference conditions, and according to trend data may be declining, although the observed declines were not statistically significant. Crust cover has likely been reduced at least somewhat due to past livestock trampling and other soil disturbance, and has not recovered probably due to continued trampling and the abundance of cheatgrass, which has likely had a negative effect on the open soil habitat required by biological soil crusts.

Standards/Idaho S&Gs

Standards 4, 5, and 6 were each evaluated for different upland areas in the Con Shea Allotment. See Appendix A (Evaluation/Determination) for additional information. Only Pastures 1 and 3 were evaluated because Pastures 4 and 5 have not been grazed in recent years.

Standard 4, Native Plant Communities, applies to all of Pasture 3 and unburned (before 2012) portions of Pasture 1.

Per the 2013 determination, Standard 4 is not being met in the Con Shea Allotment, as indicated by a near absence of large bunchgrasses in plant communities where those grasses are expected to be sub-dominant with shrubs. No significant progress in native plant community health is indicated by available data. Native plant communities in the Con Shea Allotment have been highly altered from reference conditions, in both burned and unburned areas, and do not appear to be improving. Large bunchgrasses have been almost entirely replaced by Sandberg bluegrass (a small bunchgrass) and cheatgrass (an invasive annual). Biological soil crusts are reduced compared to reference conditions. Shrubs are virtually absent from burned areas.

Current livestock grazing management was determined to not be a significant causal factor because the winter season of use (11/1 – 2/28) occurs mostly during perennial plants' dormant season, which has fewer effects than growing-season grazing. The level of use at this season of use is suitable to maintain native plant communities. The grazing system conforms with the Idaho Guidelines for Livestock Grazing Management as it relates to this Standard because the system provides for periodic rest or deferment during critical growth stages, and the season and level of use are appropriate grazing management practices to maintain adequate perennial plant vigor for seed production, seed dispersal, and seedling survival relative to the ecological site.

A significant causal factor for not meeting Standard 4 is the presence of invasive weeds, primarily cheatgrass, tumble-mustard, and Russian thistle, along with numerous infestations of various noxious weeds. The invasive and noxious weeds have increased, due to the reduction in large bunchgrasses as a result of historic grazing practices, and the reduction in shrubs as a result of repeated wildfires.

Standard 5, Seedings, applies to the crested wheatgrass seeding at the north end of Pasture 1 seeded after the 1981 wildfire. This is roughly 10% of the allotment.

Per the 2013 determination, Standard 5 is not being met, as indicated by the decline in crested wheatgrass without recovery by native species. Cheatgrass continues to dominate the plant community. Current livestock grazing is not significantly contributing to the decline because livestock use occurs during the dormant season for crested wheatgrass (November through February), and because utilization has been less than 35% (McLean and Wikeem 1985; Olson et al. 1989). The predominance of exotic annuals (cheatgrass, tumble-mustard, and Russian thistle) is the significant causal factor for not meeting Standard 5 in the Con Shea Allotment.

Standard 6, Exotic Plant Communities other than Seedings, applies to substantial cheatgrass patches in the burned but unseeded portions of Pasture 1. Within these patches, nearly all native vegetation has been eliminated, leaving cheatgrass and other invasive annuals as the dominant plants. Many of these areas were re-burned in the 2012 Con Shea Fire.

Per the 2013 determination, Standard 6 is being met in the Con Shea Allotment. Exotic plant communities in the Con Shea Allotment are providing adequate soil cover for watershed protection relative to site potential under the altered system. Remaining perennials are being maintained (although not increasing). Noxious weeds are being treated, and are not significantly increasing in the allotment. The current grazing system is in conformance with Idaho Guidelines for Livestock Management because winter

grazing provides for deferment from critical growing season use. The low to moderate utilization of perennial bunchgrasses allows for maintenance of existing perennials and ground cover sufficient to support infiltration, soil stability, and nutrient cycling.

3.3.2.1.2 Soils

See Sections 3.1.2 above.

3.3.2.1.3 Riparian/Water Quality

Riparian areas include approximately 3.9 miles of the Snake River and 1.1 miles of Sinker Creek. The 2003 Assessment referenced a 2003 aerial stream inventory along the Snake River and rated it as PFC. Livestock have limited access to the Snake River due to bluffs, steep terrain, and fencing. Consequently, livestock have little effect on riparian habitat along the river and the Snake River is not analyzed for Standard 8.

One 2012 PFC assessment rated the reach of Sinker Creek that occurs within the Con Shea Allotment as properly functioning. A healthy woody riparian vegetation community consisting of various willows, cottonwoods, and a diversity of other shrubs and a healthy herbaceous community consisting of various rushes, sedges and grasses were observed along the reach. Multiple beaver dams as well as knapweed and thistle were also observed. The stream reach was reported as geographically confined with extremely steep banks and appeared to be inaccessible to livestock. Water was present in the stream channel, but there was a diversion immediately upstream on private land that was partially dewatering the stream.

See Sections 3.1.3 for a discussion of water quality in the allotment.

3.3.2.1.4 Special Status Plants

Three species of SSPs are known from the Con Shea Allotment: Snake River milkvetch, Mulford's milkvetch, and white-margined wax plant. Two additional species have non-specific locations mapped nearby but are unlikely to be found within the allotment: cowpie buckwheat and shining flatsedge. Cowpie buckwheat is known from gravelly benches on lakebed sediments in mixed desert shrub communities, and is known from the northeast side of the Snake River, but not the Con Shea side; the non-specific record likely corresponds to those occurrences. Shining flatsedge was collected in 1971 somewhere along the Snake River northwest of Priest Ranch, but no more specific or recent information is available; even if present on the edge of the Con Shea Allotment, cattle do not access the Snake River from this allotment. Therefore, these two species will not be addressed further.

Table 3.3.12 - Special Status Plants with known locations within the Con Shea Allotment

Species	# Occurrences	Pasture
Snake River milkvetch	4	1
Mulford's milkvetch	1	1
White-margined wax plant	1	1

Occurrence records for these SSPs date from 1980 through 2013; about half of the SSP occurrences have been monitored in recent years.

Snake River milkvetch known occurrences are located in the northern half of the allotment. Three occurrences consist of several patches of plants scattered within 1-2 miles of each other, while the fourth occurrence is a single small patch. Because this plant's habitat is less specific than many SSP and much suitable habitat has not been inventoried, it is likely that additional patches and/or occurrences exist in the allotment and vicinity. The three occurrences were last visited in 1994, 2000, 2012, and 2013,

respectively. No grazing notes are included in the 1994 record (the single small patch), but the 2000 record notes evidence of cattle use at all patches, ranging from very light to moderate use. The 2012 and 2013 (Corbin 2013) records noted no disturbance, although dung from earlier grazing was seen (2012 record). All occurrence records note cheatgrass as a threat, although cheatgrass is often more dense surrounding the specific occurrence microsite than on Snake River milkvetch micro-habitat. The 1994 record notes that some individuals would be impacted by cable anchor work planned in the vicinity, and the 2012 record notes that construction of a temporary fence may affect a few plants, but is unlikely to substantially impact the occurrence.

Figure 3.3.10 - Snake River milkvetch in Con Shea Allotment, May 2013

Mulford's milkvetch is known from one occurrence with three recorded patches (within the Con Shea Allotment) at the northwest part of the allotment. A transect was established in one of the patches in 2003 and monitored in 2004, 2005, 2006, and 2007, as part of a state-wide monitoring effort for this species (ICDC 2008). This monitoring found variable plant numbers across years. An exclosure fence was constructed after the 2003 Determination to eliminate grazing on the Mulford's milkvetch occurrence in this allotment, although unauthorized cattle have accessed the exclosure from an adjacent allotment and/or private lands.

Figure 3.3.11 - Mulford's milkvetch in Con Shea Allotment, May 2013

White-margined wax plant is recorded from one occurrence with two small patches, first found in 1980 and revisited in 2000. Plant numbers were low (only 12 plants seen in 2000), but numbers of individuals of annuals typically are quite variable (often depending on precipitation patterns and amounts). Threats identified include cheatgrass in surrounding microsites, but cattle sign was "only a trace", and OHV tracks were not evident.

Standard 8, for special status plants is not being met in the Con Shea Allotment because habitat for these species is being negatively impacted by invasive weeds (primarily cheatgrass), and some of the Mulford's milkvetch habitat may be impacted by unauthorized cattle use. Current livestock management is not a significant causal factor for not meeting the Standard because grazing occurs only during the dormant season, and because the Mulford's milkvetch occurrence is within an exclosure. The system conforms to Idaho Guidelines for Livestock Grazing Management because the winter season of use proves for regular deferment during the growing season, and the combination of the season and level of use do not limit plant vigor for seed production, dispersal, and seedling survival. See Appendix A (Evaluation/Determination) for additional information.

Significant causal factors for not meeting Standard 8 for Special Status Plants are invasive weeds and unauthorized cattle use.

3.3.2.1.5 Wildlife and Special Status Animals

In addition to the general overview of the Affected Environment for Wildlife Resources in the Fossil Butte Group allotments presented above, descriptions of the current condition of species and their habitats within the Con Shea allotment are based on the 2013 Rangeland Health Evaluation and Determination Report (USDI BLM, 2013a), Affected Environment sections of the Vegetation and Water and Riparian Resources Specialist Reports, recent personal observations, current element occurrences in IFWIS (IDFG, 2012), and consultation with local wildlife professionals.

Standards/Idaho S&Gs

Standards 1 - 7 provide the basis for general wildlife habitats within the Con Shea Allotment that support Standard 8, Threatened and Endangered Animals. Wildlife habitat requirements specific to individual special status animal species are evaluated under Standard 8, as described in USDI-BLM 1997.

Upland Habitat

The 2003 Assessment was based on six 2002 Rangeland Indicators and trend frequency data collected in 1987 and 2002. Standard 4 applied to unburned portions of Pasture 1 and all of Pasture 3. Standard 5 applied to a large seeding in Pasture 1. Standard 6 applied to areas of dense cheatgrass in Pasture 1. In unburned areas, the 2003 Assessment described moderate shrub canopy cover, reduced or absent large perennial bunchgrasses, and interspaces dominated by cheatgrass and Sandberg bluegrass, indicating moderate departures from reference conditions for functional/structural groups and moderate to extreme departure from reference conditions for invasive species. Herbaceous burned communities were dominated by cheatgrass and Sandberg bluegrass, with occasional occurrences of squirreltail. No shrubs remained in these areas, and no native forbs were seen, only weedy annual forbs. Sufficient seed sources to re-establish large bunchgrasses were absent. Burned areas were departed from post-fire reference conditions in functional/structural groups (the lack of large bunchgrasses), increased amounts of litter (patches of dense cheatgrass), and dominance of invasive species.

Pasture 1

No formal Rangeland Indicators have been conducted in Con Shea Allotment Pasture 1 since 2002. However, trend plots were monitored in 2008 and 2011, and the IDT visited the allotment in June 2012 to assess ES&R recommendations after the recent Con Shea Fire. Trend site photos and other field visits show plant community conditions similar to those described in the 2003 Assessment, with a deficiency in both native and seeded large bunchgrasses and an abundance of cheatgrass and other weeds, with Sandberg bluegrass cover similar to or higher than reference conditions. Shrubs are still lacking in previously burned areas. All recorded utilization values in Pasture 1 since 2003 are $\leq$35%. See Section 3.3.1.1.1 for additional information.

Figure 3.3.12 - Previously burned area of Pasture 1 (August 2011) juxtaposed with an un-burned area of Pasture 1 (September 2012)

Pasture 3

One 2012 Rangeland Indicators was conducted by the IDT in Pasture 3 in a Loamy Wyoming sagebrush/bluebunch wheatgrass and Thurber's needlegrass ecological site. The indicators for functional/structural groups and invasive plants were each moderately departed from reference conditions based on the lack of large bunchgrasses and the extensive cheatgrass and patches of other weeds (including noxious weeds Russian knapweed and tamarisk). The shrub component was intact. Native forb

diversity and abundance and biological soil crust cover were present but were somewhat reduced from reference conditions. Utilization taken in May 2012 on Indian ricegrass was 3%. See Section 3.3.1.1.1 for additional information.

Figure 3.3.13- Field evaluation of rangeland indicators site – July 2012

Pasture 4

One Rangeland Indicators and one sage-grouse habitat assessment was conducted in July 2012 in a Loamy 8-12" Wyoming sagebrush/ bluebunch wheatgrass and Thurber's needlegrass site, influenced by calcareous loam soils. At this evaluation site, biotic integrity showed moderate-extreme departure from reference conditions because of the lack of large bunchgrasses and native forbs and the pervasiveness of cheatgrass. No utilization data has been collected because the permittee does not use this pasture. See the Section 3.3.1.1.1 for additional information.

Figure 3.3.14 - Field evaluation of rangeland indicators site – July 2012

Approximately 65% the Con Shea Allotment is managed as a native plant community and the allotment is not meeting Standard 4. Large stature perennial bunchgrasses have been reduced or lost across the allotment and have been replaced by Sandberg bluegrass and/or cheatgrass.

A large crested wheatgrass seeding in Pasture 1 comprises approximately 10% of the allotment and is managed as a seeding. The allotment is not meeting Standard 5. The 2013 ESR monitoring photos show that seeded crested wheatgrass continues to decline, with no increase in abundance or diversity of native

bunchgrasses. No shrubs or native forbs have become established and cheatgrass continues to dominate the plant community in previously burned areas, which make up a large proportion of the allotment.

Standard 6 applies to substantial cheatgrass patches in the burned but unseeded portions of Pasture 1. These areas make up about 25% of the allotment. Within these patches, nearly all native vegetation has been eliminated, leaving cheatgrass and other invasive annuals as the dominant plants. The allotment is meeting Standard 6; however, upland habitats managed under Standard 6 do not meet the requirements of Standard 8.

The vegetation community shifts throughout the allotment reduce effective nesting, escape, hiding, travel, and foraging cover values for wildlife species associated with sagebrush steppe communities. This allotment is failing to provide suitable upland habitat conditions for sagebrush steppe-associated wildlife, including sage-grouse, and therefore is not meeting Standard 8.

Trends for perennial grasses and desirable ground cover elements are stable to declining, so there is no indication of progress being made toward meeting Standard 8. Current livestock grazing management does not appear to be a significant causal factor because the winter season of use (11/1 – 2/28) occurs mostly during perennial plants' dormant season, which has fewer effects than growing-season grazing. Light perennial grass utilization levels (not exceeding 35% in data available since 2003) under current management appear suitable to maintain native plant communities.

A significant causal factor for not meeting Standard 4 is the presence of invasive weeds, primarily cheatgrass, tumble-mustard, and Russian thistle, along with numerous infestations of various noxious weeds. The invasive and noxious weeds have increased, in part, due to the reduction in large bunchgrasses as a result of historic grazing practices, and the reduction in shrubs as a result of repeated wildfires.

Riparian Habitat

Designated use for this reach of Sinker Creek includes cold water aquatic life and Total Maximum Daily Loads (TMDLs) were developed for sediment and temperature.

Figure 3.3.15 - Sinker Creek PFC assessment site – Con Shea Allotment (Pasture 3), August 2012

Water quality parameters are not being met and cold water aquatic life is not fully supported in the middle reach of Sinker Creek due to flow alteration, sediment, and water temperature. Excess flow alteration, sediment, and water temperature levels reduce habitat quality for redband trout and other riparian obligate

wildlife species and could potentially impact the Snake River physa. Because these water quality parameters are not being met, the allotment is not meeting Standard 8 for riparian wildlife habitat.

However, significant progress toward meeting Standard 8 for riparian wildlife habitat is indicated by recent improvement in the middle reach of Sinker Creek. The 2001 riparian inventory rated the reach as FAR, with no apparent trend. The 2012 PFC assessment rated the reach in PFC. Although PFC assessments do not directly assess riparian habitat suitability, stream-associated riparian areas that are in PFC generally provide adequate cover and other necessary riparian elements.

Current livestock grazing management practices are not a significant causal factor for not meeting Standard 8 because the majority of the season of use occurs during perennial plants' dormant season, which results in fewer impacts to riparian vegetation than growing-season grazing. Little to no impact from livestock grazing was observed during the 2012 PFC assessment.

A significant causal factor for not meeting Standard 8 is that water quality parameters are not being met and cold water aquatic life is not fully supported in the lower reach of Sinker Creek due to flow alteration, sediment levels, and water temperature. Sinker Creek is rated as PFC but is limited by upstream water diversions on private land along the majority of its length. Sediment levels within the stream causing impacts to the Snake River are not an issue due to the buffering ability of existing riparian vegetation, beaver ponds, and upstream water diversions. The storage of water in Hulet Reservoir, when combined with de-watering caused by existing water diversions, are the primary contributor to any failure to meet water temperature parameters in Sinker Creek.

Focal Special Status Wildlife Species

Greater sage-grouse

In addition to the general discussion of sage-grouse, the majority of the Con Shea allotment provided suitable habitat for sage-grouse historically, and may have supported significant populations (USDI-USFWS 2013b). Currently, suitable sage-grouse habitats are very limited or absent within the Con Shea allotment. The majority of potential sage-grouse habitat has been highly altered due to wildfire and historic livestock grazing. Shrub cover has been lost in much of the allotment (the majority of Pasture 1) resulting from a series of large wildfires that occurred from 1981-2012. Most of these burned areas have not recovered and are currently comprised of either exotic annual grasslands (i.e., cheatgrass) or early-seral rabbitbrush communities. In both burned and unburned areas, the large bunchgrasses (bluebunch wheatgrass, Thurber's needlegrass, Indian ricegrass) expected on the ecological sites have been lost or highly reduced, and have been replaced by Sandberg bluegrass and/or cheatgrass.

Based on an interim, updated (2012) version of the Idaho Sage-grouse Habitat Planning Map (ISHPM) completed by the Idaho Sage-grouse Advisory Committee ((ISAC) 2006), the entirety of the Con Shea allotment (100%, all land ownerships included) is not considered key sage-grouse habitat. Makela and Major (2012) identified the allotment as containing no areas rated as PPH or PGH.

Typically, sage-grouse in the vicinity of the Con Shea allotment congregate on communal strutting grounds (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 as 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 data acquired through lek surveys, telemetry studies, and incidental observations, sage-grouse do not occupy any seasonal habitats within the allotment.

As discussed above, wildfires and historic livestock grazing practices has reduced sagebrush cover and caused shifts in vegetation functional-structural groups across virtually all of the Con Shea allotment. These shifts in vegetation functional-structural groups have reduced suitable breeding habitat, protective cover, and foraging areas for sage-grouse. Assessed riparian and wetland areas within the allotment that sage-grouse could potentially use as late brood-rearing habitat are currently identified as PFC. However, the distance from active leks and lack of suitable nesting habitat within the allotment likely precludes brood rearing from occurring within the allotment.

In 2012, BLM personnel conducted four sage-grouse habitat assessments within the Con Shea allotment (Table 3.3.13). Habitat assessments indicate that the allotment is providing unsuitable (missing the majority of necessary indicators) sage-grouse breeding and upland summer habitat due to a reduction in large stature perennial bunchgrasses, dominance of Sandberg bluegrass in the understory, and low preferred forb diversity and abundance. Habitat assessments indicate that the allotment is providing suitable (necessary food/cover indicators are present) sage-grouse winter habitat at all sites assessed.

Table 3.3.13 - 2012 Con Shea allotment sage-grouse habitat assessment seasonal habitat summary

Pasture	Site ID	Ecosite	Sage-grouse Seasonal Habitat Type		
			Breeding	Upland Summer	Winter
01	0571-01 02s01w28b-2012	Loamy 8-12”	Unsuitable	Unsuitable	Suitable
01	0571-01-02s01w33a-2012	Loamy 8-12”	Unsuitable	Unsuitable	Suitable
03	0571-03-03s01w17a-2012	Loamy 8-12”	Unsuitable	Unsuitable	Suitable
04	0571-04-03s01w11a-2012	Loamy 8-12”	Unsuitable	Unsuitable	Suitable

No known leks occur within the Con Shea allotment. The allotment is not located within the 75% breeding bird density (BBD) buffer (4 miles) of any occupied lek (based on the presence of 2 or more males observed during surveys in the last five years) within Idaho. The allotment is located within the 75% BBD of one lek with undetermined status. The 75 % BBD buffer is highly correlated to breeding habitat surrounding leks and encapsulates 75% of male lek attendance along with 60% of currently occupied habitat within Zone IV (Makela and Major 2012). The remaining 40% of currently occupied habitat (which occurs outside the 75% BBD) is likely the more fragmented habitat (Doherty et al. 2011). Because counts at these leks have only recently been conducted with any annual regularity via helicopter, long-term trends in lek attendance are difficult to extrapolate.

Table 3.3.14 - Attendance at leks within 4 miles of the Con Shea allotment, 2008-2012

Lek	Lek Status	Survey Year[1]				
		2008	2009	2010	2011	2012
2O629	Undetermined	--	--	--	0	0

[1]Surveys were not conducted in years indicated by dashes (--).

Due to the distance from occupied leks, the lack of most suitable seasonal habitats due to vegetation community shifts, the fragmentary nature of remnant suitable winter habitat, and the lack of recorded sage-grouse observations within the area, effects to sage-grouse from permitted livestock grazing on the Con Shea allotment will not be discussed further.

Columbia River Redband Trout

In addition to the general discussion of redband trout, affected environment conditions within the Con Shea allotment include Sinker Creek. Within the allotment, occurrence information available from IDFG documents redband trout in the middle reach of Sinker Creek, which transects Pasture 3 and forms portions of the boundary between Pastures 3 and 4 to the north and the Fossil Butte allotment to the south. IDEQ identified the middle and lower reaches of Sinker Creek as not fully supporting cold water aquatic life and salmonid spawning beneficial uses. While Sinker Creek is listed for salmonid spawning, there is

no evidence of redband spawning in the middle reach found within the Con Shea allotment. Young-of-the-year trout have not been found in past electrofishing efforts and only a few adult redbands were found. Idaho Department of Fish and Game fisheries data show redbands higher in the watershed above Hulet Reservoir (IDEQ 2003).

The Idaho Department of Fish and Game has determined that the listed section of Sinker Creek has not historically, nor is currently, a spawning habitat due to gradient and temperature regimes. IDFG further states that this section of Sinker Creek has historically served primarily as a migratory corridor. The reservoir and the various diversions also serve as barriers to fish migration to the downstream section for spawning. The storage of water in the reservoir as well as the de-watering of the stream result in higher water temperatures, but it is unlikely that changes in management activities would result in lowering water temperatures to salmonid spawning criteria due to the overriding effect of high ambient air temperatures and flow alteration activities (IDEQ 2003). Redband trout are not known to occupy the intermittent and ephemeral streams within the remaining pastures.

Since salmonid spawning does not occur in the middle section of Sinker Creek, the temperature standard for salmonid spawning will not be applied and instead the cold water temperature standard will apply throughout the year. The lower end of Sinker Creek has shown temperature violations and thus, cold water aquatic life uses are not fully supported (IDEQ 2003).

As discussed in the Snake River physa analysis, this section of Sinker Creek appears to have reached its potential and is limited by upstream diversions; current livestock grazing does not appear to impact this stream reach. Sinker Creek has a healthy riparian vegetation community consisting of willows, cottonwood, and various other woody and herbaceous species. These riparian plants shade the streams thereby lowering water temperature, have root systems capable of holding and securing streambanks during high flow events, and slow flows and effectively buffer sediment and other contaminants from the upland area, thereby decreasing the sediment load. Sediment is likely not an issue due to buffering ability of riparian vegetation, beaver ponds, and upstream water diversions. It is likely that de-watering caused by water diversions are the primary contributor to any failure to meet water temperature criteria on Sinker Creek.

Migratory Birds, Raptors, and other Birds (including Special Status Species)
In addition to the general discussion of migratory birds, raptors, and other bird species and their habitats in Section 3.1.5, a variety of bird species have the potential to occur or have been documented within and in the vicinity of the Con Shea allotment (Appendix E).

Big Game and other Mammals (including Special Status Species)
In addition to the general discussion of big game and other mammal species and their habitats in Section 3.1.5, various big game and special status mammal species use a variety of habitats in the Con Shea allotment for some or all of their seasonal needs. There are no documented California bighorn sheep observations or areas identified as bighorn sheep habitat within the allotment.

3.3.2.1.6 Social and Economic Values

The socioeconomic environment for the Con Shea Allotment is as described in Section 3.1.7.

3.3.2.1.7 Cultural and Paleontological Resources

3.3.2.1.7.1 Cultural Resources

While sites in the past have been seriously impacted by historic placer mining and looting, erosion and looting are the more common recently listed site impacts in the Con Shea allotment. Cattle impacts were

noted in the 1970s and mid 2000s, but usually as minor with one exception. Some sites are protected from cattle and erosional impacts by their situation on the landscape and/or fencing (in the case of grazing). The only sites at risk from cattle impacts are situated along the river in this allotment, and these are now monitored at intervals that should allow for mitigation measures to be applied before conditions deteriorate to the point that NRHP eligibility is jeopardized.

In 1977 adverse effects from cattle congregation were noted at one site that only had minor recreational effects visible in 2006. Cattle had also affected another site reported in 1977 by pawing into deposits. In 2006, grazing was listed as a minor impact at three sites out of 30 in this allotment: one is National Register Listed and one is NRHP Eligible. Other impacts listed since the early 1970s include fence, road, and construction impacts, rodent burrowing river and non-river erosion, flooding, vandalism, looting (both illegal surface artifact collection and relic digging) structural collapse placer mining, road use, and recreational use. Professional excavations and permitted surface artifact collection have also affected the sites, although they have also helped to preserve much of the scientific value of the resources.

3.3.2.1.7.2 Paleontological Resources

Several fossil localities have been discovered throughout the Con Shea Allotment. Fossil finds there generally date to the Blancan Stage of the Pliocene Epoch. Most identifiable finds were of teeth, with some fragments of skull, limb, and other bones. Though generally only one or a few pieces were found per animal, over two dozen vertebrae, rib, and limb bones and fragments were recovered from one giant ground sloth (IMNH 2012). The majority of the collections were made at just two of the locations in the allotment in the late 1980s.

3.3.2.2 Con Shea Environmental Consequences

3.3.2.2.1 Alternative A

3.3.2.2.1.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table. These figures indicate the degree of effects relating to the season, intensity, duration, frequency, and distribution of use, as well as the weed introduction potential and effects to biological soil crusts, all as described in Section 3.2.

Table 3.3. 15 - Con Shea Allotment Vegetation Indicators for Alternative A

Indicator	Con Shea – Pastures 1, 3, 4, & 5
Season of use (Dates)	11/1 – 2/28
Duration (Days per pasture)*	120
Frequency	Once, every year
Total AUMs	990
Acres/AUM	12.6
Utilization	Expected <35%; limit <50%
Water haul sites	none
Number of livestock**	251 + cows

*Multiple pastures are permitted, but the permit does not specify a time limit per pasture, so the duration is for the allotment as a whole. If cattle were moved out of one pasture into another, then the duration per pasture would be less.
**The permit would specify a number for livestock, but allow for annual variation from this number, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

Under Alternative A, conditions would be similar to existing conditions as described in the affected environment, with the following changes:

Compared to the current situation (Alternative B), in the Con Shea Allotment, Pasture 3 would be used for a longer duration (120 days) in the winter (11/1 to 2/28) rather a short time (15 days) early spring (3/1 to 3/15), eliminating growing season effects but increasing potential trampling effects in this pasture. Pastures 4 and 5 would be permitted for use between 11/1 and 2/28 and therefore have effects from winter grazing, rather than the current non-use. Total AUMs in the allotment would be 15% less than are currently used, so the overall intensity of grazing across the allotment would be less than current conditions. The stocking rate would be reduced by 24% compared to current conditions in Pastures 1 and 3 because more acres (with Pastures 4 & 5) and fewer AUMs would be used. The number of cattle could be 15% less than Alternative B (although there would be flexibility in livestock number), so the weed introduction potential could be lower than the current situation. Standards 4 and 5 would not be met, but current livestock grazing would not be a causal factor because use would occur during the dormant season. Standard 6 would continue to be met because the grazing system would be expected to maintain adequate ground cover and existing perennials.

3.3.2.2.1.2 Soils

See Section 3.2.1.2 above.

3.3.2.2.1.3 Riparian/Water Quality

Riparian Areas and Wetlands

Riparian areas in Con Shea only occur in Pasture 3. In the grazing alternatives other than Alternative A this pasture is moved to the Joyce FFR Allotment.

The following terms and conditions within Alternatives A generate the most substantial difference in effects for Standards 2, 3, and 7 due to their influence on the riparian areas and stream channels:

1. Key herbaceous riparian vegetation, where streambank stability is dependent upon it, will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the growing season; and
2. Key riparian browse vegetation will not be used more than 50% of the current annual twig growth that is within reach of the animals.

These T&Cs should result in a gradual improvement to herbaceous riparian vegetation each year. Grazing within the riparian area, when not frozen, may result in a seasonal increase to soil compaction, a loss of soil moisture, a seasonal increase to soil surface disturbance, and less soil water storage capacity.

Generally, in the short and long terms (2 and 10 years, respectively), Standard 2 (riparian and wetland areas) would continue to improve to a fully functioning condition. Riparian stubble heights on all assessed livestock accessible reaches were at or above 4 inches. Clary (1999) recommended leaving a 10-15 cm (4-6 inch) herbaceous stubble height at the end of the growing season after grazing for meadow riparian recovery. In the long term, the early-seral dominated riparian vegetation communities would eventually change to communities dominated by late-seral, deep-rooted species. Stream channels would improve as they narrow and deepen, and streambanks would stabilize due to deep-rooted riparian vegetation. Aquatic habitat conditions would improve as channel form recovers, fine sediment levels decrease, and stream shading levels increase due to the development of dense and vigorous riparian plant communities. Clary (1999) found that the overall stream channel and vegetative response improved with medium grazing (35-50% utilization); stream channels narrowed, stream width-to-depth ratios were reduced, and channel bottom embeddedness decreased.

Stream Channel/Floodplain

Normally, Standard 3 and Standard 1 are closely connected to each other because the stream channels and floodplains reflect past watershed problems. In this project, Standard 3 (Stream channel/floodplain) is

meeting standards, even though Standard 1 (Watershed) is not meeting standards. The shift in upland vegetation species composition, past soil loss, and increases in non-native annual grasses would have caused a shift in watershed response that affected the channel and floodplain characteristics. The stream channels and floodplains are representative of the watershed runoff response (volume and timing) and associated sediment loads. Since Standard 3 is meeting standards, it can be assumed that the stream channels and floodplains have adjusted to the new watershed condition. These alternatives may result in a direct, observable, and positive response within the riparian areas and this positive response would correlate to an associated maintenance of stream channels/floodplain condition.

Because there are so many variables that contribute to watershed health and channel function related to upstream activities, it is difficult to attribute grazing management within the Con Shea allotment to direct or immediate improvement of this standard within the timeframe associated with the permit renewal. Full recovery will require more than ten years and may not be gained wholly because of changes exclusive to livestock management. It is necessary to recognize that Standard 4 and Standard 1 are evaluated at a watershed scale and therefore must consider the marginal influence of this project. As a whole, this project has very little influence on the standard because of other activities within the watershed that also influence conditions (irrigation, private land development, past management, wildfire, invasive or noxious weeds, and vegetation structure and diversity).

In conclusion, Alternative A indirectly affects the stream channel because of the riparian recovery described above. Stream channels and floodplains will be maintained in this alternative.

Water Quality

An indirect but slight improvement to Standard 7 (Water Quality) is expected because of the recovery of upland and riparian vegetation. As vegetation condition improves, plant litter and below ground biomass also increase which would decrease water runoff and soil erosion potential in the long term (>10 years). More vegetation and litter covering the soil surface protects the soil from raindrop impact, improves soil organic matter, and would lead to improved nutrient cycling. The allotment would take decades to centuries to reestablish soils that were lost to erosion. Slow biomass accumulation is expected, resulting in a steady, long-term improvement to soil development, watershed response, riparian areas, wetlands, and water quality within the boundaries of the project. Short-term improvements would be difficult to discern compared to current condition, especially since the project area is such a small proportion of the contributing watersheds that influence recovery rates. All of these factors would eventually improve the water quality and support to beneficial uses within Sinker Creek.

3.3.2.2.1.4 Special Status Plants

Environmental consequences to specials status plants would be as described in Alternative B, with conditions the same as described in the affected environment. Standard 8 for special status plants would continue to not be met due to invasive weeds, but current livestock grazing would not be a causal factor because use would occur during the dormant season.

3.3.2.2.1.5 Wildlife and Special Status Animals

Under this alternative, grazing use would occur as allowed under the existing permit. In the allotment all pastures would be used for a long duration (120 days) in the winter (11/1 to 2/28), eliminating growing season effects. Pastures 4 and 5 would be permitted for use between 11/1 and 2/28 and would therefore have effects from winter grazing, rather than the current non-use. Total AUMs in the allotment would be 15% less than are currently used, so the overall intensity of grazing across the allotment would be less than current conditions. The stocking rate would be reduced by 23% compared to current conditions because more acres (with Pastures 4 & 5) and fewer AUMs would be used.

Under Alternative A, the allotment would continue to not meet Standard 8 (threatened and endangered animals) in upland habitats, but current livestock grazing would not be a causal factor because use would occur during the dormant season. Utilization would continue to be less than 50%, and is expected to produce no more than 35-40%. The winter grazing period along with expected light (<40%) utilization would maintain existing perennials (native and seeded) and maintain adequate ground cover. Cheatgrass would continue to dominate extensive areas throughout the allotment, but existing perennials would not be expected to decline under this grazing management because of the season of use. Shrub regeneration is expected to continue to be limited by competition from cheatgrass and lack of seed sources in much of the fire area interiors. Noxious weeds are not expected to increase because, although highly competitive, they would be kept in check with a combination of ongoing noxious weed treatment and Sandberg bluegrass cover in most areas.

Under Alternative A, the allotment would continue to not meet Standard 8 (threatened and endangered animals) in riparian habitat, but significant progress toward meeting the Standard would continue to be made. Utilization of key herbaceous riparian vegetation would not exceed 60% during the dormant season and a minimum stubble height of 4 inches at the end of the growing season would be required. Utilization of key riparian browse vegetation would not exceed 50% of the current annual twig growth. These terms and conditions would be expected to result in gradual improvements to herbaceous vegetation each year. However, due to de-watering caused by upstream water diversions, it is likely that Sinker Creek will continue to fail to meet IDEQ water quality standards and fail to fully support cold water aquatic life beneficial uses.

Effects to individual wildlife species and their habitats resulting from Alternative A in the Con Shea Allotment are detailed under Winter Grazing (Section 3.2.1.5) in Environmental Consequences Common to All Allotments.

3.3.2.2.1.6 Social and Economic Values

The AUMs and grazing schedule authorized in the no-action alternative for all of the allotments are the same as in the current permit. There would be no change in livestock management, operations would continue with business as usual, and there would be no additional socioeconomic impact to the ranches. The ranches would continue contributing to employment and the purchase and sale of goods and services in the counties where they are located.

No short (<1 year) or long term (>3 years) effect to socioeconomics is expected since there would be no reduction in AUMs or change in grazing management. There should also be no impact to any minority population since there is no change in AUMs and would therefore not directly reduce the ability of individuals to find work.

3.3.2.2.1.7 Cultural and Paleontological Resources

Alternative A is unlikely to have any significant effect on current conditions within the Con Shea allotment to either Cultural or Paleontological resources due to the lower intensity of grazing and lack of impacts that would cause erosion or loss of vegetative cover. No changes in the NRHP eligibility status of sites or effects to historic properties would be expected.

3.3.2.2.2 Alternative B

3.3.2.2.2.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table.

Table 3.3.16 - Con Shea Allotment Vegetation Indicators for Alternative B

Indicator	Con Shea – Pasture 1
Season of use (Dates)	11/1 – 2/28
Duration (Days per pasture)	120
Frequency	Once, every year
Total AUMs	1,167
Acres/AUM	9.6
Utilization	Expected <35%; limit <50%
Water haul sites	none
Number of livestock	295 cows

With implementation of Alternative B, conditions would continue as they currently are, as described in the affected environment. This alternative includes no rest for an entire season, but includes deferment from use outside of the critical growing period that allows for undisturbed growth during spring, summer, and early fall. Utilization levels up to 50% would be allowed, but based on recent years' data would be expected to be fairly light (<35%). There would be a relatively long duration of use, but because this use is during the dormant period, growing plants would not be re-grazed and the entire growing season would be available for plant recovery. Stocking rates are relatively heavy, but are appropriate based on observed utilization rates. With no change in livestock intensity or distribution, concentrated use areas would be expected to be the same as current conditions. The potential for weed seed introduction (based on the number of livestock) would be the same as current conditions.

The Con Shea Allotment would continue to not meet Standards 4 and 5 but current livestock grazing would not be a causal factor because use would occur during the dormant season. Pastures 4 and 5 would not be grazed, so no grazing effects from authorized grazing would occur. Standard 6 would continue to be met because the grazing system would be expected to maintain adequate ground cover and existing perennials. Utilization would continue to be less than 50%, and typically less than 35%. The relatively long season of use would not subject growing shoots to re-grazing because plants are dormant. Cheatgrass would continue to dominate extensive areas throughout the allotment, but existing perennials would not be expected to decline under this grazing management because of the season of use. Shrub regeneration is expected to continue to be limited by competition from cheatgrass and lack of seed sources in much of the fire area interiors. Noxious weeds (primarily Russian knapweed and whitetop) are not expected to increase because, although highly competitive, they would be kept in check with a combination of ongoing noxious weed treatment and Sandberg bluegrass cover in most areas. Biological soil crusts would be expected to be maintained at reduced cover by this grazing management.

3.3.2.2.2.2 Soils

See Sections 3.2.1.2 above.

3.3.2.2.2.3 Special Status Plants

The special status plants Snake River milkvetch, Mulford's milkvetch, and white-margined wax plant would continue to be adversely affected by exotic weeds, but not by cattle grazing or trampling because the Mulford's milkvetch is in an exclosure, white-margined wax plant is an annual not growing during the season of use, and Snake River milkvetch is dormant with growing points below the soil surface at this time. Standard 8 (Special Status Plants) would continue to not be met due to weeds, but not by current livestock grazing.

3.3.2.2.2.4 Wildlife and Special Status Animals

Under Alternative B, the allotment would continue to not meet Standard 8 for threatened and endangered animals in upland habitats, but current livestock grazing would not be a causal factor because use would

occur during the winter (Pasture 1) or for a short duration in the spring (Pasture 3); Pastures 4 and 5 would not be grazed. Utilization would continue to be less than 50%, and typically less than 35%. The winter season of use in Pasture 1 would eliminate growing season effects because plants are dormant. Pasture 3 would include early spring use, but for a short duration, allowing adequate time for regrowth. Cheatgrass would continue to dominate extensive areas throughout the allotment, but existing perennials and adequate ground cover would be maintained because of the season of use. Shrub regeneration is expected to continue to be limited by competition from cheatgrass and lack of seed sources in much of the fire area interiors. Noxious weeds are not expected to increase because, although highly competitive, they would be kept in check with a combination of ongoing noxious weed treatment and Sandberg bluegrass cover in most areas.

Effects to individual wildlife species and their habitats resulting from Alternative B in the Con Shea Allotment are detailed under Winter (Section 3.2.1.5, Pasture 1) and Spring (3.2.2.5, Pasture 3) Grazing in Environmental Consequences Common to All Allotments.

3.3.2.2.2.5 Social and Economic Values

This alternative includes a 25 percent increase in active use AUMs compared to Alternative A. There would no adverse effects to the socioeconomic values of Owyhee County as a result of this increase. The value to the community would be as shown in Table 3.16. The ranch would continue contributing to employment and the purchase and sale of goods and services in the county.

3.3.2.2.2.6 Cultural and Paleontological Resources

Alternative B could benefit both the South Alternate Route of the Oregon Trail and fossil resources slightly due to the lack of use of pastures 4 and 5 and the continued application of T&Cs, and thus increased sediment stability and aesthetics. However, increased AUMs could cause slightly more sediment deterioration and additional pressure on water sources and congregation at sites in riparian areas that are more sensitive to erosion that might require future mitigation at certain sites over the long term. No changes in the NRHP eligibility status of sites or effects to historic properties would be expected.

3.3.2.2.3 Alternative C

3.3.2.2.3.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table. Pasture 3 would be moved to the Joyce FFR Allotment, and Pastures 4 and 5 would not be grazed.

Table 3.3.17 - Con Shea Allotment Vegetation Indicators for Alternative C

Indicator	Con Shea – Pasture 1
Season of use (Dates)	11/1 – 2/28
Duration (Days per pasture)	120
Frequency	Once, every year
Total AUMs	990
Acres/AUM	11.4
Utilization	Expected <35%; limit <50%
Water haul sites	none
Number of livestock*	251+ cows

*The permit would specify a number for livestock, but allow for annual variation from this number, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

The Con Shea Allotment would consist of just one pasture, with fall/winter use. For this pasture, the season of use would be the same as Alternative B, while the AUMs would be reduced by 15% and the

number of cattle may be fewer or the same. Like Alternative B, there would be no growing season effects to upland vegetation, weeds, and special status plants; the intensity of winter use effects would be reduced compared to Alternative B. If the number of cattle in the allotment was fewer than Alternative B (251 rather than 295 cows), then the weed introduction potential would be 15% less than in that alternative. The allotment would continue to not meet Standards 4 and 5 because of past plant community changes (loss of large bunchgrasses; presence of invasive plants), but current livestock management would not be a causal factor. Standard 6 would continue to be met because winter grazing at a reduced intensity would be expected to maintain adequate ground cover and existing perennials. Utilization would be less than 50% and typically less than 35% (or lower because of the reduced AUMs). Grazing effects to plant community composition (perennials, cheatgrass, shrubs, weeds, and biological soil crusts) and special status plants would be the same as Alternative B but at a reduced intensity because of the reduced AUMs and stocking rate. Pastures 4 and 5 would not be used, so effects would be the same as in Alternative B.

3.3.2.2.3.2 Soils

See Sections 3.2.1.2 above.

3.3.2.2.3.3 Riparian/Water Quality

Riparian Areas and Wetlands

Alternatives C and D would apply objectives established in the Owyhee Resource Management Plan related to grazing within the riparian areas that are more stringent than those stipulations applied for Alternative A and B. Alternative C and D will default to the Management Actions and Allocations described in the Owyhee Resource Management Plan for Livestock and Riparian Objectives.

Alternatives C and D only applies the following term and condition and therefore generates the most substantial difference to effects within standards 2, 3, and 7 due to the influence on the riparian areas and stream channels. Page 14 of the Owyhee Resource Management Plan states, “Improve and maintain streambank and channel stability as appropriate for the site by managing grazing to limit annual trampling impacts to 10% or less of the linear bank length.”

This term and condition should result in delayed improvement to herbaceous riparian vegetation each year. The rate of improvement will be slower for these two alternatives than that of Alternatives A and B, due to the potential for greater utilization within riparian areas. During the grazing season, a lower level of grazing pressure is expected because of the shorter season, less AUMs, and the term and condition that reduces impacts to streambanks. This grazing pressure will likely result in overall decreases in soil compaction, an increase in soil moisture, a decrease to soil surface disturbance, and greater soil water storage capacity. However, a stipulation that measures immediate effects of grazing (stubble height) will inform BLM and permittees about a potential problem sooner than a term and condition that is a secondary result of overuse (trampling of 10% or less of streambanks). While subtle, these alternatives may have a greater overall effect to riparian health than that of Alternatives A and B.

Stream Channel/Floodplain

As described above, these alternatives should result in a continued, observable increase to health, density, and vigor of riparian vegetation. An increase to vegetative conditions that improves riparian function will also stabilize streambanks and decrease sedimentation, turbidity, and stream temperatures. Even though the current condition meets standards, these two alternatives are expected to continue improving the function of the stream channels and floodplain connectivity. Compared to Alternatives A and B, these alternatives will maintain rather than improve the condition of the stream channel and floodplain function because of less comprehensive terms and conditions.

Water Quality

Improvements to channel stability will also improve aquatic habitat conditions as channel form recovers, fine sediment levels decrease, and stream shading levels increase. Sinker Creek may never connect to the Snake River due to irrigation uses upstream, however, the improvement to channel and floodplain function will likely raise the water table and support further increases to riparian vegetation. Filtering provided by riparian vegetation may be less than that resulting from Alternatives A and B but will continue to improve the water quality and/or the support of beneficial uses within Sinker Creek.

3.3.2.2.3.4 Special Status Plants

Effects on special status plants would be almost the same as in Alternative B. Standard 8 (Special Status Plants) would continue to not be met due to invasive weeds, but not current livestock grazing because of the exclosure and the dormant season of use.

3.3.2.2.3.5 Wildlife and Special Status Animals

The allotment would consist of just one pasture (Pasture 1), with winter use. Pasture 3 would be moved in the Joyce FFR Allotment, Pasture 4 and 5 would not be used by the permittee. The season of use for Pasture 1 would be the same as Alternative B, while the AUMs would be reduced by 21% and the number of cattle may be fewer or the same. Like Alternative B, there would be no growing season effects to upland vegetation; the intensity of winter use effects would be reduced compared to Alternative B. The allotment would continue to not meet Standard 8 (threatened and endangered animals) in upland habitat because of past plant community changes (loss of large bunchgrasses; presence of invasive plants), but current livestock management would not be a causal factor. Winter grazing at a reduced intensity would be expected to maintain adequate ground cover and existing perennials. Utilization would be less than 50% and typically less than 35% (or lower because of the reduced AUMs).

Grazing effects to individual wildlife species and their habitats would be the same as Alternative B (Section 3.3.1.2.2.5) but at a reduced intensity because of the reduced AUMs and stocking rate.

3.3.2.2.3.6 Social and Economic Values

This alternative does not propose a change in active use AUMs compared to Alternative A. There would no adverse effects to the socioeconomic values of Owyhee County as a result of this alternative. The value to the community would be as shown in Table 3.16. The ranch would continue contributing to employment and the purchase and sale of goods and services in the county.

3.3.2.2.3.7 Cultural and Paleontological Resources

Alternatives C and D could benefit the South Alternate Route of the Oregon Trail and fossil resources slightly due to the lack of use of Pastures 4 and 5 and the maintenance of lower AUMs as in A, C, and D.

3.3.2.2.4 Alternative D

3.3.2.2.4.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table. Pasture 3 would be moved to the Joyce FFR Allotment, and Pastures 4 and 5 would not be grazed.

Table 3.3. 18 - Con Shea Allotment Vegetation Indicators for Alternative D

Indicator	Con Shea – Pasture 1
Season of use (Dates)	11/1 – 2/28
Duration (Days per pasture)	120
Frequency	Once, every year
Total AUMs	953

Indicator	Con Shea – Pasture 1
Acres/AUM	11.8
Utilization	Expected <35%; limit <50%
Water haul sites	none
Number of livestock	242 cows

Pasture 1 of the Con Shea Allotment would be managed similar to Alternative C, but AUMs and the stocking rate would be reduced by 4%. Grazing intensity effects would be nearly the same as described in Alternative C, but slightly reduced. The fall/winter season of use would continue to have few effects, as described in Alternatives B and C. The number of cattle would be fewer than Alternatives B and C, slightly reducing the weed introduction potential. Pasture 3 would be moved to the Joyce FFR Allotment and managed the same as in Alternative B, so effects would be the same as described under that Alternative. Standard 6 would continue to be met. Current livestock management would not be a significant causal factor for not meeting Standards 4 and 5. Pastures 4 and 5 would not be grazed, so effects would be the same as in Alternative B.

3.3.2.2.4.2 Soils

See Sections 3.2.1.2 above.

3.3.2.2.4.3 Special Status Plants

Effects would be nearly the same as described in Alternative C, with slightly reduced grazing intensity. Standard 8 for Special Status Plants would not be met due to invasive weeds, but not current livestock grazing because of the dormant season of use and the exclosure.

3.3.2.2.4.4 Wildlife and Special Status Animals

Pasture 1 of the allotment would be managed the same as in Alternative C (Section 3.3.1.2.3.5) and Pasture 3 would be moved to the Joyce FFR Allotment and managed the same as in Alternative B (Section 3.3.1.2.2.5), so effects would be the same as described in those sections. Pastures 4 and 5 would continue to not be used by the permittee. Current livestock management would not be a significant causal factor for not meeting Standards 8 for threatened and endangered animals in upland habitats.

3.3.2.2.4.5 Social and Economic Values

This alternative does not propose a change in active use AUMs compared to Alternative A. There would no adverse effects to the socioeconomic values of Owyhee County as a result of this alternative. The value to the community would be as shown in Table 3.16. The ranch would continue contributing to employment and the purchase and sale of goods and services in the county.

3.3.2.2.4.6 Cultural and Paleontological Resources

Alternatives C and D could benefit the South Alternate Route of the Oregon Trail and fossil resources slightly due to the lack of use of Pastures 4 and 5 and the maintenance of lower AUMs as in A, C, and D.

3.3.2.2.5 Alternative E

3.3.2.2.5.1 Vegetation, including Noxious Weeds

Effects to vegetation from Alternative E in the Con Shea Allotment are described in Section 3.2.5.1 (Environmental Consequences Common to All Allotments).

3.3.2.2.5.2 Soils

See Sections 3.2.1.2 above.

3.3.2.2.5.3 Riparian/Water Quality

Riparian Areas and Wetlands

This alternative has no grazing; therefore, the riparian areas and wetlands will improve. The rate of recovery is expected to be much faster within this alternative than Alternative A.

Stream Channel/Floodplain

It is expected that the implementation of this alternative will achieve full channel improvement faster than Alternative A.

Water Quality

This alternative would support beneficial uses earlier than Alternative A.

3.3.2.2.5.4 Special Status Plants

Effects to Special Status Plants from Alternative E in the Con Shea Allotment are described in Section 3.2.5.1 (Environmental Consequences Common to All Allotments).

3.3.2.2.5.5 Wildlife and Special Status Animals

Effects to individual wildlife species and their habitats resulting from Alternative E in the Con Shea Allotment are detailed in Section 3.2.5.5 of Environmental Consequences Common to All Allotments.

3.3.2.2.5.6 Social and Economic Values

This alternative would cancel all authorized use AUMs on the allotment for a period of 10 years, after which applications for grazing permits would be accepted. This would likely have a substantial socioeconomic impact on the ranch operators, the people they employ, the businesses where the operators purchase supplies, and the communities that are supported by livestock operation activities. The ranchers would have to relocate their livestock to other private or state land, possibly outside of Owyhee County, sell their livestock, and/or close the ranch completely. The ranchers already likely purchase supplies from stores closer to the new grazing locations, so income from taxes and sales in these communities would drop, and the income from the livestock sales would go to the counties where the base ranches are located. The effects are displayed in Table 3.16.

The people previously employed by the ranches would have to look for new jobs if any of the ranches closed; the agricultural sector in both counties is large enough that they may not have much trouble finding similar work elsewhere, but they may have to relocate or commute long distances, which could be costly. Finding work in other sectors may be difficult because unemployment is so high. The greatest loss to the local communities as a result of ranch closures would be the loss of social cohesion.

However, not all socioeconomic impacts could be negative. Land on the allotments could be more available for recreational opportunities, which could bring more money to the stores, restaurants, and hotels that provide goods and services for people from the Treasure Valley who come to hunt, fish, camp, boat, and watch wildlife throughout the Owyhee Mountains. This could also provide more employment opportunities in other sectors throughout the county. However, as noted in the ORMP EIS (USDI BLM, 1999b), the number of businesses that provide recreational goods and services in Owyhee County is minimal. Most residents, as well as those visiting from other counties, purchase their goods outside of Owyhee County. Thus, although some recreation fees could be collected, the influx of recreation to the county would not add much to the revenue from sales or taxes there and could actually negatively affect the financial resources of the county through additional requests for help in the backcountry.

3.3.2.2.5.7 Cultural and Paleontological Resources

Effects to Cultural and Paleontological Resources for Alternative E are listed under Environmental Consequences Common to All Allotments (Section 3.2.5.8).

3.3.3 Sinker Butte

3.3.3.1 Sinker Butter Affected Environment

3.3.3.1.1 Vegetation, including Noxious Weeds

Upland Vegetation
The majority (at least 85%) of the allotment is a Loamy 8-12" ecological site. Smaller areas of Sandy Loam 8-12" and Calcareous Loam 7-10" ecological sites are also mapped within the allotment. Inclusions within the Sinker Butte Allotment include rocky buttes, canyons, and cliffs, clay/ash outcrops, and riparian areas (Snake River and Sinker Creek).

Table 3.3.19 - Sinker Butte Allotment Ecological Sites (all ownerships)

Ecological Site	**Acres** (per GIS)	**Percent of Allotment**
Loamy 8-12" ARTRW8/PSSPS-ACTH7	7,516	85%
Sandy loam 8-12" ARTRW8/ACHY	264	3%
Calcareous loam 7-10" ATCO-ARSP5/ACHY-ACTH7	64	1%
No ecological site identified	973	11%
Total:	8,817	100%

Wildfires have burned a substantial proportion of the Sinker Butte Allotment. Wildfires burned more than a third of the allotment in the 1980s, and parts of that were re-burned in 1995, 1996, 2007 or 2012. The 1980s fire area (the north part of the allotment) was seeded soon after that fire. The 2012 Con Shea fire also burned a substantial area of previously unburned range in the allotment. The 2012 burn area was not reseeded.

Little shrub recovery has occurred in the fire areas, although pockets of unburned shrubs remain within the fire perimeters. The vegetation in burned, unseeded areas is dominated by Sandberg bluegrass and cheatgrass, along with tumble-mustard and other weeds. In seeded areas, the vegetation is similarly dominated by Sandberg bluegrass and cheatgrass, but crested wheatgrass is also present at low to moderate densities. In unburned areas, the shrub cover is present with an understory of Sandberg bluegrass and in most cases, cheatgrass. Large perennial bunchgrasses are highly reduced across the allotment.

Existing cover types in the allotment are indicated by PNNL and LANDFIRE existing vegetation mapping. Neither of these sources includes changes as a result of the 2007 and 2012 fires. Although they use somewhat different vegetation classifications, similar vegetation groupings can be compiled, as shown below.

Table 3.3.20 - Existing Vegetation in the Sinker Butte Allotment (all ownerships)

Vegetation Cover Type	**Percent of Allotment per PNNL**	**Percent of Allotment per LANDFIRE**
Big sagebrush	55%	51%
Salt desert shrub	7%	25%
Exotic annuals	28%	15%
Bunchgrass/grassland	6%	<1%
Sparse vegetation	2%	<1%
Greasewood	<1%	3%
Other (developed areas, agriculture, water,	2%	5%

Vegetation Cover Type	Percent of Allotment per PNNL	Percent of Allotment per LANDFIRE
riparian, etc.)		
Total:	100%	100%

Utilization figures for perennial bunchgrasses in the Sinker Butte Allotment from 2008-2011 are <35% for all pastures monitored.

Trend Data

Two trend sites in the Sinker Butte Allotment have been monitored, both on the Loamy 8-12" ecological site. These sites, one nested frequency and one photo plot, were last read in 2002, 2008, and 2011 (Corbin 2013). Monitoring information shows the sites dominated by cheatgrass and Sandberg bluegrass, with abundant tumble-mustard and Russian thistle weeds, and low shrub recovery even almost 30 years after the fire. Perennial vegetation frequency showed static trends. Ground cover was predominantly cheatgrass litter and bare ground, with low cover and static trends in stable ground cover elements.

Figure 3.3.16 - Sinker Butte Nested Frequency Site – July 2008

The photo plot site has abundant cheatgrass, tumble-mustard, Sandberg bluegrass, and some crested wheatgrass visible. Although species composition suggests that the site has passed a threshold for an irreversible transition to an altered state from reference conditions, the apparent vigor of the Sandberg bluegrass and crested wheatgrass indicates that current grazing is not further degrading the site.

Figure 3.3.17 - Sinker Butte Photo Plot Site – August 2011

Noxious and Invasive Weeds

Noxious weeds, primarily whitetop and Russian knapweed, are scattered throughout the Sinker Butte Allotment. Most infestations are less than an acre in size, although a few are between 1 and 5 acres. Most infestations have been chemically treated.

Table 3.3.21 - Noxious Weed Infestations in the Sinker Butte Allotment, per BLM GIS layer (2002-2011) and additional observations

Noxious Weed	Number of Recorded Infestations
Perennial pepperweed	2
Puncturevine	1
Russian knapweed	46
Scotch thistle	1
Tamarisk	6
Whitetop	60
Russian olive	1

Invasive weeds are widespread and abundant across the allotment. Cheatgrass is the primary species, and it is dominant to co-dominant (often with Sandberg bluegrass) to frequent nearly everywhere in the allotment. Other frequent invasive weeds present in the Sinker Butte Allotment include Russian thistle, stork's bill, musk mustard, and tumble-mustard.

Biological Soil Crusts

Biological soil crusts have been reduced throughout the allotment. They were measured at 7-10% cover at the nested frequency trend site between 2002 and 2011, lower than expected for reference conditions. In this allotment, cheatgrass, wildfire, and cattle trampling have affected the abundance of biological soil crusts. Although reduced overall, some areas in the allotment such as within Snake River milkvetch occurrence locations have soil moss and lichen cover similar to reference conditions.

Idaho S&Gs
Standard 5 applies to the large seeding in the north part of the allotment, and Standard 4 applies to the remainder of the allotment. See Appendix A for more information.

Standard 4 for native plant communities is not being met in the Sinker Butte Allotment, as indicated by the lack of large bunchgrasses and very low recovery of shrubs. Large bunchgrasses have been replaced by Sandberg bluegrass (a small bunchgrass) and cheatgrass. Ground cover data indicate that basal vegetation and biological soil crusts are lower than expected, while non-persistent litter is higher than expected. Shrub canopy is also reduced. Static frequency trends indicate that significant progress is not being made toward meeting the Standard. Current grazing management is not a significant causal factor because the winter season of use occurs when perennial grasses are generally dormant, and because utilization measured in the last four years has not exceeded 35%.

The current livestock grazing management system conforms with the Idaho Guidelines for Livestock Grazing Management as it relates to Standard 4 because the system provides for periodic rest/deferment during critical growth stages, and the season and level of use are appropriate grazing management practices to maintain adequate perennial plant vigor for seed production, seed dispersal, and seedling survival relative to the ecological site.

Significant causal factors for not meeting Standard 4 include historic grazing practices, which have eliminated the large bunchgrasses and allowed invasive weeds to gain a foothold and spread. Historic grazing (over 20 years ago) presumably included growing season use and a higher intensity of use (overstocking) than current management, which led to the reduction/loss of large, palatable bunchgrasses and more bare ground conducive for invasive annual grass establishment. Invasive weeds have also contributed to the lack of Wyoming sagebrush regeneration after wildfire because cheatgrass competes with sagebrush seedlings for limited soil moisture.

Standard 5 for seedings is not being met because the crested wheatgrass density is low and declining over the long term, while shrubs and other natives (besides Sandberg bluegrass) have not become re-established. Although seeded species (such as crested wheatgrass) would be expected to decline over decades as the plants age, recruitment from native perennials and crested wheatgrass itself would be expected to maintain perennial dominance. Here, instead, invasive species (cheatgrass, tumble-mustard) are prevalent, along with the shallow-rooted native Sandberg bluegrass, and native forbs and shrubs are lacking. No indication of significant progress toward meeting Standard 5 is apparent. However, current livestock grazing management practices are not a significant causal factor for not meeting the Standard because the season of use (winter grazing) and level of use (recent utilization not exceeding 35%) are suitable to maintain seedings. The current grazing management system conforms with Idaho Guidelines for Grazing Management because it provides for regular deferment from critical growth stages. The significant causal factor for not meeting Standard 5 is the prevalence of invasive species (cheatgrass, tumble-mustard, and Russian thistle), which, along with a slow decrease in crested wheatgrass from earlier drought and the natural aging of the seeded grass, is causing this seeding to decline. The invasive species compete with native and seeded perennials, particularly seedlings, for light, soil water, and nutrients, and do not allow the desirable species to regenerate.

3.3.3.1.2 Soils

See Section 3.1.2 above.

3.3.3.1.3 Riparian/Water Quality

A 1.05-mile segment of Sinker Creek is located on public lands in the Sinker Butte Allotment. Sinker Creek is a perennial stream that flows west to east into the Snake River, and is the border between Sinker

Butte Allotment in the north and Fossil Butte Allotment in the south. Sinker Creek also has various upstream diversions. It is confined in a steep rock wall canyon and has many obligate riparian plant species present. Above the canyon some irrigation run-off appears to be adding to this stream's flow. Although noxious weeds such as knapweed and salt cedar are present, streambanks appear stable with a healthy, diverse system of carex, willow, and cottonwood communities. This reach was assessed as PFC in 2001 and in 2012.

BLM personnel also visited this portion of Sinker Creek again in May 2013 to validate the health of the riparian area. It was validated to be at PFC, consisting of stable banks, many beaver dams, bankfull indicators, access to floodplain, and both herbaceous and woody riparian vegetation. The majority of the perennial sections had new willow growth. The reach just above the Montini Ranch had a major diversion on the lower end that removed about 50% of the creek into an 18-inch pipe. Even though this substantial diversion would be considered a barrier to fish passage, we observed many fish in most of the pools both above and below. The active beavers and the improvement to vegetative health since the 2001 report indicate that there has been significant improvement to Sinker Creek.

Due to dewatering effect of multiple diversions upstream, Sinker Creek has very infrequent surface water connectivity with the Snake River. Connectivity with the Snake River would only happen during very large streamflow events, estimated to be much larger than bankfull and estimated to be above a 10-year recurrence interval. Even during these large streamflow events, the stream would likely flow across the entire valley bottom leaving most sediment as deposits prior to reaching the Snake River. Due to this lack of connectivity, it is not expected that temperature or sediment impairment within Sinker Creek will contribute to the water quality of the Snake River.

3.3.3.1.4 Special Status Plants

Four species of special status plants have been recorded from the Sinker Butte Allotment, and occurrences of three other species are mapped such that they may or may not occur in the allotment. Based on potential habitat, it is unlikely that shining flatsedge or cowpie buckwheat occur in the Sinker Butte Allotment, but white eatonella may.

Table 3.3.22 - Special Status Plants in the Sinker Butte Allotment

Species	Pasture(s)	Number of Known Occurrences
Snake River milkvetch *Astragalus purshii* var. *ophiogenes*	1, 3	2
Desert pincushion *Chaenactis stevioides*	1, 3	2
Shining flatsedge *Cyperus bipartitus*	1? non-specific location	1
White eatonella *Eatonella nivea*	3? non-specific location	1
Cowpie buckwheat *Eriogonum shockleyi* var.*packardaei*	1-4? non-specific location	1
White-margined wax plant *Glyptopleura marginata*	3	1
Turtleback *Psathyrotes annua*	4	2

Occurrence records for these special status plants date from the 1970s through 2013. Some of these occurrences have only the original discovery records, and a few have subsequent visits documented.

Recent (April 2013) monitoring found the Snake River milkvetch occurrence in Pasture 3 was healthy and undisturbed, although cheatgrass was always in the surrounding area and sometimes immediately in the milkvetch microhabitat. Occurrence locations for desert pincushion, white-margined wax plant, and turtleback in Pasture 3 were also visited in April 2013; these plants were not found, probably because it was too early and/or more likely too dry this year for these annuals. Their habitat appeared undisturbed (except by cheatgrass, more in surrounding areas than microhabitats) and suitable for these plants (Corbin 2013).

It does not appear that invasive weeds (particularly cheatgrass), the greatest threat, have increased in special status plant habitats. Because special status plants generally grow in specialized soil types, these areas are often not as subject to weed invasion as surrounding areas.

Standard 8 for special status plants is being met in the Sinker Butte Allotment because, based on available information, habitat for these plants is being maintained. Recent observations indicate no disturbance and no increase in cheatgrass or other invasive weeds in occurrence locations visited. The season of use (winter grazing) and level of use (recent utilization not exceeding 30%) conform with Guidelines for Grazing Management sufficient to minimize impacts to special status plant habitats.

3.3.3.1.5 Wildlife and Special Status Animals

In addition to the general overview of the Affected Environment for Wildlife Resources in the Fossil Butte Group allotments presented above, descriptions of the current condition of species and their habitats within the Sinker Butte allotment are based on the 2013 Rangeland Health Evaluation and Determination Report (USDI BLM, 2013a), Affected Environment sections of the Vegetation and Water and Riparian Resources Specialist Reports, recent personal observations, current element occurrences in IFWIS (IDFG, 2012), and consultation with local wildlife professionals.

Standards/Idaho S&Gs

Standards 1- 7 provide the basis for general wildlife habitats within the Sinker Butte Allotment that support Standard 8, Threatened and Endangered Animals. Wildlife habitat requirements specific to individual special status animal species are evaluated under Standard 8, as described in USDI-BLM 1997.

Upland Habitat

Information used to evaluate Standard 8 for upland habitats include the 2007 Assessment, 2008 and 2011 trend data, 2008-2011 utilization data and photos, 2013 field visits, and BLM's noxious weed GIS layer. No recent Rangeland Indicators have been taken, but the trend sites within the allotment were monitored in 2008 and 2011 and BLM personnel conducted two field visits in 2013. Trend data and photo points show conditions much like those described in the 2007 documents, with a lack of large bunchgrasses, co-dominance by Sandberg bluegrass and weeds (cheatgrass, Russian thistle, tumble-mustard), and few shrubs. This shows a highly altered state compared to reference conditions. The April 2013 field visit verified plant community conditions are being maintained in Pasture 3. Utilization figures for perennial bunchgrasses in the Sinker Butte Allotment from 2008-2013 are < 30% for all pastures monitored.

The Sinker Butte Allotment is managed as a native plant community in Pastures 2-5 and as a seeding in Pasture 1. The allotment is not meeting either Standard. Large stature perennial bunchgrasses have been reduced or lost across the allotment and have been replaced by Sandberg bluegrass and/or cheatgrass. Native shrubs and forbs have not become re-established in previously burned areas. This vegetation community shift reduces effective nesting, escape, hiding, travel, and foraging cover values for wildlife species associated with sagebrush steppe communities. This allotment is failing to provide suitable upland habitat conditions for sagebrush steppe-associated wildlife and therefore is not meeting Standard 8.

The native shrub component within the allotment is being maintained; however, shrubs have not become re-established in previously burned areas. Trend sites in native and seeded plant communities indicate static to declining frequency in large stature perennial bunchgrasses. No improvement in native plant functional/structural groups or the amount of invasives (cheatgrass) within the understory is apparent, therefore there is no indication of progress being made toward meeting Standard 8. Current grazing management does not appear to be a significant causal factor because season of use occurs mostly during perennial plants' dormant season, which has fewer effects than growing-season grazing. Perennial grass utilization under current management since 2007 has not exceeded 30%, and this level of use during the dormant season appears suitable to maintain native plant communities.

A significant causal factor for not meeting Standard 8 is the presence of invasive weeds, primarily cheatgrass. Invasive weeds have become dominant in the shrub understory due to the reduction in large bunchgrasses as a result of historic grazing practices. Historic grazing (over 20 years ago) likely included growing season use and a higher intensity of use (overstocking) than current management, which led to the reduction/loss of large, palatable bunchgrasses. Historic grazing and invasive weeds have also contributed to the lack of Wyoming sagebrush regeneration after wildfire.

Riparian Habitat

Information used to evaluate Standard 8 for riparian habitats include 2001 riparian inventory and assessments, the 2007 assessment, 2013 site visits, and BLM's noxious weed GIS layer. As discussed above, riparian areas include approximately 6 miles of the Snake River and 1.05 miles of Sinker Creek.

Figure 3.3.18 - Sinker Creek PFC assessment/field visit site – Sinker Butte Allotment (Pasture 3), May 2013

Livestock have limited access to the Snake River due to bluffs, steep terrain, and fencing. Consequently, livestock grazing has little effect on the river and adjacent riparian vegetation, so the Snake River is not analyzed for Standard 8.

One PFC assessment was conducted on the reach of Sinker Creek within the allotment in 2012. The 2012 PFC assessment rated the reach as properly functioning. The reach was confined in a steep rock wall canyon and had many obligate riparian plant species present. Diversions were observed as well as some beaver dams. An isolated infestation of knapweed and salt cedar in the canyon bottom was noted. Streambanks appeared stable with a healthy assortment of carex, willow, and cottonwood communities present.

One field visit to the reach was conducted by BLM personnel in 2013. Observations of this reach noted stable banks, multiple beaver dams, bankfull indicators, floodplain access, and herbaceous and woody riparian vegetation. The majority of this reach supported new willow growth. BLM observed a large

water diversion on the lower end of the reach that removed approximately 50% of the water flow into an 18-inch pipe. BLM also observed multiple fish of various age classes in the pools both above and below the diversion.

Designated uses for this reach of Sinker Creek include cold water aquatic life and primary contact recreation. IDEQ 305b list identified this reach of Sinker Creek as water quality limited and not fully supporting cold water aquatic life due to flow alteration, sediment, and water temperature. Total Maximum Daily Loads (TMDLs) were developed for sediment and temperature.

Water quality parameters are not being met and cold water aquatic life is not fully supported in Sinker Creek due to flow alteration, sediment, and water temperature. Excess flow alteration, sediment, and water temperature levels reduce habitat quality for redband trout and other riparian obligate wildlife species and could potentially impact the Snake River physa. Because these water quality parameters are not being met, the allotment is not meeting Standard 8 for riparian wildlife habitat.

However, significant progress toward meeting Standard 8 for riparian wildlife habitat is indicated by recent improvement in the lower reach of Sinker Creek. The 2001 riparian inventory rated the reach at the high range of FAR, with no apparent trend. The 2012 PFC assessment rated the reach in PFC. Although PFC assessments do not directly assess riparian habitat suitability, stream-associated riparian areas that are in PFC generally provide adequate cover and other necessary riparian elements.

Comparative photographs of the reach taken during the 2001 riparian inventory and 2013 field visit also document improvements in hydric vegetation along the length of the reach. Xeric invader and shallow rooted species remain minor components of the floodplain. Improvements in existing deep rooted riparian vegetation and the minor composition of xeric and shallow rooted species also indicate significant progress toward meeting Standard 8.

Current livestock grazing management practices are not a significant causal factor for not meeting Standard 8 because the majority of the season of use occurs during perennial plants' dormant season, which results in fewer impacts to riparian vegetation than growing-season grazing. Little to no impact from livestock grazing was observed during multiple field visits in 2012 and 2013.

A significant causal factor for not meeting Standard 8 is that water quality parameters are not being met and cold water aquatic life is not fully supported in the lower reach of Sinker Creek due to flow alteration, sediment levels, and water temperature. Sinker Creek is rated as PFC but is limited by upstream water diversions on private land along the majority of its length. Sediment levels within the stream causing impacts to the Snake River are not an issue due to the buffering ability of existing riparian vegetation, beaver ponds, and upstream water diversions. The storage of water in Hulet Reservoir, when combined with de-watering caused by existing water diversions, are the primary contributor to any failure to meet water temperature parameters in Sinker Creek.

Focal Special Status Wildlife Species

Greater sage-grouse

In addition to the general discussion of sage-grouse, the majority of the Sinker Butte allotment provided suitable habitat for sage-grouse historically, and may have supported significant populations (USDI-USFWS 2013b). Currently, suitable sage-grouse habitats are very limited or absent within the allotment. The majority of potential sage-grouse habitat has been highly altered due to wildfire and historic livestock grazing. Plant communities are highly altered from reference conditions because of the reduction in shrub cover and the loss of virtually all of the large perennial bunchgrasses and native forbs.

Based on an interim, updated (2012) version of the Idaho Sage-grouse Habitat Planning Map (ISHPM) completed by the Idaho Sage-grouse Advisory Committee ((ISAC) 2006), the entirety of the Sinker Butte allotment (100%, all land ownerships included) is not considered key sage-grouse habitat. Makela and Major (2012) identified the allotment as containing no areas rated as PPH or PGH.

Typically, sage-grouse in the vicinity of the allotment congregate on communal strutting grounds (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 as 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 data acquired through lek surveys, telemetry studies, and incidental observations, sage-grouse do not occupy seasonal habitats within the allotment.

No sage-grouse habitat assessments have been conducted within the Sinker Butte allotment. However, trend data collected in 2002, 2008, and 2011 indicated insufficient sagebrush and perennial grass canopy cover to provide adequate cover and forage for sage-grouse. These data, indicate a general lack of marginal (missing some necessary indicators) or suitable (necessary food/cover indicators are present) sage-grouse habitat throughout the allotment due to a reduction in sagebrush and large stature perennial bunchgrasses, dominance of cheatgrass in the understory, and low preferred forb diversity and abundance.

Sage-grouse have been shown to select brood-rearing habitat with taller grasses and increased herbaceous cover; increased herbaceous biomass is correlated with invertebrate prey abundance, and the increased vertical and horizontal cover it affords most likely imbues greater protection from predators, both of which could increase juvenile survival (Kaczor et al. 2011). No assessments of late brood-rearing habitat are known to have been conducted within the Sinker Butte allotment. Assessed riparian and wetland areas within the allotment that sage-grouse could potentially use as late brood-rearing habitat are currently identified as PFC. However, the distance from active leks and lack of suitable nesting habitat within the allotment likely precludes brood rearing from occurring within the allotment.

No known leks occur within the Sinker Butte allotment. The allotment is not located within the 75% breeding bird density (BBD) buffer (4 miles) of known occupied leks or leks with undetermined status (based on the presence of 2 or more males observed during surveys in the last five years) within Idaho. The 75 % BBD buffer is highly correlated to breeding habitat surrounding leks and encapsulates 75% of male lek attendance along with 60% of currently occupied habitat within Zone IV (Makela and Major 2012). The remaining 40% of currently occupied habitat (which occurs outside the 75% BBD) is likely the more fragmented habitat (Doherty et al. 2011).

Due to the distance from occupied leks, the lack of suitable seasonal habitats due to vegetation community shifts, and the lack of recorded sage-grouse observations within the area, effects to sage-grouse from permitted livestock grazing on the Sinker Butte allotment will not be discussed further.

<u>Columbia River Redband Trout</u>
In addition to the general discussion of redband trout, affected environment conditions within the Sinker Butte allotment include the lower reach of Sinker Creek. Occurrence information available from IDFG documents redband trout in the lower reach of Sinker Creek, which creates the southern border of the allotment. IDEQ identified the middle and lower reaches of Sinker Creek as not fully supporting cold water aquatic life and salmonid spawning beneficial uses. While Sinker Creek is listed for salmonid spawning, there is no evidence of redband spawning in its lower reaches. Young-of-the-year trout have not been found in past electrofishing efforts. This is likely due to a combination of factors relating to flow alteration, lack of spawning habitat due to stream characteristics, and barriers to fish migration due to

Hulet Reservoir. Idaho Department of Fish and Game fisheries data show redbands higher in the watershed above Hulet Reservoir (IDEQ 2003).

The Idaho Department of Fish and Game has determined that the listed section of Sinker Creek has not historically, nor is currently, a spawning habitat due to gradient and temperature regimes. IDFG further states that this section of Sinker Creek has historically served primarily as a migratory corridor. The reservoir and the various diversions also serve as barriers to fish migration to the downstream section for spawning. The storage of water in the reservoir as well as the de-watering of the stream result in higher water temperatures, but it is unlikely that changes in management activities would result in lowering water temperatures to salmonid spawning criteria due to the overriding effect of high ambient air temperatures and flow alteration activities (IDEQ 2003).

Since salmonid spawning does not occur in the lower section of Sinker Creek, the temperature standard for salmonid spawning will not be applied; instead the cold water temperature standard will apply to that section throughout the year. The lower reach of Sinker Creek has shown temperature violations and thus, cold water aquatic life uses are not currently fully supported (IDEQ 2003).

As discussed in the Snake River physa analysis, this section of Sinker Creek appears to have reached its potential and is limited by upstream diversions; current livestock grazing does not appear to impact this stream reach. Sinker Creek has a healthy riparian vegetation community consisting of willows, cottonwood, and various other woody and herbaceous species. These riparian plants shade the streams thereby lowering water temperature, have root systems capable of holding and securing streambanks during high flow events, and slow flows and effectively buffer sediment and other contaminants from the upland area, thereby decreasing the sediment load. Sediment is likely not an issue due to buffering ability of riparian vegetation, beaver ponds, and upstream water diversions. It is likely that de-watering caused by water diversions are the primary contributor to any failure to meet water temperature criteria on Sinker Creek.

Migratory Birds, Raptors, and other Birds (including Special Status Species)
In addition to the general discussion of migratory birds, raptors, and other bird species and their habitats in Section 3.1.5, a variety of bird species have the potential to occur or have been documented within and in the vicinity of the Sinker Butte allotment (Appendix E).

Big Game and other Mammals (including Special Status Species)
In addition to the general discussion of big game and other mammal species and their habitats in Section 3.1.5, various big game and special status mammal species use a variety of habitats in the Sinker Butte allotment for some or all of their seasonal needs.

Approximately 4,173 acres of public land within the Sinker Butte Allotment has been identified by IDFG as bighorn sheep habitat. A small bachelor herd of eight rams were observed approximately within the allotment, along the Snake River canyon near the lower Swan Falls pump station, in 2009. However, based on occurrence records, it does not appear that bighorn sheep have made use of this part of the allotment historically.

3.3.3.1.6 Social and Economic Values

The socioeconomic environment for the Sinker Butte Allotment is as described in Section 3.1.7.

3.3.3.1.7 Cultural and Paleontological Resources

The Sinker Butte Allotment area is significant for a number of reasons including the presence of the Swan Falls Dam and related structures, a now vanished historic ferry landing and the vicinity of the Utter

Massacre, though the exact location of the massacre is unknown. Segments of the South Alternate Route of the Oregon Trail, another wagon road, historic ditches, and a variety of other historic mining and habitation sites and prehistoric lithic scatters and habitations have also been found. Though historically significant, these are generally not subject to cattle impacts. Several sites in the allotment have been damaged in the past by illegal relic collection, pot hunting (looters' holes), erosion, and road construction. Topography and fencing protects some sites from cattle, and to a lesser extent, erosion.

Of the eight sites with disturbances reported on between 1958 and 1980 or the 13 revisited or recorded in 2006 within this allotment, none had cattle impacts. Rodent disturbance, structural collapse, demolition, minor deflation, erosion, road use and construction, and recreational impacts have been observed. At least four sites also had illegal digging and/or surface artifact collection.

Sinker Butte Environmental Consequences

3.3.3.1.8 Alternative A

3.3.3.1.8.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table. These figures indicate the degree of effects relating to the season, intensity, duration, frequency, and distribution of use, as well as the weed introduction potential and effects to biological soil crusts, all as described in Section 3.2.

Table 3.3.23 - Sinker Butte Allotment Vegetation Indicators for Alternative A

Indicator	Sinker Butte – Pastures 1-4
Season of use (Dates)	11/15 – 2/28
Duration (Days per pasture)*	106
Frequency	Once, every year
Total AUMs	707
Acres/AUM	11.1
Utilization	Expected <40%; limit <50%
Water haul sites	none
Number of livestock**	203+ cows

*Multiple pastures are permitted, but the permit does not specify a time limit per pasture, so the duration is for the allotment as a whole. If cattle were moved out of one pasture into another, then the duration per pasture would be less.
**The permit would specify a number for livestock, but allow for annual variation from this number, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

Under Alternative A, conditions would be similar to existing conditions as described in the affected environment, with the following changes:

The Sinker Butte Allotment would be used for 26 fewer days (starting 11/15 rather than 10/20), with 64 fewer AUMs (707 versus 771, an 8% reduction). The stocking rate would be the same as the current situation because although fewer AUMs would be used, fewer acres would also be used because no grazing in Pasture 5 would be authorized. This would produce slightly less fall and the same amount of winter season effects. The intensity of grazing effects would be the same as the current situation, except in Pasture 5, which would have no direct grazing effects (thus reducing the extent of effects within the allotment by 9% fewer acres grazed). The water haul site would not be used, resulting in more limited cattle distribution, increasing use at and around other existing water sources, but reducing trampling and heavier utilization effects at and around that site. Standards 4 and 5 would continue to not be met in the Sinker Butte Allotment due to invasive plants (mostly cheatgrass) and historic grazing, but current grazing management would not be a causal factor. Utilization would be limited to no more than 50% use,

and based on observed utilization with the same stocking rate, this alternative is expected to produce utilization of no more than about 35%. The winter grazing period along with expected light (<35%) utilization would maintain existing perennials (native and seeded), although cheatgrass would continue to be subdominant with the Sandberg bluegrass and crested wheatgrass. Removal of the temporary fire fence would have little effect of vegetation other than one-time minor disturbance to remove the structure, and reduced vegetation disturbance from trailing along the fence line. Also, cattle use may be less evenly distributed across one larger pasture than two smaller ones, producing slightly more concentrated use areas. The minimum number of cattle on the allotment would be 23% higher than the current situation (Alternative B), thus resulting in potentially a higher weed introduction risk, but because variation in cattle number would be permitted under both alternatives, the actual risk would be similar.

Otherwise, effects on native upland plant communities and noxious and invasive weeds introduction and spread would be the same as described in Alternative B.

3.3.3.1.8.2 Soils

See Sections 3.2.1.2 above.

3.3.3.1.8.3 Riparian/Water Quality

Riparian Areas and Wetlands

Alternatives A and B include unique T&Cs related to grazing within the riparian areas that separate them from the other alternatives. Therefore, the analysis of riparian areas and wetlands will focus on the difference between alternatives. Alternatives A and B include these stipulations and Alternative C and D will default to the Management Actions and Allocations described in the Owyhee Resource Management Plan for Livestock and Riparian Objectives.

The following T&Cs within Alternatives A and B generate the most substantial difference in effects for Standards 2, 3, and 7 due to their influence on the riparian areas and stream channels:

1. Key herbaceous riparian vegetation, where streambank stability is dependent upon it, will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the growing season; and
2. Key riparian browse vegetation will not be used more than 50% of the current annual twig growth that is within reach of the animals.

These T&Cs should result in a gradual improvement to herbaceous riparian vegetation each year. The rate of improvement will be faster for these two alternatives than that of Alternatives C and D, due to the lower allowable levels of grazing pressure represented specifically by stipulations 1 and 2 above. Grazing within the riparian area, when not frozen, may result in a seasonal increase to soil compaction, a loss of soil moisture, a seasonal increase to soil surface disturbance, and less soil water storage capacity.

Generally, in the short and long terms (2 and 10 years, respectively), Standard 2 (riparian and wetland areas) would continue to improve to a fully functioning condition. Riparian stubble heights on all assessed livestock accessible reaches were at or above 4 inches. Clary (1999) recommended leaving a 10-15 cm (4-6 inch) herbaceous stubble height at the end of the growing season after grazing for meadow riparian recovery. In the long term, the early-seral dominated riparian vegetation communities would eventually change to communities dominated by late-seral, deep-rooted species. Stream channels would improve as they narrow and deepen, and streambanks would stabilize due to deep-rooted riparian vegetation. Aquatic habitat conditions would improve as channel form recovers, fine sediment levels decrease, and stream shading levels increase due to the development of dense and vigorous riparian plant communities. Clary (1999) found that the overall stream channel and vegetative response improved with

medium grazing (35-50% utilization); stream channels narrowed, stream width-to-depth ratios were reduced, and channel bottom embeddedness decreased.

Stream Channel/Floodplain
Normally, Standard 3 and Standard 1 are closely connected to each other because the stream channels and floodplains reflect past watershed problems. In this project, Standard 3 (Stream channel/floodplain) is meeting standards, even though Standard 1 (Watershed) is not meeting standards. The shift in upland vegetation species composition, past soil loss, and increases in non-native annual grasses would have caused a shift in watershed response that affected the channel and floodplain characteristics. The stream channels and floodplains are representative of the watershed runoff response (volume and timing) and associated sediment loads. Since Standard 3 is meeting standards, it can be assumed that the stream channels and floodplains have adjusted to the new watershed condition. These alternatives may result in a direct, observable, and positive response within the riparian areas and this positive response would correlate to an associated maintenance of stream channels/floodplain condition.

Because there are so many variables that contribute to watershed health and channel function related to upstream activities, it is difficult to attribute grazing management within the Con Shea allotment to direct or immediate improvement of this standard within the timeframe associated with the permit renewal. Full recovery will require more than ten years and may not be gained wholly because of changes exclusive to livestock management. It is necessary to recognize that Standard 4 and Standard 1 are evaluated at a watershed scale and therefore must consider the marginal influence of this project. As a whole, this project has very little influence on the standard because of other activities within the watershed that also influence conditions (irrigation, private land development, past management, wildfire, invasive or noxious weeds, and vegetation structure and diversity).

In conclusion, Alternatives A and B indirectly effect the stream channel because of the riparian recovery described above. The application of stipulation 4 minimizes streambank damage. This stipulation specifies that damage that is attributable to grazing livestock will be less than 10% of a stream segment. Stream channels and floodplains will be maintained with these two alternatives.

Water Quality
An indirect but slight improvement to Standard 7 (Water Quality) is expected because of the recovery of upland and riparian vegetation. As vegetation condition improves, plant litter and below ground biomass also increase which would decrease water runoff and soil erosion potential in the long term (>10 years). More vegetation and litter covering the soil surface protects the soil from raindrop impact, improves soil organic matter, and would lead to improved nutrient cycling. The allotment would take decades to centuries to reestablish soils that were lost to erosion. Slow biomass accumulation is expected, resulting in a steady, long-term improvement to soil development, watershed response, riparian areas, wetlands, and water quality within the boundaries of the project. Short-term improvements would be difficult to discern compared to current condition, especially since the project area is such a small proportion of the contributing watersheds that influence recovery rates. All of these factors would eventually improve the water quality and support to beneficial uses within Sinker Creek.

3.3.3.1.8.4 Special Status Plants

Under Alternative A, Standard 8 (special status plants) would continue to be met because of the dormant season of use. Conditions would be similar to those described in the affected environment.

3.3.3.1.8.5 Wildlife and Special Status Animals

Under this alternative, grazing use would occur as allowed under the existing permit. In the allotment all pastures would be used for a long duration (120 days) in the winter (11/1 to 2/28) eliminating growing

season effects. Total AUMs in the allotment would be 10 fewer than are currently being used (707 versus 717, a 1.4% reduction). The stocking rate would be increased by 7% compared to the current situation because although fewer AUMs would be used, fewer acres would also be used because no grazing in Pasture 5 would be authorized. This would produce an overall minor increase in the intensity of winter use and effects, except in Pasture 5, which would have no direct grazing effects (thus reducing the extent of effects within the allotment by 9% fewer acres grazed). The water haul site would not be used, resulting in more limited cattle distribution, increasing use at and around other existing water sources, but reducing trampling and heavier utilization effects at and around that site.

Under Alternative A, the allotment would continue to not meet Standard 8 (threatened and endangered animals) in upland habitats, but current livestock grazing would not be a causal factor because use would occur during the dormant season. Utilization would continue to be less than 50%, and is expected to produce no more than 35-40%. The winter grazing period along with expected light (<40%) utilization would maintain existing perennials (native and seeded) and maintain adequate ground cover. Cheatgrass would continue to dominate extensive areas throughout the allotment, but existing perennials would not be expected to decline under this grazing management because of the season of use. Shrub regeneration is expected to continue to be limited by competition from cheatgrass and lack of seed sources in much of the fire area interiors. Noxious weeds are not expected to increase because, although highly competitive, they would be kept in check with a combination of ongoing noxious weed treatment and Sandberg bluegrass cover in most areas.

Under Alternative A, the allotment would continue to not meet Standard 8 (threatened and endangered animals) in riparian habitat, but significant progress toward meeting the Standard would continue to be made. Utilization of key herbaceous riparian vegetation would not exceed 60% during the dormant season and a minimum stubble height of 4 inches at the end of the growing season would be required. Utilization of key riparian browse vegetation would not exceed 50% of the current annual twig growth. These terms and conditions would be expected to result in gradual improvements to herbaceous vegetation each year. However, due to de-watering caused by upstream water diversions, it is likely that Sinker Creek will continue to fail to meet IDEQ water quality standards and fail to fully support cold water aquatic life beneficial uses.

Effects to individual wildlife species and their habitats resulting from Alternative A in the Sinker Butte Allotment are detailed under Winter Grazing (Section 3.2.1.5) in Environmental Consequences Common to All Allotments.

3.3.3.1.8.6 Social and Economic Values

The AUMs and grazing schedule authorized in the no-action alternative for all of the allotments are the same as in the current permit. There would be no change in livestock management, operations would continue with business as usual, and there would be no additional socioeconomic impact to the ranches. The ranches would continue contributing to employment and the purchase and sale of goods and services in the counties where they are located.

No short (<1 year) or long term (>3 years) effect to socioeconomics is expected since there would be no reduction in AUMs or change in grazing management. There should also be no impact to any minority population since there is no change in AUMs and would therefore not directly reduce the ability of individuals to find work.

3.3.3.1.8.7 Cultural and Paleontological Resources

Alternative A would be unlikely to result in any significant change from current conditions to cultural resources, though the lack of water haul locations could cause overuse and erosion at some sites, but as

discussed for Fossil Butte and Con Shea allotments, site condition would be monitored in sensitive areas and mitigation could be applied as needed.

Fossil resources are sparse and only likely within a small portion of the allotment, so impacts would be unlikely to change or become significant under any alternative.

3.3.3.1.9 Alternative B

3.3.3.1.9.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table.

Table 3.3. 24 - Sinker Butte Allotment Vegetation Indicators for Alternative B

Indicator	Sinker Butte – Pastures 1-5
Season of use (Dates)	10/20 – 2/28
Duration (Days per pasture)*	132
Frequency	Once, every year
Total AUMs	771
Acres/AUM	11.1
Utilization	Expected <35%; limit <50%
Water haul sites	1
Number of livestock**	178+ cows

*Multiple pastures are permitted, but the permit does not specify a time limit per pasture, so the duration is for the allotment as a whole. If cattle were moved out of one pasture into another, then the duration per pasture would be less.
**The permit would specify a number for livestock, but allow for annual variation from this number, with prior approval by the authorized officer, as long as season of use and active AUMs are not exceeded.

With implementation of Alternative B, conditions would continue as they currently are, as described in the affected environment. This alternative includes no rest for an entire season, but all use is deferred from use outside of the critical growing period, allowing for undisturbed regrowth. Utilization levels up to 50% would be allowed, but based on recent years' data would be expected to be less than 35%. The allotment has a relatively long duration of use, but because this use is generally during the dormant period, growing plants would not be re-grazed and the entire growing season would be available for plant recovery. The stocking rate is moderate, and appropriate based on the observed utilization. With no change in livestock intensity or distribution, concentrated use areas would be expected to be the same as current conditions. The potential for weed seed introduction (based on the number of livestock) is difficult to evaluate because the permit allows discretion in livestock numbers within permitted AUMs.

Standards 4 and 5 would continue to not be met in the Sinker Butte Allotment due to invasive plants (mostly cheatgrass) and historic grazing, but current grazing management would not be a causal factor. The fall/winter grazing period along with expected light (<35%) utilization would maintain existing perennials (native and seeded), although cheatgrass would continue to be subdominant with the Sandberg bluegrass and crested wheatgrass. Late fall grazing impacts to Sandberg bluegrass green-up would be modulated by the expected light use. Existing shrubs would be expected to be maintained under this level of use. Noxious weeds (whitetop, Russian knapweed, and others) would be kept in check by the combination of noxious weed treatment and perennial grasses. Biological soil crusts would be expected to be maintained at reduced cover by this grazing management.

3.3.3.1.9.2 Soils

See Sections 3.2.1.2 above.

3.3.3.1.9.3 Riparian/Water Quality

Same as Alternative A.

3.3.3.1.9.4 Special Status Plants

Standard 8 (special status plants) would continue to be met. Grazing would not be expected to affect the four known and three possible special status plants in the Sinker Butte Allotment because the season of use would be outside the growing period for these plants, overall use in the allotment would be relatively light, and use of these specific occurrence or habitat areas is expected to be negligible because most are not readily accessible to livestock.

3.3.3.1.9.5 Wildlife and Special Status Animals

Under Alternative B, the allotment would continue to not meet Standard 8 for threatened and endangered species in upland habitats, but current grazing management would not be a causal factor. The fall/winter grazing period along with expected light (<35%) utilization would maintain existing perennials (native and seeded) and adequate ground cover, although cheatgrass would continue to be subdominant with the Sandberg bluegrass and crested wheatgrass. Late fall grazing impacts to Sandberg bluegrass green-up would be moderated by the expected light use. Existing shrubs would be expected to be maintained under this level of use. Noxious weeds would be kept in check by the combination of noxious weed treatment and perennial grasses.

Under Alternative B, the allotment would continue to not meet Standard 8 for threatened and endangered animals in riparian habitat, but significant progress toward meeting the Standard would continue to be made. Utilization of key herbaceous riparian vegetation would not exceed 60% during the dormant season and a minimum stubble height of 4 inches at the end of the growing season would be required. Utilization of key riparian browse vegetation would not exceed 50% of the current annual twig growth. These terms and conditions would be expected to result in gradual improvements to herbaceous vegetation each year. However, due to de-watering caused by upstream water diversions, it is likely that Sinker Creek will continue to fail to meet IDEQ water quality standards and fail to fully support cold water aquatic life beneficial uses.

Effects to individual wildlife species and their habitats resulting from Alternative B in the Sinker Butte Allotment are detailed under Fall (Section 3.2.2.5) and Winter (Section 3.2.1.5) Grazing in Environmental Consequences Common to All Allotments.

3.3.3.1.9.6 Social and Economic Values

This alternative includes a 1 percent increase in active use AUMs compared to Alternative A. There would no adverse effects to the socioeconomic values of Owyhee County as a result of this increase. The value to the community would be as shown in Table 3.17. The ranch would continue contributing to employment and the purchase and sale of goods and services in the county.

3.3.3.1.9.7 Cultural and Paleontological Resources

The fire fence was fully surveyed for cultural resources and removal would not have any effects on cultural resources. The proposed water haul location and Winmill stipulations could have slight benefits to sites by reducing congregations around sites and benefiting sediment stability, thus reducing the potential for erosion and the need for future mitigation.

3.3.3.1.10 Alternative C

3.3.3.1.10.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table.

Table 3.3.25 - Sinker Butte Allotment Vegetation Indicators for Alternative C

Indicator	Sinker Butte – Pastures 1-5
Season of use (Dates)	10/15 – 2/28 and 4/1 - 4/30
Duration (Days per pasture)*	30 to 137
Frequency	Each pasture used 3 winters, 1 spring, and one rest in a 5-year rotation
Total AUMs	791
Acres/AUM**	10.8
Utilization	Expected and limit <50%
Water haul sites	1
Number of livestock	101 cows (April), 153 cows (10/15-2/28)

*137 days is the total days used on three winter-use pastures, used sequentially. Days per each of the three pastures are not specified, but would average about 46 days/pasture if there was no overlap between pasture use.
**Acres/AUM shown is the average for the entire allotment, including the rested pasture.

The Sinker Butte Allotment would be used in a five-pasture rest/rotation of three years' winter use, one year spring use, and one year rest within five years. The addition of spring use to this allotment means that critical growing season impacts would occur in one out of five years per pasture. This spring use is of fairly short duration (30 days) so little re-grazing is expected, and would provide regrowth potential in May/early June during years with adequate soil moisture. The addition of one year of rest per five years would also help mitigate growing season effects. However, this alternative has a slightly higher overall stocking rate (10.8 acres/AUM) than Alternatives A and B (11.1 acres/AUM), and including a rest pasture every year means that the stocking rate of grazed pastures is higher still (variable because of different pasture sizes, but averaging 8.6 acres/AUM). As a result, the grazing intensity on grazed pastures (including the spring use pasture) would be about 29% greater than in Alternative B (which itself is not making significant progress). Standards 4 and 5 would continue to not be met or make significant progress under Alternative C, and this livestock management would be expected to be a causal factor because of the increased grazing intensity and addition of critical growing season use. Cheatgrass and other invasive weeds would be expected to continue to dominate patches across the allotment under this management, but not significantly increase or decrease in abundance apart from precipitation-related pulses. The weed introduction potential (based on the number of livestock) would be similar to Alternatives A and B. There would be no observable changes to the existing shrub component compared to current management under this alternative, although the addition of rest and spring grazing may slightly reduce shrub use compared to strictly winter use. There would be the same water haul site as Alternative B, so cattle distribution would be similar in that pasture, except that with one rested pasture per year, cattle would be more concentrated in the grazed pastures. Also, because the temporary fire fence would remain (to allow the five-pasture rotation), cattle may be somewhat more evenly distributed within the smaller pastures.

3.3.3.1.10.2 Soils

See Sections 3.2.1.2 above.

3.3.3.1.10.3 Riparian/Water Quality

Riparian Areas and Wetlands

Alternatives C and D would apply objectives established in the Owyhee Resource Management Plan related to grazing within the riparian areas that are more stringent than those stipulations applied for Alternative A and B. Alternative C and D will default to the Management Actions and Allocations described in the Owyhee Resource Management Plan for Livestock and Riparian Objectives.

Alternatives C and D only applies the following term and condition and therefore generates the most substantial difference to effects within standards 2, 3, and 7 due to the influence on the riparian areas and stream channels. Page 14 of the Owyhee Resource Management Plan states, "Improve and maintain streambank and channel stability as appropriate for the site by managing grazing to limit annual trampling impacts to 10% or less of the linear bank length."

These terms and conditions should result in a gradual improvement to herbaceous riparian vegetation each year. The rate of improvement will be faster for these two alternatives than that of Alternatives C, D, and E, due to the lower allowable levels of grazing pressure represented specifically by stipulations 1 and 2 above. Grazing within the riparian area, when not frozen, may result in a seasonal increase to soil compaction, a loss of soil moisture, a seasonal increase to soil surface disturbance, and less soil water storage capacity.

Generally, in the short and long terms (2 and 10 years, respectively), Standard 2 (riparian and wetland areas) would continue to improve to a fully functioning condition. Riparian stubble heights on all assessed livestock accessible reaches were at or above 4 inches. Clary (1999) recommended leaving a 10-15 cm (4-6 inch) herbaceous stubble height at the end of the growing season after grazing for meadow riparian recovery. In the long term, the early-seral dominated riparian vegetation communities would eventually change to communities dominated by late-seral, deep-rooted species. Stream channels would improve as they narrow and deepen, and streambanks would stabilize due to deep-rooted riparian vegetation. Aquatic habitat conditions would improve as channel form recovers, fine sediment levels decrease, and stream shading levels increase due to the development of dense and vigorous riparian plant communities. Clary (1999) found that the overall fluvial and vegetative response improved with medium grazing (35-50% utilization); stream channels narrowed, stream width-to-depth ratios were reduced, and channel bottom embeddedness decreased.

Stream Channel/Floodplain

Normally, Standard 3 and Standard 1 are closely connected to each other because the stream channels and floodplains reflect past watershed problems. In this project, Standard 3 (Stream channel/floodplain) is meeting standards, even though Standard 1 (Watershed) is not meeting standards. The shift in upland vegetation species composition, past soil loss, and increases in non-native annual grasses would have caused a shift in watershed response that affected the channel and floodplain characteristics. The stream channels and floodplains are representative of the watershed runoff response (volume and timing) and associated sediment loads. Since Standard 3 is meeting standards, it can be assumed that the stream channels and floodplains have adjusted to the new watershed condition. These alternatives may result in a direct, observable, and positive response within the riparian areas and this positive response would correlate to an associated maintenance of stream channels/floodplain condition.

Because there are so many variables that contribute to watershed health and channel function related to upstream activities, it is difficult to attribute grazing management within the Con Shea allotment to direct or immediate improvement of this standard within the timeframe associated with the permit renewal. Full recovery will require more than ten years and may not be gained wholly because of changes exclusive to livestock management. It is necessary to recognize that Standard 4 and Standard 1 are evaluated at a watershed scale and therefore must consider the marginal influence of this project. As a whole, this allotment area (Table 1.2) has very little influence related to BLM ownership on the standard because it must be compared to other activities within the entire watershed (Table 3.6) that also influence conditions (irrigation, private land development, past management, wildfire, invasive or noxious weeds, and vegetation structure and diversity).

In conclusion, Alternatives A and B indirectly effect the stream channel because of the riparian recovery described above. The application of stipulation #4 minimizes streambank damage. This stipulation

specifies that damage that is attributable to grazing livestock will be less than 10% of a stream segment. Stream channels and floodplains will be maintained with these two alternatives.

3.3.3.1.10.4 Special Status Plants

Spring use would have growing season impacts on special status plants one year in five, but effects would be mitigated by four years of winter use or rest, so this alternative would marginally meet Standard 8 for special status plants.

3.3.3.1.10.5 Wildlife and Special Status Animals

The allotment would be used in a five-pasture rest/rotation of three years' winter use, one year spring use, and one year rest within five years. The addition of spring use to this allotment means that critical growing season impacts would occur in one out of five years per pasture. This spring use is of fairly short duration (30 days) so little re-grazing is expected, and would provide regrowth potential in May/early June during years with adequate soil moisture. The addition of one year of rest per five years would also help mitigate effects caused by spring grazing. However, this alternative has a slightly higher overall stocking rate (10.8 acres/AUM) than Alternatives A (11.1 acres/AUM) or B (11.9 acres/AUM), and including a rest pasture every year means that the stocking rate of grazed pastures is higher still (variable because of different pasture sizes, but averaging 8.6 acres/AUM). As a result, the grazing intensity on grazed pastures (including the spring use pasture) would be ~ 38% greater than in Alternative B (which is not making significant progress for Standard 8 in upland habitats). There would be the same water haul sites as Alternative B, so cattle distribution would be similar, except that with one rested pasture per year, cattle would be more concentrated in the grazed pastures. Standard 8 for threatened and endangered animals in upland habitats would continue to not be met or make significant progress under Alternative C, and this livestock management would be expected to be a causal factor because of the increased grazing intensity and addition of critical growing season use. Cheatgrass and other invasive weeds would be expected to continue to dominate patches across the allotment under this management, but are not expected to significantly increase or decrease in abundance. There would be no observable changes to the existing shrub component compared to current management under this alternative, although the addition of rest and spring grazing may slightly reduce shrub use compared to strictly winter use. The allotment would continue to not meet Standard 8 (threatened and endangered animals) in riparian habitat because of water diversions, and livestock management would be expected to be a causal factor because of the increased grazing intensity and addition of spring use.

Effects to individual wildlife species and their habitats resulting from Alternative C in the Sinker Butte Allotment are detailed under Spring and Fall (Section 3.2.2.5), and Winter (Section 3.2.1.5) Grazing in Environmental Consequences Common to All Allotments.

3.3.3.1.10.6 Social and Economic Values

This alternative includes a 12 percent increase in active use AUMs compared to Alternative A. There would no adverse effects to the socioeconomic values of Owyhee County as a result of this increase. The value to the community would be as shown in Table 3.17. The ranch would continue contributing to employment and the purchase and sale of goods and services in the county.

3.3.3.1.10.7 Cultural and Paleontological Resources

This alternative could benefit cultural resources if cattle dispersal is facilitated by fencing, though any increased soil erosion or compaction or vegetation disturbance caused by increased AUMs and less optimal season of use could have negative effects.

3.3.3.1.11 Alternative D

3.3.3.1.11.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table.

Table 3.3.26 - Sinker Butte Allotment Vegetation Indicators for Alternative D

Indicator	Sinker Butte – Pastures 1-5
Season of use (Dates)	11/1 – 2/28
Duration (Days per pasture)*	120
Frequency	Once, every year
Total AUMs	771
Acres/AUM	11.1
Utilization	Expected <35%; limit <50%
Water haul sites	1
Number of livestock	195 cows

*Total days used on five pastures used sequentially. Days per each of the pastures are not specified, but would average about 27 days/pasture if there was no overlap between pasture use.

The Sinker Butte Allotment would be managed similarly to Alternative B except that the season of use would be 11 days shorter in the fall, starting 11/1 rather than 10/20, thus reducing fall grazing (possible green-up) effects. The overall use (AUMs, stocking rate, expected utilization level, and number of animals) would be the same as or similar to current management, so intensity effects would be the same as Alternative B. As in Alternative B, this level of dormant season use is expected to maintain existing native and seeded perennials, shrubs, and biological soil crusts. Cheatgrass would continue to be subdominant with Sandberg bluegrass and crested wheatgrass, but not increase. Noxious weeds would kept in check by the combination of noxious weed treatment and perennial grasses. Standards 4 and 5 would continue to not be met due to invasive plants and historic grazing, but current grazing management would not be a causal factor.

3.3.3.1.11.2 Soils

See Sections 3.2.1.2 above.

3.3.3.1.11.3 Riparian/Water Quality

Same as Alternative C.

3.3.3.1.11.4 Special Status Plants

Effects would be nearly the same as described in Alternative B. Special status plants and their not-readily- accessible habitats would not be affected by dormant season use. As a result, the Sinker Butte Allotment would continue to meet Standard 8 for Special Status Plants.

3.3.3.1.11.5 Wildlife and Special Status Animals

The allotment would be managed similarly to Alternative B except that the season of use would be 11 days shorter in the fall, starting 11/1 rather than 10/20, thus reducing fall grazing effects. The overall use (AUMs, stocking rate, expected utilization level, and number of animals) would be the same as Alternative B. As in Alternative B, this level of dormant season use is expected to maintain existing native and seeded perennials, shrubs, and adequate soil cover. Cheatgrass would continue to be subdominant with Sandberg bluegrass and crested wheatgrass, but not increase. Noxious weeds would kept in check by the combination of noxious weed treatment and perennial grasses. Standard 8 for threatened and endangered animals in upland and riparian habitats would continue to not be met due to

invasive plants, historic grazing, and water diversions, but current grazing management would not be a causal factor.

3.3.3.1.11.6 Social and Economic Values

This alternative includes a 1 percent increase in active use AUMs compared to Alternative A. There would no adverse effects to the socioeconomic values of Owyhee County as a result of this increase. The value to the community would be as shown in Table 3.17. The ranch would continue contributing to employment and the purchase and sale of goods and services in the county.

3.3.3.1.11.7 Cultural and Paleontological Resources

Alternative D would have advantages similar to B. This alternative would restrict grazing to the winter and could likely have slight positive benefits to site sediment stability over the long term.

3.3.3.1.12 Alternative E

3.3.3.1.12.1 Vegetation, including Noxious Weeds

Effects to vegetation from Alternative E in the Sinker Butte Allotment are described in Section 3.2.5.1 (Environmental Consequences Common to All Allotments).

3.3.3.1.12.2 Soils

See Sections 3.2.1.2 above.

3.3.3.1.12.3 Riparian/Water Quality

Riparian Areas and Wetlands

Refer to the discussion for Alternatives A and B for details about the effects to this standard. However, it is expected that the implementation of this alternative will achieve full riparian and wetland improvement faster than the other alternatives.

Stream Channel/Floodplain

Refer to the discussion for Alternatives A and B for details about the effects to this standard. However, it is expected that the implementation of this alternative will achieve full channel and floodplain improvement faster than the other alternatives.

Water Quality

Water quality is also expected to reach equilibrium conditions faster than the other alternatives. This condition may not be substantially different than the other alternatives; however, it will be attained earlier.

3.3.3.1.12.4 Special Status Plants

Effects to Special Status Plants from Alternative E in the Sinker Butte Allotment are described in Section 3.2.5.1 (Environmental Consequences Common to All Allotments).

3.3.3.1.12.5 Wildlife and Special Status Animals

Effects to individual wildlife species and their habitats resulting from Alternative E in the Sinker Butte Allotment are detailed in Section 3.2.5.5 of Environmental Consequences Common to All Allotments.

3.3.3.1.12.6 Social and Economic Values

This alternative would cancel all authorized use AUMs on the allotment for a period of 10 years, after which applications for grazing permits would be accepted. This would likely have a substantial

socioeconomic impact on the ranch operators, the people they employ, the businesses where the operators purchase supplies, and the communities that are supported by livestock operation activities. The ranchers would have to relocate their livestock to other private or state land, possibly outside of Owyhee County, sell their livestock, and/or close the ranch completely. The ranchers already likely purchase supplies from stores closer to the new grazing locations, so income from taxes and sales in these communities would drop, and the income from the livestock sales would go to the counties where the base ranches are located. The effects of this alternative are expressed in Table 3.17.

The people previously employed by the ranches would have to look for new jobs if any of the ranches closed; the agricultural sector in both counties is large enough that they may not have much trouble finding similar work elsewhere, but they may have to relocate or commute long distances, which could be costly. Finding work in other sectors may be difficult because unemployment is so high. The greatest loss to the local communities as a result of ranch closures would be the loss of social cohesion. As noted above, researchers have found that ranchers have more social networks throughout the community, and closing a ranch can lead to a disruption in these networks.

However, not all socioeconomic impacts could be negative. Land on the allotments could be more available for recreational opportunities, which could bring more money to the stores, restaurants, and hotels that provide goods and services for people from the Treasure Valley who come to hunt, fish, camp, boat, and watch wildlife throughout the Owyhee Mountains. This could also provide more employment opportunities in other sectors throughout the county. However, as noted in the ORMP EIS (USDI BLM, 1999b), the number of businesses that provide recreational goods and services in Owyhee County is minimal. Most residents, as well as those visiting from other counties, purchase their goods outside of Owyhee County. Thus, although some recreation fees could be collected, the influx of recreation to the county would not add much to the revenue from sales or taxes there and could actually negatively affect the financial resources of the county through additional requests for help in the backcountry.

3.3.3.1.12.7 Cultural and Paleontological Resources

Effects to Cultural and Paleontological Resources for Alternative E are listed under Environmental Consequences Common to All Allotments (Section 3.2.5.8).

3.3.4 Joyce FFR

3.3.4.1 Joyce FFR Affected Environment

Land ownership acreage by pasture is presented in Table 2.16 and on Figure 2.4.

3.3.4.1.1 Vegetation, including Noxious Weeds

Upland Vegetation

Public lands in Pastures 2-5 are mostly in the Calcareous Loam ecological site, while Pasture 6 has Shallow Claypan 11-13" and 12-16" ecological sites. Topography in pasture 2-5 includes rolling flats and steeper canyon walls dropping into Sinker Creek Canyon. Sinker Creek riparian areas and a few rocky cliffs make up small inclusions in these pastures.

Public lands in Pastures 2-4 are mostly shrub-dominated (sagebrush or salt desert shrub) vegetation, with some agriculture (hay fields or irrigated pasture in valley bottoms) or weedy annual plant areas. Pastures 2 and 4 are Calcareous Loam ecological sites with salt desert shrubs or Wyoming sagebrush and few grasses. Ground cover data from a September 2013 field visit show high bare ground and cheatgrass litter in Pasture 4, with little basal vegetation. Photos from a May 2013 Riparian/Wildlife Field Visit Report from uplands in Pasture 3 show a sparse shrub overstory and highly depleted understory, with heavy livestock use (including no visible seed heads).

Like Pastures 2-4, current vegetation in Pasture 5 has been highly altered from reference conditions, with a substantial loss of large bunchgrasses, some reduction in forbs and biological crusts, an increase in Sandberg bluegrass, and extensive patches of invasive annuals (cheatgrass, clasping pepperweed, halogeton, and flixweed). The salt desert shrub overstory is mostly intact in Pasture 5.

In Pasture 6, the low sagebrush plant community is nearly intact and little departed from reference conditions, with healthy stands of low sagebrush, Idaho fescue and/or bluebunch wheatgrass subdominant with Sandberg bluegrass, good native forb diversity, and good biological soil crusts. Slight departure is indicated by a minor reduction in large bunchgrasses, some small patches of cheatgrass, and juniper cover slightly higher than expected.

Current vegetative cover types as mapped by PNNL and LANDFIRE both indicate that BLM land in the allotment is mostly shrub-dominated, with relatively small areas converted to exotic annuals. A 1999 wildfire is mapped in part of Pasture 2, but little evidence of the burn is apparent in current aerial photography or from the 2012 site visit.

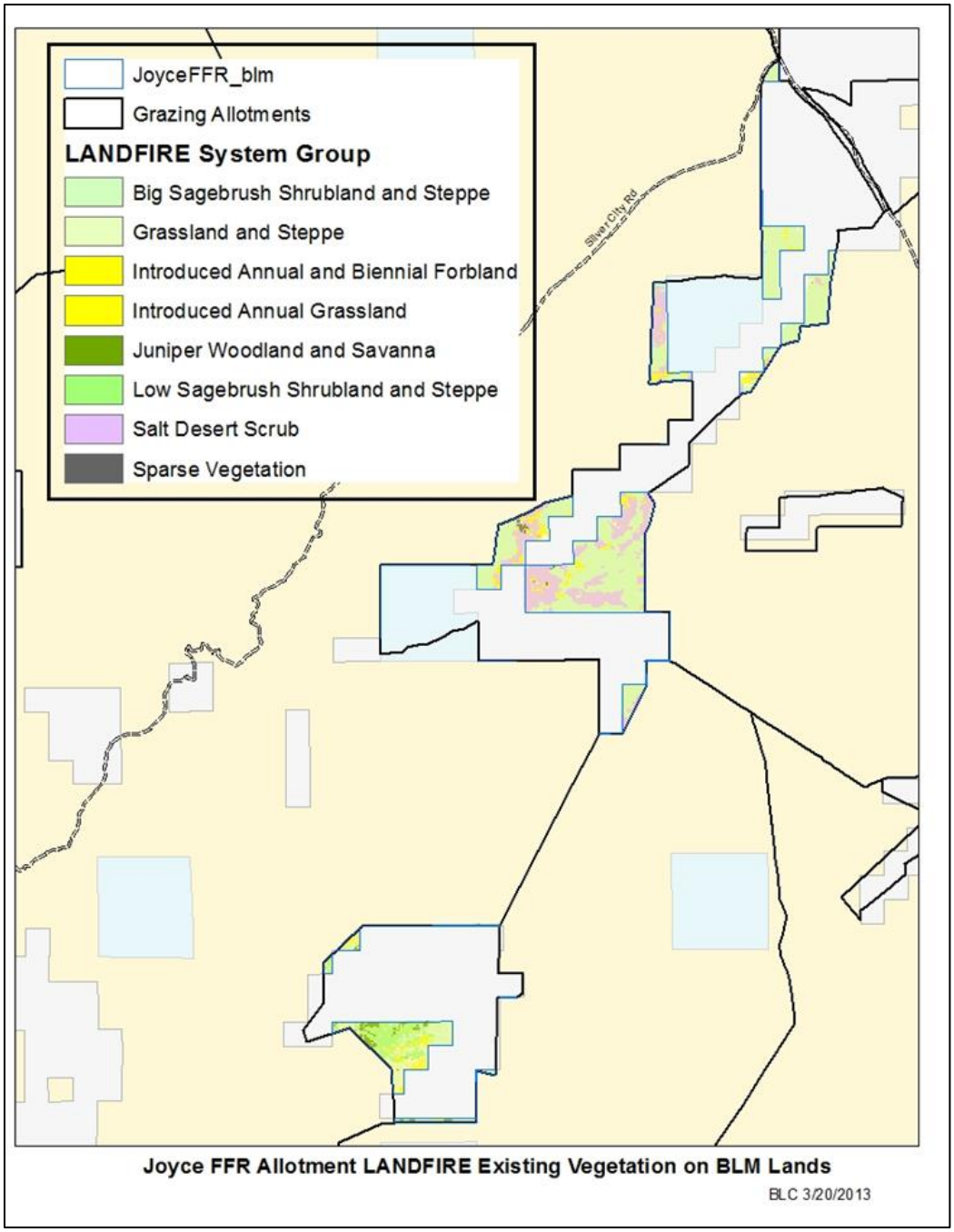

Figure 3.3.19 – Existing Vegetation on the Joyce FFR Allotment as described through LANDFIRE

Very little utilization information is available. Utilization in Pasture 2 in November 2012 noted no apparent use, and 3% utilization of Indian ricegrass in Pasture 5 in 2011; no other utilization monitoring is available. No trend plots have been established in the Joyce FFR.

Noxious and Invasive Weeds

Few noxious weeds are mapped on public lands in the Joyce FFR Allotment. In Pasture 5, one infestation of whitetop (0.1-1 acre) is recorded, from 2009. In Pasture 6, two infestations of Scotch thistle are recorded, each less than 1 acre, and both from 2004. In Pasture 2, one infestation of Russian knapweed (1-5 acres) was recorded in 2002. All of these infestations were chemically treated at the time of record.

This Russian knapweed infestation and a single tamarisk plant was also observed in 2013. Although not mapped in the BLM weed layer, Russian olive and Scotch thistle are apparent in 2013 photos within Pasture 3.

Invasive, non-native weeds in the Joyce FFR include the typical species for this vicinity. Cheatgrass is patchy throughout, more so in lower pastures. In Pasture 5, there are extensive patches of other invasive plants, such as halogeton, clasping pepperweed, and flixweed. Pasture 6 had few invasive weeds noted.

Biological Soil Crusts
Biological soil crusts have been highly reduced from reference conditions in Pasture 5. The 2012 sage-grouse habitat assessment transect measured only 2% moss ground cover and no lichen, while lichen should be a significant component of this salt desert shrub site, rather than the bare ground and cheatgrass litter currently present. Biological soil crusts had probably impacted by past heavy livestock trampling, and have not recovered because of the presence of cheatgrass and ongoing trampling (although at presumably a lower level than previously). Although no information is available, based on reported management, it is likely that biological soil crusts conditions are similar in Pastures 2-4.

In Pastures 6, biological soil crusts have been only slightly reduced. The 2012 ground cover transect in Pasture 6 found 8% moss cover and 2% lichen cover (and no bare ground), fairly close to what would be expected for this low sagebrush/bunchgrass site.

Idaho S&Gs
The Joyce FFR Allotment was evaluated for Standard 4. Standards 5 and 6 do not apply because no seedings and no extensive areas dominated by exotic plant communities exist on public lands in the allotment. Joyce FFR Pasture 1 was evaluated with the Con Shea Allotment (as Con Shea Pasture 3).

Standard 4, Native Plant Communities
Standard 4 is not being met in Pastures 2-5 based on the lack of large bunchgrasses (such as Indian ricegrass and Thurber's needlegrass), reduction of forbs and biological crusts, and presence of extensive patches of invasive weeds. No significant progress toward meeting the Standard is apparent. The salt desert shrub component is similar to reference conditions. In Pastures 2 and 5, current management (fall use (10/1 – 11/15) at a moderate or lower utilization levels) is sufficient to maintain the altered plant community (existing Sandberg bluegrass and limited native forbs). In Pasture 4, management includes early growing season use, but provides for regrowth after use.

Current management in Pasture 3 is not suitable to maintain what little perennial vegetation exists because livestock use the pastures year-long, including during the critical growing period, with a high level of use.

Thus Standard 4 is not being met in Pastures 2-5; current livestock grazing is a causal factor in Pasture 3 but not in Pastures 2, 4, and 5. No change in current grazing management would bring back the large bunchgrasses without providing for an adequate seed source. Significant causal factors in all of these pastures include historic grazing, which has eliminated large bunchgrasses and allowed invasive weeds to gain a foothold and spread.

Standard 4 is being met in Pasture 6, as the low sagebrush native plant community is only slightly departed from reference conditions and ecological processes are intact. Livestock grazing management conforms with the Guidelines.

3.3.4.1.2 Soils

Pasture 3 of The Joyce FFR does not meet Standard 1 due to current grazing; however, when considered as a whole the Joyce FFR is not meeting, not due to current livestock. These pastures consisted of compaction, pedestalled shrubs on floodplain and accessible hillslopes, and over-utilization on grasses and forbs. These impacts appear to be a result of current horse grazing in uplands that consist of soil types that are still recovering from past erosion. This soil loss may have been the result of flooding and scour events dated as far back as the 1960s. Pasture 8 also consists of a small length of stream that has impacts associated with both horse grazing and diversions within the stream channel.

3.3.4.1.3 Riparian/Water Quality

Riparian Areas and Wetlands
This allotment does not currently include manageable riparian areas and wetlands or within stream channel/floodplains and therefore there are no applicable effects to this standard.

Stream Channel/Floodplain
This allotment does not currently include manageable riparian areas and wetlands or within stream channel/floodplains and therefore there are no applicable effects to this standard.

Water Quality
This allotment does not currently include manageable riparian areas and wetlands or within stream channel/floodplains and therefore there are no applicable effects to either of these standards and within this allotment there is no capability to cause an effect to water quality either.

This resource discussion will not be carried further in the Environmental Consequences Section.

3.3.4.1.4 Special Status Plants

Five species of special status plants are reported from the Joyce FFR Allotment. See the Vegetation Specialist Report (Corbin 2013) for additional information.

Table 3.3.27 - Special Status Plant Species on Public Lands in the Joyce FFR Allotment

Species	Pasture	Number of Occurrences
White-margined wax plant *Glyptopleura marginata*	5	1
Rigid threadbush *Nemacladus rigidus*	5	1
Snake River milkvetch *Astragalus purshii* var. *ophiogenes*	5	1- 2
Malheur cryptantha *Cryptantha propria*	5	1
Stiff milkvetch *Astragalus conjunctus*	6	1

Stiff milkvetch was discovered in Pasture 6 in 2012, and Malheur cryptantha in Pasture 5 in 2013. White-margined wax plant and rigid threadbush were discovered in 1996, and these plants have not been seen since. In 2003, the rigid threadbush occurrence area was revisited, but no plants were found, presumably because of drought. In 2013, white-margined wax plant and rigid threadbush occurrence areas were visited and no plants found because the dry year was not favorable for annuals. The Snake River milkvetch possible occurrence in this allotment is based on a collection from 1980 with only general location information; plants that are probably this variety were seen in 2013.

The stiff milkvetch occurrence appears healthy in 2012 and is in a mostly intact plant community, so current grazing management appears suitable for this occurrence. Habitat areas for white-margined wax plant and rigid threadbush in the allotment visited in 2013 appeared suitable for these species, with little or no grazing disturbance, no vehicle disturbance, and although cheatgrass was present, it did not appear to be substantially limiting the specific habitat. Malheur cryptantha and Snake River milkvetch occurrences also appeared healthy in 2013, with minimal cattle, vehicle, or cheatgrass disturbance (although cheatgrass is thick in many surrounding loamy areas).

Standard 8 for special status plants is met in the Joyce FFR Allotment. Recent Pasture 6 observations showed a healthy population of stiff milkvetch, with no apparent grazing impacts. Habitat for special status plants at occurrence areas in Pasture 5 also is stable and mostly undisturbed, with very little sign of cattle disturbance. Cheatgrass is not substantially impacting special status plant habitat (microsites). All occurrences have little or no physical disturbance during the growing season. Current management conforms with grazing guidelines relative to these species sufficient to maintain adequate vigor for seed production, dispersal, and seedling survival. Use in Pasture 5 is primarily during the dormant season, providing for regular deferment during the growing season. Management of Pasture 6 has growing season rest every other year, providing periodic rest.

3.3.4.1.5 Wildlife and Special Status Animals

In addition to the general overview of the Affected Environment for Wildlife Resources in the Fossil Butte Group allotments presented above, descriptions of the current condition of species and their habitats within the Joyce FFR allotment are based on the 2013 Rangeland Health Evaluation and Determination Report (USDI BLM, 2013a), Affected Environment sections of the Vegetation and Water and Riparian Resources Sections of the Fossil Butte Group EA, recent personal observations, current element occurrences in IFWIS (IDFG, 2012), and consultation with local wildlife professionals.

Standards/Idaho S&Gs

Standards 1- 7 provide the basis for general wildlife habitats within the Fossil Butte Allotment that support Standard 8, Threatened and Endangered Animals. Wildlife habitat requirements specific to individual special status animal species are evaluated under Standard 8, as described in USDI-BLM 1997.

Upland Habitat

Information used to evaluate Standard 8 for upland habitats include 2002 field evaluation of Rangeland Indicators, the 2003 assessment, 2012 Rangeland Indicators, BLM's noxious weed GIS layer, 2012 sage-grouse habitat assessments, and 2013 field visits.

The Joyce FFR Allotment is managed as a native plant community and Pastures 2-5 are not meeting Standard 4. Large stature perennial bunchgrasses have been reduced or lost across these pastures and have been replaced by Sandberg bluegrass and/or cheatgrass. This vegetation community shift reduces effective nesting, escape, hiding, travel, and foraging cover values for wildlife species associated with sagebrush steppe communities. This allotment is failing to provide suitable upland habitat conditions for sagebrush steppe-associated wildlife, including sage-grouse, and therefore is not meeting Standard 8. No indication of significant progress in native plant community health is apparent, so there is no indication of progress being made toward meeting Standard 8. Current management is suitable for maintaining the altered plant community (existing Sandberg bluegrass and limited native forbs and large bunchgrasses). Winter use (Pasture 2) or fall use (Pasture 5) pastures do not have critical growing period use. Short-duration spring use provides the opportunity for regrowth (Pasture 4). Significant causal factors for not meeting Standard 8 in Pastures 2, 4, and 5 include historic grazing practices, which have eliminated the large bunchgrasses and allowed invasive weeds to gain a foothold and spread

Standard 4 is being met in Joyce FFR Pasture 6, as the indicators (large bunchgrasses, native forbs, shrubs, perennial basal vegetation, biological soil crusts, and invasive plants) are all within expected ranges for the ecological sites. The low sagebrush native plant community is only slightly departed from reference conditions and ecological processes appear to be intact. Because Standard 4 is being met, it is expected that upland habitat composition and structure are meeting vegetation cover and forage needs of most sagebrush steppe-associated wildlife, including sage-grouse, and therefore is meeting Standard 8 in Pasture 6. Current management is suitable for maintaining existing perennial vegetation because use includes growing season rest every other year, and light utilization in use years.

Standard 8 is not being met in Pasture 3, which makes up 4% of public lands within the allotment. Current management is a significant causal factor, as it is not suitable to maintain existing perennial vegetation because livestock use the pasture year-long, including during the critical growing period.

Figure 3.3.20 - Joyce FFR field evaluation of rangeland indicators sites – Pasture 1 (left) and Pasture 2 (right), July 2012

Riparian Habitat

Information used to evaluate Standard 8 for riparian habitats include one 2003 PFC assessment, the 2003 Assessment, 2013 site visits, and BLM's noxious weed GIS layer. As discussed above, riparian areas include approximately 0.1 miles of Sinker Creek in Pasture 3.

BLM considers the reach of Sinker Creek that occurs within the allotment as functional as is capable given the flow alteration upstream, within, and downstream of the reach. The natural stream characteristics associated with this reach cannot be achieved through a change in BLM management; therefore this reach is not assessed under Standards 2 and 3. However, enough controlled natural perennial flow (approximately 40%) reaches the original stream channel to support a riparian plant community consisting of mature woody vegetation with a herbaceous understory component, which could provide habitat for various riparian-obligate wildlife species. Therefore, this will be analyzed for riparian wildlife habitat under Standard 8.

One field visit to the reach was conducted by BLM personnel in 2013. The reach is bordered by private agricultural land to the north, west, and south. Impacts to this reach include agricultural use, multiple water diversions, and livestock grazing. The riparian area found on BLM lands that received annual flow consisted of stable banks, bankfull indicators, and woody and herbaceous riparian vegetation. Reach access to the floodplain was interrupted by water diversions and channel alterations upstream, within, and downstream of the reach. Livestock impacts to the riparian vegetation within the stream channel appeared minimal.

Designated uses for this reach of Sinker Creek include cold water aquatic life and primary contact recreation. IDEQ identified this reach of Sinker Creek as water quality limited and not fully supporting cold water aquatic life due to flow alteration, sediment, and water temperature. Total Maximum Daily Loads (TMDLs) were developed for sediment and temperature.

Water quality parameters are not being met and cold water aquatic life is not fully supported in this reach of Sinker Creek due to flow alteration, sediment, and water temperature. Excess flow alteration, sediment, and water temperature levels reduce habitat quality for redband trout and other riparian obligate wildlife species and could potentially impact the Snake River physa. Because these water quality parameters are not being met, the allotment is not meeting Standard 8 for riparian wildlife habitat. No indication of significant progress in riparian plant community health or water quality parameters is apparent, so there is no indication of progress being made toward meeting Standard 8. Current livestock grazing management practices are not a significant causal factor for not meeting Standard 8 because the majority of livestock use appears to occur on adjacent private agriculture lands and BLM uplands. Little to no impact to riparian areas from livestock grazing was observed during the 2013 field visit.

Figure 3.3.21 - Joyce FFR riparian site visit – Pasture 8, May 2013

A significant causal factor for not meeting Standard 8 is that water quality parameters are not being met and cold water aquatic life is not fully supported in Sinker Creek due to flow alteration, sediment levels, and water temperature. Sinker Creek is rated as PFC but is limited by water diversions on private land along the majority of its length. Sediment levels within the stream causing impacts to the Snake River are not an issue due to the buffering ability of existing riparian vegetation, beaver ponds, and water diversions. The storage of water in Hulet Reservoir, when combined with de-watering caused by existing water diversions, are the primary contributor to any failure to meet water temperature parameters in Sinker Creek.

Focal Special Status Wildlife Species

Greater sage-grouse

In addition to the general discussion of sage-grouse, the majority of the Joyce FFR allotment provided suitable habitat for sage-grouse historically and may have supported significant populations (USDI-USFWS 2013b). Currently, suitable sage-grouse habitats in Pastures 1, 6-10, and 12 are very limited or absent within the Joyce FFR allotment. As discussed previously, the shrub structure on public lands in these pastures is more or less intact, but large bunchgrasses have been lost and have been replaced by Sandberg bluegrass and/or cheatgrass. Pastures 2 and 3 are still providing suitable sage-grouse habitats as

the low sagebrush native plant community is only slightly departed from reference conditions and ecological processes appear to be intact.

Based on an interim, updated (2012) version of the ISHPM completed by the Idaho Sage-grouse Advisory Committee (ISAC 2006), approximately 85% (1,442 acres) of public land within the Joyce FFR Allotment is currently classified as key sage-grouse habitat, 0% (0 acres) is classified as perennial native and non-native grasslands with high restoration potential, and 0% (0 acres) is classified as conifer encroachment areas with high restoration potential (Table 3.3.28). The remaining 15% (255 acres) of the Joyce FFR Allotment is not considered sage-grouse habitat. Makela and Major (2012) identified approximately 0.05% (1 acre) of public lands within the Joyce FFR Allotment as PGH and 85% (1,443 acres) as PPH. The habitat identified as PPH was further classified as 100% (1,443 acres) sagebrush, 0% (0 acres) perennial grassland, and 0% (0 acres) conifer encroachment areas.

Table 3.3.28 - Sage-grouse habitat acreage on public lands within the Joyce FFR Allotment

Pasture	Idaho Sage-grouse Habitat Planning Map				PGH/PPH	
	Sagebrush	Perennial Grassland	Conifer Encroachment	Total	PGH	PPH
1	911	0	0	911	0	911
2	219	0	0	336	0	219
3	148	0	0	148	0	148
4	2	0	0	2	0	2
5	4	0	0	4	0	4
6	29	0	0	29	0	29
7	12	0	0	12	0	12
8	1	0	0	1	0	1
9	146	0	0	146	1	145
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0

Typically, sage-grouse in the vicinity of the Joyce FFR allotment congregate on communal strutting grounds (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 as 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 data acquired through lek surveys, telemetry studies, and incidental observations, sage-grouse nesting, early and late brood-rearing, and winter habitats currently occur within the allotment and surrounding areas to varying degrees.

As discussed above, approximately 85% of the Joyce FFR Allotment is classified as key sage-grouse habitat (ISAC 2006) and approximately 85% of the allotment is classified as either PPH or PGH (Makela and Major 2012). Pre-2008 livestock grazing practices in Pastures 1, 6-10, and 12 of the allotment have limited sage-grouse use in previously suitable areas because heavy livestock utilization likely caused shifts in vegetation functional-structural groups which resulted in the underrepresentation of dominant large-statured bunchgrass species across virtually the entire allotment and an overrepresentation of shallow-rooted, short-statured Sandberg bluegrass and the dominance of cheatgrass. This shift in vegetation functional-structural groups can reduce suitable breeding habitat, protective cover, and foraging areas for sage-grouse and other shrub steppe-obligate wildlife species.

Based on an interim, updated (2012) version of the BLM's sage-grouse Landscape Importance Model (LIM), lands within the Joyce FFR allotment are currently classified as areas of low to moderate relative importance to sage-grouse. The LIM is based on a combination of breeding bird density (lek density and attendance), lek connectivity, and population persistence models. The intent of the LIM is to provide an

index of the relative importance of areas within PPH and PGH across Zone IV. Generally, Pastures 4-12 of the allotment are rated low to low-moderate importance due primarily to low sagebrush persistence values resulting from local vegetative community shifts, anthropogenic disturbance, and distance from active leks. Pastures 1-3 of the allotment are rated as low-moderate to moderate importance due to relatively higher sagebrush persistence values and their proximity to active leks.

Sage-grouse have been shown to select brood-rearing habitat with taller grasses and increased herbaceous cover; increased herbaceous biomass is correlated with invertebrate prey abundance, and the increased vertical and horizontal cover it affords most likely imbues greater protection from predators, both of which could increase juvenile survival (Kaczor et al. 2011). No late brood-rearing habitat assessments are known to have been conducted within the Joyce FFR allotment.

However, BLM personnel did conduct a field visit of the 0.1 mile reach of Sinker Creek on public lands in 2013. The riparian area within public land indicated perennial flow and riparian woody vegetation within the stream channel appeared to be healthy and in high vigor. No livestock grazing impacts to riparian vegetation were observed. However, channel access to the floodplain was interrupted by multiple diversions and channel alterations. This degree of channelization is likely precluding the formation of stream-adjacent riparian herbaceous vegetation necessary to provide suitable brood rearing habitat. Evidence of heavy livestock grazing was also observed in the uplands adjacent to the riparian area, which is impacting the understory vegetation needed to provide adequate horizontal escape cover. Based on these observations, the reach of Sinker Creek occurring on public land is likely providing unsuitable (missing the majority of necessary indicators) to marginal sage-grouse late brood-rearing habitat. However, adjacent agricultural lands may provide marginal to suitable sage-grouse late brood-rearing habitat.

In 2012, BLM personnel conducted two sage-grouse habitat assessments within the Joyce FFR allotment. Habitat assessments indicate that the allotment is providing marginal (missing some necessary indicators) sage-grouse breeding and upland summer habitats in Pasture 1due to a reduction in large stature perennial bunchgrasses, co-dominance of cheatgrass and Sandberg bluegrass in the understory, and low preferred forb abundance. However, habitat assessments indicate that Pasture 2 is providing suitable (necessary food/cover indicators are present) breeding and upland summer habitats. Habitat assessments also indicate that the allotment is providing suitable sage-grouse winter habitat at all sites assessed.

Table 3.3.29 - 2012 Joyce FFR allotment sage-grouse habitat assessment seasonal habitat summary

Pasture	Site ID	Ecosite	Sage-grouse Seasonal Habitat Type		
			Breeding	Upland Summer	Winter
5	0487-1-04S02W15a-2012	Calcareous Loam 7-10”	Marginal	Marginal	Suitable
6	0487-2-05S02W09a-2012	Shallow Claypan 11-13”	Suitable	Suitable	Suitable

One inactive lek is known to occur within the Joyce FFR allotment. The allotment is located within the 75% breeding bird density (BBD) buffer (4 miles) of three occupied leks (based on the presence of 2 or more males observed during surveys in the last five years), four leks with undetermined status, and one unoccupied lek (Table 3.3.30). The 75 % BBD buffer is highly correlated to breeding habitat surrounding leks and encapsulates 75% of male lek attendance along with 60% of currently occupied habitat within Zone IV (Makela and Major 2012). The remaining 40% of currently occupied habitat (which occurs outside the 75% BBD buffer) is likely the more fragmented habitat (Doherty et al. 2011). Because counts at these leks have only recently been conducted with any annual regularity via helicopter, long-term trends in lek attendance are difficult to extrapolate.

Table 3.3.30 - Attendance at leks within 4 miles of the Joyce FFR Allotment, 2008-2012

Lek	Lek Status	Survey Year[1]				
		2008	2009	2010	2011	2012
2O441	Undetermined	--	--	--	--	0
2O442	Undetermined	--	--	0	--	0
2O442a	Undetermined	--	--	--	--	--
2O504	Occupied	--	--	14	--	--
2O505	Occupied	29	21	26	40	28
2O506	Undetermined	--	--	--	0	0
2O507	Occupied	--	--	10	--	0
2O508	Unoccupied	0	0	0	0	0
2O629	Undetermined	--	--	--	0	0

[1]Surveys were not conducted in years indicated by dashes (--).

Columbia River Redband Trout

In addition to the general discussion of redband trout, affected environment conditions within the Joyce FFR allotment, as they relate to Sinker Creek, are the same as those discussed for the Con Shea Allotment.

Migratory Birds, Raptors, and other Birds (including Special Status Species)

In addition to the general discussion of migratory birds, raptors, and other bird species and their habitats, a variety of bird species have the potential to occur or have been documented within and in the vicinity of the Joyce FFR allotment (Appendix E).

Big Game and other Mammals (including Special Status Species)

In addition to the general discussion of big game and other mammal species and their habitats in Section 3.1.5, various big game and special status mammal species use a variety of habitats in the Fossil Butte allotment for some or all of their seasonal needs.

Approximately 368 acres of public land within the Joyce FFR allotment has been identified by IDFG as bighorn sheep habitat. Telemetry data collected by IDFG has documented a small resident bachelor herd of 5 rams occupying rocky terrain near the South Fork of Diamond Creek and North Fork of Sinker Creek. These rams likely travel between the larger Reynolds Creek and Castle Creek herds during the fall breeding season in search of mating opportunities.

3.3.4.1.6 Social and Economic Values

The socioeconomic environment for the Joyce FFR Allotment is as described in Section 3.2.2.6.

As there is no change proposed in Alternatives B-C, the sections analyzing those alternative do not include a discussion of socioeconomic values. Alternatives D and F. do propose changes to authorized AUMs and are discussed in the following sections. Please refer to the Section 3.3.4.2.5.6 for a discussion of the effects of not authorizing grazing in the Joyce FFR Allotment for 10 years.

3.3.4.1.7 Cultural and Paleontological Resources

Effects to Cultural and Paleontological Resources for Alternative E are listed under Environmental Consequences Common to All Allotments (Section 3.2.5.8).

3.3.4.2 Joyce FFR Environmental Consequences

3.3.4.2.1 Alternative A

Under this alternative, grazing use would occur as allowed under the existing permit. Alternative A is not being analyzed in detail for the Joyce FFR Allotment because this management would not meet all applicable Standards.

3.3.4.2.2 Alternative B

3.3.4.2.2.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table. These figures indicate the degree of effects relating to the season, intensity, duration, frequency, and distribution of use, as well as the weed introduction potential and effects to biological soil crusts, all as described in Section 3.2.

Table 3.3.31 - Vegetation Indicators for Alternative B – Joyce FFR

Indicator	Pasture 1	Pasture 2	Pasture 3	Pasture 4	Pasture 5	Pasture 6
Season of use (Dates)	3/1 – 3/15	11/1 – 2/28	Any time of year	3/1 – 3/31	10/1 – 11/15	5/15 – 6/15 odd years; fall trailing
Duration (Days per pasture)	15	124	Not specified	31	46	32 + trailing
Frequency	Once, every year	Once, every year	Not specified	Once, every year	Once, every year	Twice odd years; once even years
Total AUMs	246 (allotment total)					
Acres/AUM	8.4 for allotment					
Utilization	Expected <20%; limit <50%	Expected and Limit <50%	Expected and Limit <50%	Expected and Limit <50%	Expected light; Limit <50%	Expected light; Limit <50%
Water haul sites	none	None	None	None	None	None
Number of livestock	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified

With implementation of Alternative B, conditions would continue as they currently are, as described in the affected environment. This alternative includes no rest for an entire season, but some pastures include either deferment from use outside of the critical growing period or a short period of early critical growing period use that allows for undisturbed regrowth. Utilization levels up to 50% would be allowed. Some pastures have a relatively long duration of use, including during the growing season. Stocking rates are relatively heavy (about 6 acres/AUM), and are highly influenced by the availability of water sources and use on adjacent private lands. With no change in livestock intensity or distribution, concentrated use areas would be expected to be the same as current conditions. The potential for weed seed introduction (based on the number of livestock) is difficult to evaluate because the permit allows discretion in livestock numbers within permitted AUMs.

The Joyce FFR Allotment would continue to not meet Standard 4 in Pastures 1-5 and continue to meet Standard 4 in Pasture 6. Livestock grazing management would not be a causal factor in not meeting Standard 4 in Pastures 2 and 5 because use would not occur during the critical growing period, and in Pastures 1 and 4 because short-duration spring use is expected to provide the opportunity for regrowth. In

Pasture 5, fall use of the salt desert shrub community would be expected to continue to be light, which would maintain existing perennials. Invasive annuals would continue to occupy extensive patches in the pasture, but little increase is expected because of light use. Biological soil crusts would be static to slightly declining under fall use; the low soil moisture at that time is not favorable for crust on loamy soils, but the expected light use would create only minor impacts. In Pasture 6, the healthy low sagebrush/bluebunch wheatgrass or Idaho fescue communities would be maintained under light spring use alternated with rest. Invasive annual weeds would continue to be few and localized, and soil crusts are expected to be maintained at relatively high cover. Current livestock grazing would continue to be a causal factor for not meeting Standard 4 in Pasture 3 because livestock would use the pastures at any time and length of year, including during the critical growing period. In all pastures, noxious weeds would be few and declining under continued noxious weed treatment.

3.3.4.2.2.2 Soils

See Sections 3.2.1.2 above.

3.3.4.2.2.3 Riparian/Water Quality

Manageable riparian areas in Joyce FFR only occur in Pasture 1 (currently Pasture 3 of the Con Shea allotment).

The following T&Cs within Alternatives B generate the most substantial difference in effects for Standards 2, 3, and 7 due to their influence on riparian areas and stream channels.

1. Key herbaceous riparian vegetation, where streambank stability is dependent upon it, will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the growing season; and
2. Key riparian browse vegetation will not be used more than 50% of the current annual twig growth that is within reach of the animals.

These T&Cs should result in a gradual improvement to herbaceous riparian vegetation each year. Grazing within the riparian area, when not frozen, may result in a seasonal increase to soil compaction, a loss of soil moisture, a seasonal increase to soil surface disturbance, and less soil water storage capacity. The spring season of use may impact the early riparian growth in years with warmer than normal temperatures, however, is not expected to have an effect on the function of riparian, floodplain, or stream channels in this section of Sinker Creek. As described in the affected environment, there is neglibale evidence of livestock use in the riparian section of this pasture. There is a potential, because of the application of T&Cs, that the rate of improvement will be faster for Alternative B than that of Alternatives C, and D. Even though current use is negligible, the T&Cs applied to Alternative B would ensure a lower allowable level of grazing pressure.

Generally, in the short and long terms (2 and 10 years, respectively), standard #2 (riparian and wetland areas) would continue to improve to a fully functioning condition. Riparian stubble heights on all assessed livestock accessible reaches were at or above 4 inches. Clary (1999) recommended leaving a 10-15 cm (4-6 inch) herbaceous stubble height at the end of the growing season after grazing for meadow riparian recovery. In the long term, the early-seral dominated riparian vegetation communities would eventually change to communities dominated by late-seral, deep-rooted species. Stream channels would improve as they narrow and deepen, and streambanks would stabilize due to deep-rooted riparian vegetation. Aquatic habitat conditions would improve as channel form recovers, fine sediment levels decrease, and stream shading levels increase due to the development of dense and vigorous riparian plant communities. Clary (1999) found that the overall fluvial and vegetative response improved with medium grazing (35-50% utilization); stream channels narrowed, stream width-to-depth ratios were reduced, and channel bottom embeddedness decreased.

Stream Channel/Floodplain
Normally, Standard 3 and Standard 1 are closely connected to each other because the stream channels and floodplains reflect past watershed problems. In this project, Standard 3 (Stream channel/floodplain) does not necessarily correlate so closely to the rest of the watershed due to upstream water storage and diversions for irrigation. In most cases, the shift in upland vegetation species composition, past soil loss, and increases in non-native annual grasses would have caused a shift in watershed response that affected the channel and floodplain characteristics. The stream channels and floodplains are representative of the watershed runoff response (volume and timing) and associated sediment loads. Since Standard 3 is meeting standards, it can be assumed that the stream channels and floodplains have adjusted to the new watershed condition. This alternative may result in a direct, observable, and positive response within the riparian areas and this positive response would correlate to an associated maintenance of stream channels/floodplain condition.

Because there are so many variables that contribute to watershed health and channel function related to upstream activities, it is difficult to attribute grazing management within the Joyce FFR to direct or immediate improvement of this standard within the timeframe associated with the permit renewal. Full recovery will require more than ten years and may not be gained wholly because of changes exclusive to livestock management. It is necessary to recognize that Standard 4 and Standard 1 are evaluated at a watershed scale and therefore must consider the marginal influence of this project. As a whole, this alternative has very little influence on the standard because of other activities within the watershed that also influence conditions (irrigation, private land development, past management, wildfire, invasive or noxious weeds, and vegetation structure and diversity).

In conclusion, Alternative B indirectly affects stream channel and floodplain function because of the riparian recovery described above. Stream channels and floodplains will be maintained in this alternative.

Water Quality
Alternative B results in an indirect but slight improvement to Standard 7 (Water Quality) because of the slow recovery of upland and riparian vegetation. As vegetation condition improves, plant litter and below ground biomass also increase which would decrease water runoff and soil erosion potential in the long term (>10 years). More vegetation and litter covering the soil surface protects the soil from raindrop impact, improves soil organic matter, and would lead to improved nutrient cycling. The allotment would take decades to centuries to reestablish soils that were lost to erosion. Slow biomass accumulation is expected, resulting in a steady, long-term improvement to soil development, watershed response, riparian areas, wetlands, and water quality within the boundaries of the project. Short-term improvements would be difficult to discern compared to current condition, especially since the project area is such a small proportion of the contributing watersheds that influence recovery rates. All of these factors would eventually improve the water quality and support to beneficial uses within Sinker Creek.

3.3.4.2.2.4 Special Status Plants

The allotment would continue to meet Standard 8 (special status plants). Special status plants occurrences would be maintained because critical growing period grazing would be limited: either avoided (Pasture 1) or alternated with deferred light use (Pasture 2). Invasive weeds or OHVs do not appear to be impacting these occurrences.

3.3.4.2.2.5 Wildlife and Special Status Animals

Under Alternative B, the allotment would continue to not meet Standard 8 for threatened and endangered species in upland habitats in Pastures 2-5 and continue to meet Standard 8 in Pastures 6. Livestock grazing management would not be a causal factor in not meeting Standard 8 in Pastures 2 and 5 because

use would not occur during the critical growing period, and in Pasture 4 because short-duration spring use (rested in some years) is expected to provide the opportunity for regrowth. In Pasture 5, fall use of the salt desert shrub community would be expected to continue to be light, which would maintain existing perennials and adequate ground cover. Invasive annuals would continue to occupy extensive patches in the pasture, but little increase is expected because of light use. In Pastures 6, the healthy low sagebrush/bluebunch wheatgrass and Idaho fescue communities would be maintained under light spring use alternated with rest. Invasive annual weeds would continue to be few and localized, and adequate ground cover is expected to be maintained. Current livestock grazing would continue to be a causal factor for not meeting Standard 8 in Pasture 3 because livestock would use the pastures for an extended period, including during the critical growing period, and the level of use may be high. In all pastures, noxious weeds would be few and declining under continued noxious weed treatment.

Under Alternative B, the allotment would continue to not meet Standard 8 for threatened and endangered animals in riparian habitats in Pasture 3. No significant progress in improving the health of riparian wildlife habitat is indicated by available data. Livestock grazing management would not be a causal factor in not meeting the Standard because existing excess flow alteration and water temperature levels are not caused or impacted by livestock grazing. Utilization of key herbaceous riparian vegetation would not exceed 60% during the dormant season and a minimum stubble height of 4 inches at the end of the growing season would be required. Utilization of key riparian browse vegetation would not exceed 50% of the current annual twig growth. These terms and conditions would be expected to result in gradual improvements to herbaceous vegetation each year. However, due to de-watering caused by upstream water diversions, it is likely that Sinker Creek will continue to fail to meet IDEQ water quality standards and fail to fully support cold water aquatic life beneficial uses.

Effects to individual wildlife species and their habitats resulting from Alternative B in the Joyce FFR Allotment are detailed under Fall (Section 3.2.2.5) and Winter (Section 3.2.1.5) Grazing (Pasture 1), Winter Grazing (Pastures 10 and 12), Spring (Section 3.2.2.5) Grazing (Pastures 2,3, and 9) and under all seasons (Section 3.2.2.5) (Pastures 6-8) in Environmental Consequences Common to All Allotments.

3.3.4.2.2.6 Cultural and Paleontological Resources

Only one potentially significant lithic scatter and one ineligible site are known on the Joyce FFR with no past or expected cattle impacts at either site. There is a relatively small area of suitable land for sites due to topography and a low potential for cattle impacts under any alternative. No fossil localities are known, and their exposure would be unlikely within the allotment. These conditions would apply to cultural and paleontological resources even with the addition of Pasture 3 from the Con Shea Allotment. There is unlikely to be any noticeable change in resource condition due to any of the alternatives presented, including Alternative E.

3.3.4.2.3 Alternative C

3.3.4.2.3.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table.

Table 3.3.32 - Joyce FFR Allotment Vegetation Indicators for Alternative C

Indicator	Joyce FFR – All pastures (including Pasture 3 from Con Shea)
Season of use (Dates)	Discretionary yearlong
Duration (Days per pasture)*	Discretionary
Frequency	Discretionary
Total AUMs	246

Indicator	Joyce FFR – All pastures (including Pasture 3 from Con Shea)
Acres/AUM	8.4
Utilization	Limit <50%
Water haul sites	None
Number of livestock	Not specified

The Joyce FFR Allotment would consist of 6 pastures (including the current Pasture 3 of Con Shea), each of which would be used at the permittee's discretion as far as season and duration of use and number of cattle and horses, as long as total AUMs and 50% utilization limits were not exceeded. If pastures were used more than incidentally during the critical growing season or for an extended time during the entire growing season (causing regrazing of growing plants), plant community health would decline and those pastures would not meet or make significant progress toward meeting Standard 4. If no more than light use occurred during the growing season and no more than slight use during the critical growing period, then existing upland plant community conditions are likely to be maintained, and perhaps slowly improve over the long term, similar to Alternative D, limited only by existing invasive plants, past soil loss, and available perennial grass seed sources. If use continues as it has in the past, then effects would be the same as described in Alternative B, with some pastures meeting Standard 4 and some not meeting or making significant progress. The overall stocking rate is the same as Alternative B.

3.3.4.2.3.2 Soils

See Sections 3.2.1.2 above.

3.3.4.2.3.3 Riparian/Water Quality

Manageable riparian areas in Joyce FFR only occur in Pasture 1 (currently Pasture 3 of the Con Shea allotment).

Alternative C does not include T&Cs applied under Alternative B and defaults to the Management Actions and Allocations described in the ORMP for Livestock and Riparian Objectives.

As described in the affected environment, there is negligible evidence of livestock use in the riparian section of this pasture. If permittees manage this riparian section of Pasture 1 as they do currently, then the exclusion of the T&Cs (above) would result in a gradual improvement to herbaceous riparian vegetation each year. Grazing within the riparian area, when not frozen, may result in a seasonal increase to soil compaction, a loss of soil moisture, a seasonal increase to soil surface disturbance, and less soil water storage capacity. However, the exclusion of T&Cs creates the potential that the rate of improvement will be slower for Alternative C than that of Alternatives B. There is also a potential that the higher AUM numbers proposed in Alternative C would result in greater bank trampling and utilization than that of Alternative D. The discretionary season of use proposed for Alternative C may result in regrazing of riparian vegetation and a correlated suppression of riparian regrowth within the growing season. Alternative C leaves a potential for a slower improvement or decrease of the function of riparian, floodplain, and stream channels in this section of Sinker Creek.

Stream Channel/Floodplain

No substantial difference between this alternative and Alternative B related to Standard 3 (Stream channel/floodplain) is expected because the upstream water storage and diversions for irrigation lessen the influence from the contributing watershed and increase the influence of the riparian area. Therefore, the effects described above for standard 2 can be used as an indicator of effects to standard 3.

Water Quality
No substantial difference between this alternative and Alternative B related to Standard 7 (Water Quality) is expected. Short-term improvements would be difficult to discern compared to current condition, especially since the project area is such a small proportion of the contributing watersheds that influence recovery rates. The effects described above for Standard 2 would define the trend of effects to water quality. An improvement to riparian conditions would eventually improve the water quality and support to beneficial uses within Sinker Creek.

3.3.4.2.3.4 Special Status Plants

Use would be totally at the permittee's discretion, but use (up to 50% utilization) during the critical growing period for special status plants would not meet or make significant progress toward meeting Standard 8 for Special Status Plants. If use continues as it has in the past, then effects would be the same as described in Alternative B, with no substantial effect on special status plants.

3.3.4.2.3.5 Wildlife and Special Status Animals

The allotment would consist of 6 pastures (including Con Shea Pasture 3), each of which would be used at the permittee's discretion for season and duration of use and number of cattle, as long as total AUMs and 50% utilization limits were not exceeded. If pastures were used more than incidentally during the critical growing season or for an extended time during the entire growing season, plant community health would decline and those pastures would not meet or make significant progress toward meeting Standard 8 for threatened and endangered animals in upland and riparian (Pasture 8) habitats. If no more than light use occurred during the growing season and no more than slight use during the critical growing period, then existing upland conditions are likely to be maintained, and perhaps slowly improve over the long term, similar to Alternative D, limited only by existing invasive plants and available perennial grass seed sources. If no more than light use occurred in the summer and no more than moderate use occurred in the spring, fall, or winter, then the allotment would continue to not meet Standard 8 (threatened and endangered animals) in riparian habitat because of water diversions, but existing riparian conditions are likely to be maintained and possibly improve slowly over the long term. The overall stocking rate is slightly lighter in Alternative C than in Alternative B (6.5 acres/AUM versus 6.1 acres/AUM for Pastures 2-5 combined and 6.4 acres/AUM for Con Shea Pasture 3), but the difference is negligible.

If use continues as it has in the past, then effects to individual wildlife species and their habitats would be the same as described in Alternative B, with some pastures meeting Standard 8 and some not meeting or making significant progress.

3.3.4.2.3.6 Cultural and Paleontological Resources

Effects would be the same as for Alternative B (Section 3.3.4.2.2.6).

3.3.4.2.4 Alternative D

3.3.4.2.4.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table.

Table 3.3.33 - Vegetation Indicators for Alternative D – Joyce FFR

Indicator	Pasture 1	Pasture 2	Pasture 3	Pasture 4	Pasture 5	Pasture 6
Season of use (Dates)	3/1 – 3/15	11/1 – 2/28	Any time of year	3/1 – 3/31	10/1 – 11/15	5/15 – 6/15 odd years; fall trailing
Duration (Days per pasture)	15	124	Not specified	31	46	32 + trailing

Indicator	Pasture 1	Pasture 2	Pasture 3	Pasture 4	Pasture 5	Pasture 6
Frequency	Once, every year	Once, every year	Not specified	Once, every year	Once, every year	Twice odd years; once even years
Total AUMs	124 (allotment total)					
Acres/AUM	16.7 for allotment					
Utilization	Expected <20%; limit <50%	Expected and Limit <50%	Expected and Limit <50%	Expected and Limit <50%	Expected light; Limit <50%	Expected light; Limit <50%
Water haul sites	none	None	None	None	None	None
Number of livestock	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified

The pastures in the Joyce FFR Allotment would be managed with specific seasons of use except for Pasture 3, which would be managed as agreed upon at annual meetings. The level of use, based on total AUMs and stocking rate, would be about 50% less than Alternative B. The utilization limit (50%) would be the same as other alternatives. Because the season of use is similar but the level of use is reduced, effects from grazing on vegetation would be the same as described in Alternative B but with reduced intensity, except in Pasture 3.

In Pastures 1-5, Standard 4 would continue to not be met (precluded by invasive weeds and the loss of large bunchgrasses from past grazing), but current livestock management would not be a significant causal factor. Perennial grasses would be expected to be maintained under this alternative. Pastures 1 and 4 would be used only in March, so opportunity for regrowth would be provided and plant community health is expected to be maintained. In Pastures 2 and 5 grazing would occur only during the dormant season, so few effects to native perennials are expected. In Pasture 3 the annual meeting would provide suitable management to address resource concerns, such as short-duration use during the critical growing period alternated with rest.

Pasture 6 would continue to meet Standard 4 because the healthy low sagebrush/bluebunch wheatgrass communities would be maintained under spring use alternated with rest, with few effects from fall trailing.

In summary, management for the Joyce FFR Allotment in Alternative D would be expected to maintain native plant community conditions, as indicated by native perennial grass abundance and vigor, native forb diversity, shrub diversity, cover, and health, and biological soil crust cover. Invasive and noxious weeds would not be expected to increase, due to noxious weed control and competition from native plants.

3.3.4.2.4.2 Soils

See Sections 3.2.1.2 above.

3.3.4.2.4.3 Riparian/Water Quality

Manageable riparian areas in Joyce FFR only occur in Pasture 1 (currently Pasture 3 of the Con Shea allotment).

Alternative D does not include T&Cs applied under Alternative B and defaults to the Management Actions and Allocations described in the ORMP for Livestock and Riparian Objectives.

As described in the affected environment, there is negligible evidence of livestock use in the riparian section of this pasture. If permittees manage this riparian section of Pasture 1 as they do currently, then the exclusion of the T&Cs (above) would result in a gradual improvement to herbaceous riparian vegetation each year. Grazing within the riparian area, when not frozen, may result in a seasonal increase to soil compaction, a loss of soil moisture, a seasonal increase to soil surface disturbance, and less soil water storage capacity. The exclusion of T&Cs increases the potential to slow the rate of improvement compared to that of Alternative B. However, the reduction of AUMs under Alternative D will offset any potential effects associated with this T&C exclusion. Alternative D would result in less streambank trampling and riparian utilization than that of Alternative C. The season of use proposed for Alternative D will also prevent the potential for regrazing riparian vegetation preventing the correlated suppression of riparian regrowth within the growing season that may occur under Alternative C.

Stream Channel/Floodplain

No substantial difference between this alternative and Alternative B related to Standard 3 (Stream channel/floodplain) is expected because the upstream water storage and diversions for irrigation lessen the influence from the contributing watershed and increase the influence of the riparian area. Therefore, the effects described above for standard 2 can be used as an indicator of effects to standard 3.

Water Quality

No substantial difference between this alternative and Alternative B related to Standard 7 (Water Quality) is expected. Short-term improvements would be difficult to discern compared to current condition, especially since the project area is such a small proportion of the contributing watersheds that influence recovery rates. The effects described above for Standard 2 would define the trend of effects to water quality. An improvement to riparian conditions would eventually improve the water quality and support to beneficial uses within Sinker Creek.

3.3.4.2.4.4 Special Status Plants

Special status plant occurrences would be maintained because critical growing period grazing would be either avoided (Pasture 1) or light and alternated with deferred use (Pasture 2). As a result, this alternative would continue to meet Standard 8 for special status plants.

3.3.4.2.4.5 Wildlife and Special Status Animals

The pastures in the allotment would be managed with specific seasons of use, except for Pasture 3 which has minute acreages and proportions of BLM lands (compared to private lands). The level of use, based on total AUMs and stocking rate, would be the same as Alternative B. Pasture 6 would continue to meet Standard 8 for upland habitats because the healthy low sagebrush/bluebunch wheatgrass communities would be maintained under light spring use alternated with rest every other year, with few effects from fall trailing. In Pastures 2 and 5, Standard 8 would continue to not be met for upland habitats due to historic grazing and invasive weeds, but current grazing would not be a causal factor because grazing would occur only during the dormant season. Perennial grasses would be expected to be maintained or improved under this alternative. Similarly, in Pasture 3, Standard 8 for upland and riparian (Pasture 8) habitats would not be met (precluded by past grazing, invasive weeds, and water diversions), but the implementation of the annual meeting Term and Condition would result in short-duration use during the critical growing period alternated with rest. This pasture rotation would maintain existing perennial grasses and riparian conditions, so current grazing would not be a causal factor. Pasture 4 would be used only in March, so opportunity for regrowth would be provided and plant community health is expected to be maintained or improved. In summary, the specified management for the Joyce FFR Allotment would be expected to maintain or improve native plant community conditions, as indicated by native perennial grass abundance and vigor, native forb diversity, shrub diversity, cover, and health. Invasive and noxious

weeds would not be expected to increase, due to noxious weed control and competition from native plants.

3.3.4.2.4.6 Social and Economic Values

This alternative includes a 50 percent decrease in active use AUMs compared to Alternative B. There would no adverse effects to the socioeconomic values of Owyhee County as a result of this increase. The effect to the socioeconomic values of Owyhee County are described in Section 3.1.7. The value to the community would be as shown in Table 3.19. The ranch would continue contributing to employment and the purchase and sale of goods and services in the county though at a decreased rate.

3.3.4.2.4.7 Cultural and Paleontological Resources

Effects would be the same as for Alternative B (Section 3.3.4.2.2.6).

3.3.4.2.5 Alternative E

3.3.4.2.5.1 Vegetation, including Noxious Weeds

Effects to vegetation from Alternative E in the Joyce FFR Allotment are described in Section 3.2.5.1 (Environmental Consequences Common to All Allotments).

3.3.4.2.5.2 Soils

See Sections 3.2.1.2 above.

3.3.4.2.5.3 Riparian/Water Quality

Manageable riparian areas in Joyce FFR only occur in Pasture 1 (currently Pasture 3 of the Con Shea allotment).

As described in the affected environment, there is negligible evidence of livestock use in the riparian section of this pasture. Alternative E and the exclusion of grazing would result in a comparably faster improvement to herbaceous riparian vegetation each year than that of the other alternatives. Stream channel and floodplain function would also recover quickest under this alternative. While fully functional riparian, channel, and floodplain systems may be achieved under other alternatives, Alternative E would achieve this condition earlier.

Stream Channel/Floodplain

No substantial difference between this alternative and Alternative B related to Standard 3 (Stream channel/floodplain) is expected because the upstream water storage and diversions for irrigation lessen the influence from the contributing watershed and increase the influence of the riparian area. Therefore, the effects described above (Alternative E) for standard 2 can be used as an indicator of effects to standard 3.

Water Quality

No substantial difference between this alternative and Alternative B related to Standard 7 (Water Quality) is expected. Short-term improvements would be difficult to discern compared to current condition, especially since the project area is such a small proportion of the contributing watersheds that influence recovery rates. The effects described above (Alternative E) for Standard 2 would define the trend and rate of recovery to water quality. An improvement to riparian conditions would eventually improve the water quality and support to beneficial uses within Sinker Creek.

3.3.4.2.5.4 Special Status Plants

Effects to Special Status Plants from Alternative E in the Joyce FFR Allotment are described in Section 3.2.5.1 (Environmental Consequences Common to All Allotments).

3.3.4.2.5.5 Wildlife and Special Status Animals

Effects to individual wildlife species and their habitats resulting from Alternative E in the Joyce FFR Allotment are detailed in Section 3.2.5.5 of Environmental Consequences Common to All Allotments.

3.3.4.2.5.6 Social and Economic Values

This alternative would cancel all authorized use AUMs on the allotment for a period of 10 years, after which applications for grazing permits would be accepted. This would likely have a substantial socioeconomic impact on the ranch operators, the people they employ, the businesses where the operators purchase supplies, and the communities that are supported by livestock operation activities. The ranchers would have to relocate their livestock to other private or state land, possibly outside of Owyhee County, sell their livestock, and/or close the ranch completely. The ranchers already likely purchase supplies from stores closer to the new grazing locations, so income from taxes and sales in these communities would drop, and the income from the livestock sales would go to the counties where the base ranches are located. The total loss of value to the community if these AUMs were completely removed from Owyhee County would be $16,467.24.

The people previously employed by the ranches would have to look for new jobs if any of the ranches closed; the agricultural sector in both counties is large enough that they may not have much trouble finding similar work elsewhere, but they may have to relocate or commute long distances, which could be costly. Finding work in other sectors may be difficult because unemployment is so high. The greatest loss to the local communities as a result of ranch closures would be the loss of social cohesion. As noted above, researchers have found that ranchers have more social networks throughout the community, and closing a ranch can lead to a disruption in these networks.

3.3.4.2.5.7 Cultural and Paleontological Resources

Effects to Cultural and Paleontological Resources for Alternative E are listed under Environmental Consequences Common to All Allotments (Section 3.2.5.8).

3.3.4.2.6 Alternative F

3.3.4.2.6.1 Vegetation, incl. Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table.

Table 3.3.34 - Joyce FFR Allotment Vegetation Indicators for Alternative F

Indicator	Joyce FFR – All pastures (including Pasture 3 from Con Shea)
Season of use (Dates)	11/1 – 2/28
Duration (Days per allotment)	120
Frequency	Once, every year
Total AUMs	124
Acres/AUM	16.7
Utilization	Limit <50%
Water haul sites	None
Number of livestock	Not specified

Alternative F would allow only late fall/winter use, so no growing season effects to vegetation would occur. This deferred use outside of the critical growing season would provide for undisturbed growth during spring, summer, and early fall. Utilization levels of up to 50% would be allowed, but based on the

AUM and stocking rate, the level of use may be less than in Alternatives B and C (and the same as Alternative D). The duration of use is relatively long, but because this use is during the dormant period, growing plants would not be re-grazed and the entire growing season would be available for plant recovery.

The Joyce FFR Allotment would continue not to meet Standard 4 in Pastures 1-5, precluded by invasive weeds and the loss of large bunchgrasses from past management. However, current livestock management would not be a significant causal factor because dormant season use is expected to maintain existing perennial grasses. Pasture 6 would continue to meet Standard 4 because the healthy low sagebrush/bluebunch wheatgrass-Idaho fescue communities would be maintained under late fall/winter use.

Grazing management in Alternative F would maintain native plant community conditions in the Joyce FFR Allotment, as indicated by native perennial grass abundance and vigor, native forb diversity, shrub diversity, cover, and health, and biological soil crust cover. Invasive and noxious weeds would not be expected to increase, due to noxious weed control and competition from native plants.

3.3.4.2.6.2 Soils

See Sections 3.2.1.2 above.

3.3.4.2.6.3 Riparian/Water Quality

Manageable riparian areas in Joyce FFR only occur in Pasture 1 (currently Pasture 3 of the Con Shea allotment).

Alternative F does not include the T&Cs applied under Alternative B and defaults to the Management Actions and Allocations described in the ORMP for Livestock and Riparian Objectives.

As described in the affected environment, there is negligible evidence of livestock use in the riparian section of this pasture. If permittees manage this riparian section of Pasture 1 as they do currently, then the exclusion of the T&Cs (above) would result in a gradual improvement to herbaceous riparian vegetation each year. Grazing within the riparian area, when not frozen, may result in a seasonal increase to soil compaction, a loss of soil moisture, a seasonal increase to soil surface disturbance, and less soil water storage capacity. The winter season of use proposed for Alternative F will minimize or eliminate suppression of riparian vegetation regrowth and function within the growing season. Alternative F adapts the same number of AUMs as Alternative D and reduces grazing to winter only. Compared to all other grazing alternatives, Alternative F will result in the fastest rate of recovery to the function of riparian, floodplain, and stream channel systems for this section of Sinker Creek.

Stream Channel/Floodplain

No substantial difference between this alternative and Alternative B related to Standard 3 (Stream channel/floodplain) is expected because the upstream water storage and diversions for irrigation lessen the influence from the contributing watershed and increase the influence of the riparian area. Therefore, the effects described above for standard 2 can be used as an indicator of effects to standard 3.

Water Quality

No substantial difference between this alternative and Alternative B related to Standard 7 (Water Quality) is expected. Short-term improvements would be difficult to discern compared to current condition, especially since the project area is such a small proportion of the contributing watersheds that influence recovery rates. The effects described above for Standard 2 would define the trend of effects to water

quality. An improvement to riparian conditions would eventually improve the water quality and support to beneficial uses within Sinker Creek.

3.3.4.2.6.4 Special Status Plants

Special status plant occurrences would be maintained because critical growing period grazing would be avoided in Pastures 1and 2. As a result, this alternative would continue to meet Standard 8 for special status plants.

3.3.4.2.6.5 Wildlife and Special Status Animals

Alternative F would allow only late fall/winter use, so there would be no growing season effects to upland vegetation. Utilization levels of up to 50% would be allowed, but based on the AUM and stocking rate, the level of use may be less than in Alternatives B and C (and the same as Alternative D). The allotment would continue to not meet Standard 8 (threatened and endangered animals) in upland habitat because of past plant community changes (loss of large bunchgrasses; presence of invasive plants), but current livestock management would not be a causal factor. The allotment would continue to not meet Standard 8 (threatened and endangered animals) in riparian habitat because of water diversions, but significant progress is expected to be made due to the winter season of use and expected light utilization. Winter grazing at a reduced intensity would be expected to maintain adequate ground cover and existing perennials.

Effects to individual wildlife species and their habitats resulting from Alternative F in the Joyce FFR Allotment are detailed under Fall (Section 3.2.2.5) and Winter (Section 3.2.1.5) Grazing in Environmental Consequences Common to All Allotments.

3.3.4.2.6.6 Social and Economic Values

This alternative includes a 50 percent decrease in active use AUMs compared to Alternative B. There would no adverse effects to the socioeconomic values of Owyhee County as a result of this increase. The effect to the socioeconomic values of Owyhee County are described in Section 3.1.7. The value to the community would be as shown in Table 3.19. The ranch would continue contributing to employment and the purchase and sale of goods and services in the county though at a decreased rate.

3.3.4.2.6.7 Cultural Resources

The effects to this resource would be as described in Section 3.2.6.7.

3.3.5 Montini FFR

3.3.5.1 Montini FFR Affected Environment

3.3.5.1.1 Vegetation, including Noxious Weeds

Upland Vegetation
Most of the Montini FFR Allotment is mapped as an unlabeled ecological site in BLM's ecological site layer. Of the identified sites, most abundant is the Loamy 8-12" site, with smaller amounts of Sandy Loam 8-12" and Calcareous Loam 7-10" sites. Based on the IDT's 3/18/2013 field visit, much of the unmapped areas appear to be similar proportions to the labeled polygons (USDI-BLM 2013). In addition, there are large inclusions of shallow, cindery soil and small slickspots with sparse vegetation. There are also steep, rocky slopes on the edges of the buttes and dropping into the Snake River and other drainages. Also, a saline bottom ecological site occurs in the Thomas Flats area (unmapped).

The current vegetation in the Montini FFR Allotment consists primarily of a shrub overstory and a highly depleted understory, consisting mainly of cheatgrass with some Sandberg bluegrass and very few other species. The shrub overstory is indicated by PNNL mapping, while relatively few acres are mapped as exotic annuals.

Table 3.3.35 - Montini FFR Allotment (BLM lands only) Existing Vegetation based on PNNL Mapping

Vegetation Cover Type	Percent of Allotment (BLM lands only)
Big Sagebrush	66%
Salt Desert Shrub	18%
Sparse vegetation	10%
Exotic Annuals	4%
Miscellaneous (Ag, wet meadow, greasewood)	2%

Based on point intercept data from a 2013 field visit, the plant communities are highly altered from reference conditions because of the loss of virtually all of the large perennial bunchgrasses and native forbs and the reduction in Sandberg bluegrass and biological soil crusts (Corbin 2013). Shrub cover is close to reference conditions for the harsh site, and a diversity of shrub species is present, although composition has likely been altered across the allotment, with fewer winterfat and budsage and more greasewood than expected. Cheatgrass and bare ground (and probably gravel) are higher than expected under reference conditions.

Figure 3.3.22 - Montini FFR Allotment – Mixed desert shrub and cheatgrass community, March 2013

No large fires are mapped within the Montini FFR Allotment. No trend plots have been established, and little utilization monitoring has been conducted.

Noxious and Invasive Weeds
No noxious weeds are mapped within the Montini FFR Allotment, and none were noted in the March 8, 2013 visit. Invasive weeds are pervasive across the allotment, particularly cheatgrass, along with more localized Russian thistle, halogeton, tumble-mustard, flixweed, bur buttercup, kochia, teasel, and clasping pepperweed. Russian olive is fairly common in riparian areas along the Snake River and parts of Sinker Creek in the allotment.

Biological Soil Crusts
Biological soil crusts were observed with fairly low cover across the allotment, and measured at 3% cover in a point intercept transect in 2013. Crusts consisted primarily of soil moss, with some soil lichen (more lichen in the small clay inclusions).

Idaho S&Gs
The Montini FFR Allotment was evaluated under Standard 6 rather than Standard 4 (or 5) because although there is a shrub component, the lack of perennial grass (besides low cover by Sandberg bluegrass) makes the exotic plant communities standard more appropriate than the native plant communities standard.

Standard 6 is being met because native shrubs' cover and vigor are being maintained, noxious weeds are not increasing, and adequate litter is present for site protection and to replenish soil nutrients relative to the altered site potential.

It the current season (late winter/early spring) and level of use (based on 2007 and 2010 utilization) are appropriate to maintain the native shrub component and provide adequate soil cover (non-persistent litter) for site protection and to replenish soil nutrients. The litter cover varies with precipitation, with cheatgrass sparse in drier years and more abundant in wetter years. Cheatgrass does not appear to be

limited by grazing management (note the low utilization figures), but rather by naturally low precipitation at this low elevation site and/or other site characteristics. Although the permit allows use at any time of year, the history of actual use shows a fairly consistent pattern of late winter/early spring use, which provides regular deferment during the majority of the critical growing season. Thus, livestock grazing management conforms with Guidelines appropriate for Standard 6.

3.3.5.1.2 Soils

See Section 3.1.2 above.

3.3.5.1.3 Riparian/Water Quality

As described in the evaluations and determinations for the Montini FFR allotment, the standards 1, 2, and 3 are meeting standards. Standard 7 is not meeting standards because of water quality concerns; however, it was identified as making significant progress to meeting standards. Multiple field visits to the sections of riparian area within this allotment observed little to no evidence of livestock use within the riparian areas. Even though seasons of use vary between alternatives, all of the alternatives would implement similar AUM levels (except Alternative E with 0 AUMs). However, due to the lack of current grazing use, it is not expected that the current stocking level or proposed seasons of use proposed in any alternative would result in a different result. The riparian area has not been used by livestock and is not expected to be used in the future either, even though there was a change to the season of use. Therefore, none of the alternatives would affect riparian function, channel function, and water quality (standards 2, 3, and 7 respectively).

3.3.5.1.4 Special Status Plants

Six species of special status plants may occur in the Montini FFR Allotment. Some are specifically mapped within the allotment, and some have non-specific locations recorded that may or may not be within the allotment. Occurrence records for these species date from 1971 to 2013, with few recent monitoring visits in this allotment.

Table 3.3.36 - Special Status Plant Species on BLM Land in the Montini FFR Allotment

Species	Occurrence Notes
Snake River milkvetch *Astragalus purshii* var. *ophiogenes*	Part of one occurrence, last visited in 2000
Desert pincushion *Chaenactis stevioides*	Small part of one occurrence, last visited in 2000
White eatonella *Eatonella nivea*	Non-specific location, likely within allotment but unknown whether on private or BLM; last visited in 1974
Cowpie buckwheat *Eriogonum shockleyi* var. *packardiae*	Non-specific location, likely not within allotment; last visited in 1971
White-margined wax plant *Glyptopleura marginata*	One occurrence discovered in 2013.
Rigid threadbush *Nemacladus rigidus*	One occurrence discovered in 2013.

No recent monitoring information is available for previously recorded special status plants in the Montini FFR Allotment, but two new occurrences were discovered in 2013. Previous records indicate threats from cattle grazing (2000), cheatgrass, and fire, where threats were noted. The occurrences of white-margined wax plant and rigid threadbush discovered in 2013 are somewhat impacted by cheatgrass and potentially by other weeds (related to unauthorized supplemental hay feeding), but not directly by winter grazing.

Plant communities in the allotment are highly altered from reference conditions (see Standard 6), and thus special status plant habitat is also likely to be highly altered.

Standard 8 for special status plants is not being met in the Montini FFR, but current livestock grazing is not a significant causal factor. Native plant communities throughout the allotment are highly altered from reference conditions, as indicated by the virtual lack of perennial grasses and presence of cheatgrass. Although special status plants generally grow on specialized soil types (such as open sandy spots or ash outcrop inclusions) where cheatgrass is less likely to become dominant, the special status plant habitat has also been highly altered by the presence of cheatgrass and lack of diverse perennials, which has affected the plant communities' nutrient, energy, and hydrologic cycling.

Although the permit allows use at any time of year, the history of actual use shows a fairly consistent pattern of late winter/early spring use (generally February and March). The current season of use (as shown in actual use reports) and level of use (as indicated by utilization) are appropriate to maintain special status plant occurrences in the Montini FFR Allotment. The causal factors for not meeting Standard 8 for special status plants are historic grazing (which altered the plant communities' current ecological processes by removing perennial bunchgrasses) and invasive weeds, primarily cheatgrass.

Current livestock grazing management is not significantly impacting Snake River milkvetch because this plant is a low, perennial forb which is mostly dormant during the typical season of use (later winter/early spring), with all growing points at or below ground level, so mostly not subject to grazing impacts at that time, although plants probably begin to emerge by late March. Heavy trampling could dislodge individual plants, but the current level of use does not appear likely to create heavy trampling effects in Snake River milkvetch habitat.

If cowpie buckwheat occurs in the Montini FFR Allotment, dormant or early season grazing could affect this tufted perennial plant because its growing points are above ground, and plants would be subject to herbivory and trampling year-round. However, its habitat of gravelly benches is unlikely to be heavily used by livestock, so significant effects to plants or habitat would not be expected.

The annuals desert pincushion, white eatonella, rigid threadbush, and white-margined wax plant are unlikely to be affected by most of the typically used season, because these plants germinate in the spring and are active from spring to early summer. Late March or April use, when plants are beginning to germinate, may affect some plants by trampling on emerging seedlings, but these species' habitat (specialized soil open areas within sagebrush or salt desert shrub) is generally not highly used by livestock, and thus the combination of the current season and level of use recorded in the Montini FFR Allotment is unlikely to be negatively affecting these occurrences.

3.3.5.1.5 Wildlife and Special Status Animals

In addition to the general overview of the Affected Environment for Wildlife Resources in the Fossil Butte Group allotments presented above, descriptions of the current condition of species and their habitats within the Montini FFR allotment are based on the 2013 Rangeland Health Evaluation and Determination Report (USDI BLM, 2013a), Affected Environment sections of the Vegetation and Water and Riparian Resources Fossil Butte Group EA, one 2013 field visit, current element occurrences in IFWIS (IDFG, 2012), and consultation with local wildlife professionals.

Standards/Idaho S&Gs

Standards 1- 7 provide the basis for general wildlife habitats within the Montini FFR Allotment that support Standard 8, Threatened and Endangered Animals. Wildlife habitat requirements specific to individual special status animal species are evaluated under Standard 8, as described in USDI-BLM 1997.

Upland Habitat
Information used to evaluate Standard 8 for upland habitats include one 2002 field evaluation of Rangeland Indicators, the 2007 Assessment, 2007 and 2010 utilization and photographs, one 2013 field visit, and BLM's noxious weed GIS layer.

Figure 3.3.23 - Montini FFR Allotment field visit– Mixed desert shrub and cheatgrass community, March 2013

Based on the March 2013 field visits and utilization photos, the shrub component is being maintained similar to reference conditions. No noxious weeds are mapped within the allotment. Utilization was measured in 2007 and 2010, on cheatgrass, at 9% and 7% respectively. Ground cover data collected in 2013 indicates adequate litter for an annual-dominated herbaceous community to provide ground cover.

The Montini FFR Allotment is managed as an exotic plant community due to the loss of perennial bunchgrasses and the dominance of cheatgrass. Upland habitats managed under Standard 6 do not meet the requirements of Standard 8. Vegetation composition, structure, and function are lacking or absent in these communities, substantially reducing effective nesting, hiding, escape, travel, and foraging cover values for all upland wildlife species.

The native shrub component within the allotment is being maintained. However, no improvement in native plant functional/structural groups or the amount of invasives (cheatgrass) within the understory is apparent, so there is no indication of progress being made toward meeting Standard 8. Current livestock grazing management does not appear to be a significant causal factor because the season of use occurs mostly during perennial plants' dormant season, which has fewer effects than growing-season grazing.

A significant causal factor for not meeting Standard 8 is the presence of invasive weeds, primarily cheatgrass. Invasive weeds have become dominant in the shrub understory due to the reduction in large bunchgrasses as a result of historic grazing practices.

Riparian Habitat
Information used to evaluate Standard 8 for riparian habitats include a 2001 riparian inventory and assessment, the 2007 assessment, one 2012 PFC assessment, one 2013 field visit, and BLM's noxious weed GIS layer. As discussed above, riparian areas include approximately 4 miles of the Snake River and 0.75 miles of Sinker Creek.

Figure 3.3.24 - Sinker Creek riparian field visit– Montini FFR (Pasture 1), May 2013

Livestock have limited access to the Snake River due to bluffs and steep terrain. Consequently, livestock grazing has little effect on the river and adjacent riparian vegetation, so the Snake River is not analyzed for Standard 8.

One PFC assessment was conducted on the reach of Sinker Creek within the allotment in 2012. The 2012 PFC assessment rated the reach as properly functioning. Many obligate riparian plant species were observed such as carex, rush, cattails, woody shrubs, and cottonwoods. Some upland species were beginning to encroach on upstream riparian areas. Tamarisk, knapweed, and cocklebur were observed in isolated locations. Perennial flow within the reach was observed. However, due to water diversions, the flow was reduced from previously monitored Sinker Creek locations upstream. Little to no impact from livestock grazing was observed.

One site visit to the reach was conducted by BLM personnel in 2013. As identified in a 2001 riparian inventory, the stream flow, "goes underground and the channel becomes non-distinct approximately 0.25 miles above the confluence with the Snake River." BLM observed stream channel "bed and bank" downstream to a point approximately 0.2 miles above the confluence with the Snake River. BLM observations confirmed minimal connectivity between Sinker Creek and the Snake River. BLM also observed evidence of sediment delivery by annual high flows. Sediment deposits were observed approximately 0.2 miles upstream from the Snake River but none were observed below that point. These deposits were fresh enough to indicate annual deposition, but dryer vegetation types in the valley bottom further indicated that surface water did not flow beyond the observed sediment deposition site. Woody and herbaceous riparian vegetation was observed upstream from the terminus of the sediment deposits, indicating a high water table for a majority of the year. Finally, surface water was observed at a point approximately 0.25 miles above the Snake River with active beaver dams, cattails, and large pools present.

Designated uses for this reach of Sinker Creek include cold water aquatic life and primary contact recreation. IDEQ 305b list identified this reach of Sinker Creek as water quality limited and not fully supporting cold water aquatic life due to flow alteration, sediment, and water temperature. Total Maximum Daily Loads (TMDLs) were developed for sediment and temperature.

Water quality parameters are not being met and cold water aquatic life is not fully supported in the lower reach of Sinker Creek due to flow alteration, sediment, and water temperature. Excess flow alteration, sediment, and water temperature levels reduce habitat quality for redband trout and other riparian obligate wildlife species and could potentially impact the Snake River physa. Because these water quality parameters are not being met, the allotment is not meeting Standard 8 for riparian wildlife habitat.

However, significant progress toward meeting Standard 8 for riparian wildlife habitat is indicated by recent improvement in the lower reach of Sinker Creek. The 2001 riparian inventory rated the reach at the high range of FAR, with no apparent trend. The 2012 PFC assessment rated the reach in PFC. Although PFC assessments do not directly assess riparian habitat suitability, stream-associated riparian areas that are in PFC generally provide adequate cover and other necessary riparian elements.

Comparative photographs of the reach taken during 2000 utilization monitoring and 2013 field visits also document improvements in hydric vegetation along the length of the reach. Xeric invader and shallow rooted species remain minor components of the floodplain. Improvements in existing deep rooted riparian vegetation and the minor composition of xeric and shallow rooted species also indicate significant progress toward meeting Standard 8.

Current livestock grazing management practices are not a significant causal factor for not meeting Standard 8 because the majority of the season of use occurs during perennial plants' dormant season, which results in fewer impacts to riparian vegetation than growing-season grazing. Little to no impact from livestock grazing was observed during multiple field visits in 2012 and 2013.

A significant causal factor for not meeting Standard 8 is that water quality parameters are not being met and cold water aquatic life is not fully supported in the lower reach of Sinker Creek due to flow alteration, sediment levels, and water temperature. Sinker Creek is rated as PFC but is limited by upstream water diversions on private land along the majority of its length. Sediment levels within the stream causing impacts to the Snake River are not an issue due to the buffering ability of existing riparian vegetation, beaver ponds, and upstream water diversions. The storage of water in Hulet Reservoir, when combined with de-watering caused by existing water diversions, are the primary contributor to any failure to meet water temperature parameters in Sinker Creek.

Focal Special Status Wildlife Species

Greater sage-grouse

In addition to the general discussion of sage-grouse, the majority of the Montini FFR allotment provided suitable habitat for sage-grouse historically, and may have supported significant populations (USDI-USFWS 2013b). Currently, suitable sage-grouse habitats are very limited or absent within the allotment. The majority of potential sage-grouse habitat has been highly altered due to historic livestock grazing. Plant communities are highly altered from reference conditions because of the loss of virtually all of the large perennial bunchgrasses and native forbs. Shrub cover is probably close to reference conditions, and a diversity of shrub species is present, although composition has likely been altered across the allotment, with more greasewood present than expected.

Based on an interim, updated (2012) version of the Idaho Sage-grouse Habitat Planning Map (ISHPM) completed by the Idaho Sage-grouse Advisory Committee ((ISAC) 2006), the entirety of the Montini FFR allotment (100%, all land ownerships included) is not considered key sage-grouse habitat. Makela and Major (2012) identified the allotment as containing no areas rated as PPH or PGH.

Typically, sage-grouse in the vicinity of the allotment congregate on communal strutting grounds (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 as 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 data acquired through lek surveys, telemetry studies, and incidental observations, sage-grouse do not occupy seasonal habitats within the allotment.

No sage-grouse habitat assessments have been conducted within the Montini FFR allotment. However, a point intersect transect conducted on the 3/18/2013 field visit indicated insufficient sagebrush and perennial grass canopy cover to provide adequate cover and forage for sage-grouse. These data, indicate a general lack of marginal (missing some necessary indicators) or suitable (necessary food/cover indicators are present) sage-grouse habitat throughout the allotment due to a reduction in sagebrush and large stature perennial bunchgrasses, dominance of cheatgrass in the understory, and low preferred forb diversity and abundance.

Sage-grouse have been shown to select brood-rearing habitat with taller grasses and increased herbaceous cover; increased herbaceous biomass is correlated with invertebrate prey abundance, and the increased vertical and horizontal cover it affords most likely imbues greater protection from predators, both of which could increase juvenile survival (Kaczor et al. 2011). No assessments of late brood-rearing habitat are known to have been conducted within the Montini FFR allotment. Assessed riparian and wetland areas within the allotment that sage-grouse could potentially use as late brood-rearing habitat are currently identified as PFC. However, the distance from active leks and lack of suitable nesting habitat within the allotment likely precludes brood rearing from occurring within the allotment.

No known leks occur within the Montini FFR allotment. The allotment is not located within the 75% breeding bird density (BBD) buffer (4 miles) of any occupied lek or lek with undetermined status (based on the presence of 2 or more males observed during surveys in the last five years) within Idaho. The 75 % BBD buffer is highly correlated to breeding habitat surrounding leks and encapsulates 75% of male lek attendance along with 60% of currently occupied habitat within Zone IV (Makela and Major 2012). The remaining 40% of currently occupied habitat (which occurs outside the 75% BBD) is likely the more fragmented habitat (Doherty et al. 2011).

Due to the distance from occupied leks, the lack of suitable seasonal habitats due to vegetation community shifts, and the lack of recorded sage-grouse observations within the area, effects to sage-grouse from permitted livestock grazing on the Montini FFR allotment will not be discussed further.

Columbia River Redband Trout

In addition to the general discussion of redband trout, affected environment conditions within the Montini FFR allotment include the lower reach of Sinker Creek. Occurrence information available from IDFG documents redband trout in the lower reach of Sinker Creek, adjacent to the northwestern border of the allotment (IDEQ 2003).

IDEQ identified the middle and lower reaches of Sinker Creek as not fully supporting cold water aquatic life and salmonid spawning beneficial uses. While Sinker Creek is listed for salmonid spawning, there is no evidence of redband spawning in the reach found within the Montini FFR allotment. Young-of-the-year trout have not been found in past electrofishing efforts. This is likely due to a combination of factors relating to flow alteration, lack of spawning habitat due to stream characteristics, and barriers to fish migration due to Hulet Reservoir. Idaho Department of Fish and Game fisheries data show redbands higher in the watershed above Hulet Reservoir (IDEQ 2003).

The Idaho Department of Fish and Game has determined that the listed section of Sinker Creek has not historically, nor is currently, a spawning habitat due to gradient and temperature regimes. IDFG further states that this section of Sinker Creek has historically served primarily as a migratory corridor. The reservoir and the various diversions also serve as barriers to fish migration to the downstream section for spawning. The storage of water in the reservoir as well as the de-watering of the stream result in higher water temperatures, but it is unlikely that changes in management activities would result in lowering water temperatures to salmonid spawning criteria due to the overriding effect of high ambient air temperatures and flow alteration activities (IDEQ 2003).

Since salmonid spawning does not occur in the lower section of Sinker Creek, the temperature standard for salmonid spawning will not be applied; instead the cold water temperature standard will apply to that section throughout the year. The lower reach of Sinker Creek has shown temperature violations and thus, cold water aquatic life uses are not currently fully supported (IDEQ 2003).

As discussed in the Snake River physa analysis, this section of Sinker Creek appears to have reached its potential and is limited by upstream diversions; current livestock grazing does not appear to impact this stream reach. Sinker Creek has a healthy riparian vegetation community consisting of willows, cottonwood, and various other woody and herbaceous species. These riparian plants shade the streams thereby lowering water temperature, have root systems capable of holding and securing streambanks during high flow events, and slow flows and effectively buffer sediment and other contaminants from the upland area, thereby decreasing the sediment load. Sediment is likely not an issue due to buffering ability of riparian vegetation, beaver ponds, and upstream water diversions. It is likely that de-watering caused by water diversions are the primary contributor to any failure to meet water temperature criteria on Sinker Creek.

Migratory Birds, Raptors, and other Birds (including Special Status Species)
In addition to the general discussion of migratory birds, raptors, and other bird species and their habitats in Section 3.1.5, a variety of bird species have the potential to occur or have been documented within and in the vicinity of the Montini FFR allotment (Appendix E).

Big Game and other Mammals (including Special Status Species)
In addition to the general discussion of big game and other mammal species and their habitats in Section 3.1.5, various big game and special status mammal species use a variety of habitats in the Montini FFR allotment for some or all of their seasonal needs.

Approximately 126 acres of public land within the Montini FFR allotment has been identified by IDFG as bighorn sheep habitat. A small bachelor herd of eight rams were observed approximately 3.0 miles from the allotment boundary, along the Snake River canyon near the lower Swan Falls pump station, in 2009. However, based on occurrence records, it does not appear that bighorn sheep have made use of this part of the allotment historically.

3.3.5.1.6 Social and Economic Values

The socioeconomic environment for the Montini FFR Allotment is as described in Section 3.1.7.

As there is no change proposed in Alternatives B-D, the sections analyzing those alternatives do not include a discussion of socioeconomic values. Please refer to the Section 3.3.5.2.5.6 for a discussion of the effects of not authorizing grazing in the Montini FFR Allotment for 10 years.

3.3.5.1.7 Cultural and Paleontological Resources

Grazing was listed as having minor effects on two of the nine sites with effects listed on 2012 records for this allotment. In 2003 one other site had a cattle trail that apparently ran through the site area, but no artifacts were observed in the vicinity so it may have had no impact as opposed to severe erosional impacts noted in both 2006 and 1958 and moderate deflation in 2006 described at the same site. In 1958 erosion had almost completely destroyed a site, another had been 30% destroyed by relic digging, and two others were listed as intact. These four were later combined into a single site that is listed on the National Register. Looting in the form of relic digging and surface collection was described at four of the eight sites reported in 1977, vandalism at two sites, and other 1977 disturbances noted were road use, erosion (two sites), development, rodent burrowing (two sites). In 2006, looting was noted as a severe at two sites , while severe recreation impacts were noted at three sites, with two others listed as minor to moderate. Erosion was listed as moderate to severe at six sites, and minor at two; minor road impacts were listed at four sites, minor structural collapse and deflation and moderate rodent burrowing disturbance at one site each in 2006.

3.3.5.2 Montini FFR Environmental Consequences

3.3.5.2.1 Alternative A

Under this alternative, grazing use would occur as allowed under the existing permit. Alternative A is not being analyzed in detail for the Montini FFR Allotment because it is virtually the same as Alternative C (the permittee proposal).

3.3.5.2.2 Alternative B

3.3.5.2.2.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table. These figures indicate the degree of effects relating to the season, intensity, duration, frequency, and distribution of use, as well as the weed introduction potential and effects to biological soil crusts, all as described in Section 3.2.

Table 3.3.37 - Montini FFR Allotment Vegetation Indicators for Alternative B

Indicator	Montini FFR – Pastures 1 & 2
Season of use (Dates)	1/10 -4/30
Duration (Days per allotment)*	111
Frequency	Once, every year
Total AUMs	140
Acres/AUM	11.9
Utilization	Expected light; limit <50%
Water haul sites	1
Number of livestock**	Not specified

*Days per pasture are not specified
**FFR allotment permits allow livestock numbers at permittee's discretion, as long as resource degradation doesn't occur on public land.

The Montini FFR Allotment would continue to meet Standard 6 because adequate ground cover (mostly cheatgrass litter) would remain after grazing use, and existing perennials would be maintained. Although use could occur into April, within the critical growing period, use is typically in late winter/early spring and would be expected to continue to be light. Only a short period of critical growing season use (if any) is expected, leaving adequate critical growing season time for remnant perennial plant regrowth to occur without being re-grazed. Cheatgrass would continue to dominate the herbaceous communities in the allotment, and existing shrubs and remnant biological soil crusts and Sandberg bluegrass would be maintained. Noxious weeds would continue to be few and not increasing. No supplemental feeding

would be authorized in this alternative, eliminating a potential source of noxious and non-noxious weed seed introduction.

3.3.5.2.2.2 Soils

See Sections 3.2.1.2 above.

3.3.5.2.2.3 Riparian/Water Quality

There are not likely to be any effects to riparian areas, floodplain, and water quality as a result of continued application of the Winmill Stipulations and season of use T&Cs. The observed condition (negligible use of riparian areas) would be expected to continue through the term of the permit. Therefore the applicable Standards would continue to be met or make significant progress toward meeting.

3.3.5.2.2.4 Special Status Plants

Standard 8 (special status plants) would continue to not be met in the Montini FFR Allotment due to cheatgrass but not grazing impacts. Special status plants would not be substantially impacted by grazing because use is primarily before the critical growing season and is expected to be light, particularly in the localized occurrence areas. Although two special status plant occurrences are within ¼ mile of the water haul site, they are annuals that generally germinate after the period of use and are up on the hill above the water haul site.

3.3.5.2.2.5 Wildlife and Special Status Animals

Under Alternative B, the allotment would continue to not meet Standard 8 for threatened and endangered species in upland habitats. Livestock grazing would not be a causal factor for not meeting the Standard because use typically occurs in the late winter/early spring and would be expected to be light. Only a short period of critical growing season use (if any) is expected, leaving adequate critical growing season time for remnant perennial plant regrowth to occur. Adequate ground cover and existing perennials would be maintained. Cheatgrass would continue to dominate the herbaceous communities in these allotments and Sandberg bluegrass and existing shrubs (in Montini) would be maintained.

Under Alternative B, the Montini FFR Allotment would continue to not meet Standard 8 (threatened and endangered animals) in riparian habitat, but significant progress toward meeting the Standard would continue to be made. Utilization of key herbaceous riparian vegetation would not exceed 60% during the dormant season and a minimum stubble height of 4 inches at the end of the growing season would be required. Utilization of key riparian browse vegetation would not exceed 50% of the current annual twig growth. These terms and conditions would be expected to result in gradual improvements to herbaceous vegetation each year. However, due to de-watering caused by upstream water diversions, it is likely that Sinker Creek will continue to fail to meet IDEQ water quality standards and fail to fully support cold water aquatic life beneficial uses.

Effects to individual wildlife species and their habitats resulting from Alternative B in the Montini FFR Allotment are detailed under Winter (Section 3.2.1.5) and Spring (Section 3.2.2.5) Grazing in Environmental Consequences Common to All Allotments.

3.3.5.2.2.6 Cultural and Paleontological Resources

Alternative B would be unlikely to have any effects on cultural or paleontological resources due to the expected similarity to or slight improvement from conditions that have occurred in the past. No cultural or paleontological resources exist in the vicinity of the existing water haul.

3.3.5.2.3 Alternative C

3.3.5.2.3.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table.

Table 3.3.38 - Montini FFR Allotment Vegetation Indicators for Alternative C

Indicator	Montini FFR – Pastures 1 & 2
Season of use (Dates)	Discretionary yearlong
Duration (Days per allotment)	Discretionary
Frequency	Discretionary
Total AUMs	140
Acres/AUM	11.9
Utilization	Expected light; limit <50%
Water haul sites	1
Number of livestock*	Not specified

*FFR allotment permits allow livestock numbers at permittee's discretion, as long as resource degradation doesn't occur on public land.

The Montini FFR Allotment would be used the permittee's discretion for season and duration of use and number of cattle, as long as total AUMs and 50% utilization limits were not exceeded. Thus, up to 50% use during the growing season could impact the few native perennial grasses present, resulting in not meeting Standard 6, although adequate soil cover by litter is expected to maintain the exotic annual plant community. If use continued as it has in the past, with expected light use primarily outside of the growing season, then environmental consequences would be the same as Alternative B, and Standard 6 would be met. Cheatgrass would be expected to continue to dominate plant communities, and noxious weeds would be expected to be static. Feeding certified noxious weed-free hay (baiting) to assist cattle movement would result in a increased potential for non-noxious weed seed introduction in hay feed areas, as well as concentrating use around feeding areas for a short time.

3.3.5.2.3.2 Soils

See Sections 3.2.1.2 above.

3.3.5.2.3.3 Riparian/Water Quality

There may be no effects to riparian areas, floodplain, and water quality from livestock grazing. The observed condition (negligible use of riparian areas) could continue through the term of the permit. Therefore, the applicable Standards may continue to be met or make significant progress toward meeting. However, Alternative C allows discretionary management for season of use and does not apply T&Cs within the riparian area, there is a potential that the riparian area could be grazed more heavily in the future. Depending on the actual season and the actual level of use within the riparian area, this alternative has the potential to impair riparian conditions.

3.3.5.2.3.4 Special Status Plants

Spring and early summer use would coincide with the critical growing period for the special status plants in the Montini FFR Allotment, and thus not meet Standard 8 for special status plants. If use continued as it has in the past, with expected light use primarily outside of the growing season, then environmental consequences would be the same as Alternative B, and special status plants would be maintained (current livestock grazing not a causal factor for Standard 8 special status plants).

3.3.5.2.3.5 Wildlife and Special Status Animals

The allotment would be used at each permittee's discretion for season and duration of use and number of cattle, as long as total AUMs and 50% utilization limits were not exceeded. Thus, up to 50% use during the growing season could impact the few native perennial grasses present in the allotment, resulting in not meeting Standard 8 for threatened and endangered animals in upland habitat, although adequate soil cover and maintenance exotic annual plant community is expected. If use continued as it has in the past, with expected light use primarily outside of the growing season, then environmental consequences in upland habitats would be the same as Alternative B, and Standard 8 in would not be met due to past plant community changes, but current livestock grazing management would not be a causal factor. If no more than light use occurred in the summer and no more than moderate use occurred in the spring, fall, or winter, then the Montini FFR Allotment would continue to not meet Standard 8 (threatened and endangered animals) in riparian habitat because of water diversions, but existing riparian conditions are likely to be maintained and possibly improve slowly over the long term. Cheatgrass would be expected to continue to dominate plant communities in both allotments, and noxious weeds would be expected to be static.

3.3.5.2.3.6 Cultural and Paleontological Resources

Alternative C would have similar effects to B.

3.3.5.2.4 Alternative D

3.3.5.2.4.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table.

Table 3.3. 39 - Montini FFR Allotment Vegetation Indicators for Alternative D

Indicator	Montini FFR – Pastures 1 & 2
Season of use (Dates)	11/1 – 3/15
Duration (Days per allotment)*	135
Frequency	Once, every year
Total AUMs	140
Acres/AUM	11.9
Utilization	Expected light; limit <50%
Water haul sites	1
Number of livestock**	Not specified

*Days per pasture are not specified.
**FFR allotment permits allow livestock numbers at permittee's discretion, as long as resource degradation doesn't occur on public land.

The Montini FFR Allotment would be limited to winter and early spring use, similar to current management except with a longer allowable period within the dormant season (starting November 1 rather than January as in current management). The Montini FFR Allotment would have less early spring use than Alternative B because use would end March 15 rather than April 30, thus virtually eliminating growing season use in this allotment. The level of use, based on AUMs and stocking rate, would be unchanged from current management. A longer season could be used, but because it is almost entirely within the dormant season, there would not be re-grazing impacts to growing plants. As in the other alternatives, because there would be no limit on the number of animals, the AUMs could be used with more animals over a shorter time period or fewer animals over the longer time (up to 135 days); with a higher number of animals, the potential for weed seed introduction is increased over a lower number of animals. Overall impacts to grasses, shrubs, forbs, weeds, and biological soil crusts would be nearly the same as or less than current management because a longer season of use within the dormant season, along

with reduced early spring use, at the same overall level of use would have virtually the same effects on these resources. Thus, Alternative D would continue to meet Standard 6 and Standard 8 (Special Status Plants) in the Montini FFR Allotment. No supplemental feed would be authorized (unlike Alternative C), eliminating this potential source of weed seed introduction, but increased herding would be used to facilitate cattle movement in the Montini Allotment, with negligible effects to vegetation.

3.3.5.2.4.2 Soils

See Sections 3.2.1.2 above.

3.3.5.2.4.3 Riparian/Water Quality

Even though a longer grazing season may be used, the implementation of Alternative D is not expected to result in a change of effects to riparian areas, floodplain, or water quality compared to current grazing. The similarity of assessed effects is due to the grazing season occurring during the dormant season as described above (Vegetation). The observed condition (negligible use of riparian areas) would be expected to continue through the term of the permit. Therefore the applicable Standards would continue to be met or make significant progress toward meeting.

3.3.5.2.4.4 Special Status Plants

Standard 8 (special status plants) would continue to not be met in the Montini FFR Allotment due to cheatgrass but not grazing impacts. Effects would be similar to those described in Alternative B except use would end before annual special status plant germination, eliminating direct effects to these plants.

3.3.5.2.4.5 Wildlife and Special Status Animals

The allotment would be limited to winter and early spring use, similar to current management except with a longer allowable period within the dormant season (starting November 1 rather than January or March as in current management). The Montini FFR Allotment would have less early spring use than Alternative B because use would end March 15 rather than April 30, thus virtually eliminating the effects of spring use in this allotment. The level of use, based on AUMs and stocking rate, would be unchanged from current management. A longer season could be used, but because it is almost entirely within the dormant season, there would not be re-grazing impacts to growing plants. As in the other alternatives, because there would be no limit on the number of animals, the AUMs could be used with more animals over a shorter time period or fewer animals over the longer time (up to 135 or 151 days respectively for the two allotments). Overall impacts to upland habitats would be nearly the same as or less than current management because a longer season of use within the dormant season, or reduced early spring use, with the same overall use would have virtually the same effects on these resources. With the same intensity of use as current management, but reduced growing season effects, grazing management in the allotments under Alternative D would continue to not meet Standard 8 for threatened and endangered species in upland and riparian habitats due to past plant community changes, invasive weeds, and water diversions. Livestock grazing would not be a causal factor for not meeting the Standard because use typically occurs in the late winter/early spring and would be expected to be light.

3.3.5.2.4.6 Cultural and Paleontological Resources

Alternative D would be nearly identical to Alternative C, though active herding would be used to drive cattle while trailing. No changes in site significance would be expected regardless of trailing method.

3.3.5.2.5 Alternative E

3.3.5.2.5.1 Vegetation, including Noxious Weeds

Effects to vegetation from Alternative E in the Montini FFR Allotment are described in Section 3.2.5.1 (Environmental Consequences Common to All Allotments).

3.3.5.2.5.2 Soils

See Sections 3.2.1.2 above.

3.3.5.2.5.3 Riparian/Water Quality

There would not be any effects to riparian areas, floodplain, and water quality from livestock grazing. The observed condition (negligible use of riparian areas) would be expected to continue through the term of the permit. Therefore the applicable Standards would continue to be met or make significant progress toward meeting.

3.3.5.2.5.4 Special Status Plants

Effects to Special Status Plants from Alternative E in the Montini FFR Allotment are described in Section 3.2.5.1 (Environmental Consequences Common to All Allotments).

3.3.5.2.5.5 Wildlife and Special Status Animals

Effects to individual wildlife species and their habitats resulting from Alternative E in the Montini FFR Allotment are detailed in Section 3.2.5.5 of Environmental Consequences Common to All Allotments.

3.3.5.2.5.6 Social and Economic Values

This alternative would cancel all authorized use AUMs on the allotment for a period of 10 years, after which applications for grazing permits would be accepted. This would likely have a substantial socioeconomic impact on the ranch operators, the people they employ, the businesses where the operators purchase supplies, and the communities that are supported by livestock operation activities. The ranchers would have to relocate their livestock to other private or state land, possibly outside of Owyhee County, sell their livestock, and/or close the ranch completely. The ranchers already likely purchase supplies from stores closer to the new grazing locations, so income from taxes and sales in these communities would drop, and the income from the livestock sales would go to the counties where the base ranches are located. The total loss of value to the community if these AUMs were completely removed from Owyhee County would be $9,371.60.

The people previously employed by the ranches would have to look for new jobs if any of the ranches closed; the agricultural sector in both counties is large enough that they may not have much trouble finding similar work elsewhere, but they may have to relocate or commute long distances, which could be costly. Finding work in other sectors may be difficult because unemployment is so high. The greatest loss to the local communities as a result of ranch closures would be the loss of social cohesion. As noted above, researchers have found that ranchers have more social networks throughout the community, and closing a ranch can lead to a disruption in these networks.

3.3.5.2.5.7 Cultural and Paleontological Resources

Effects to Cultural and Paleontological Resources for Alternative E are listed under Environmental Consequences Common to All Allotments (Section 3.2.5.8).

3.3.6 Murphy FFR

3.3.6.1 Murphy FFR Affected Environment

3.3.6.1.1 Vegetation, including Noxious Weeds

Upland Vegetation
The Murphy FFR Allotment is in the Sandy Loam 8-12" ecological site. The current vegetation of the Murphy FFR Allotment is mapped as salt desert shrub and non-native annual grassland, with some Wyoming sagebrush, according to PNNL and LANDFIRE data. From 2012 utilization photos, aerial photography, and drive-by observations, the shrub canopy appears sparse, and the area is dominated by cheatgrass.

Utilization is available only for May 2012, and indicated negligible use (<5% utilization) on cheatgrass. Utilization photos show high cover by cheatgrass.

Figure 3.3.25 - Utilization monitoring in the Murphy FFR, May 2012

No large fires are mapped in the Murphy FFR Allotment. No trend plots have been established.

Noxious and Invasive Weeds
No noxious weeds are reported for the Murphy FFR Allotment. Invasive weeds, primarily cheatgrass but also tumble-mustard and probably others, are the dominant vegetation in the allotment.

Biological Soil Crusts
No information on biological soil crusts is available, but based on the cheatgrass cover, it is likely that crusts are highly reduced to absent over much of the allotment.

Idaho S&Gs
The 2003 Assessment and Determination indicate that the allotment was meeting Standard 6, although it did not conform with Guideline #1 because the amount of ground cover remaining at the end of the

grazing season was marginal. No noxious weeds were present, but the parcel was dominated by annual grasses. Very few Sandberg bluegrass plants were observed and bare ground was a little higher than expected. Standards 4 and 5 do not apply because of the lack of native plant communities or seedings.

3.3.6.1.2 Soils

See Section 3.1.2 above.

3.3.6.1.3 Riparian/Water Quality

Riparian Areas and Wetlands
This allotment does not include management within riparian areas and wetlands or within stream channel/floodplains and therefore there are no applicable effects to either of these standards and within this allotment there is no capability to cause an effect to water quality either.

Stream Channel/Floodplain
This allotment does not include management within riparian areas and wetlands or within stream channel/floodplains and therefore there are no applicable effects to either of these standards and within this allotment there is no capability to cause an effect to water quality either.

Water Quality
This allotment does not include management within riparian areas and wetlands or within stream channel/floodplains and therefore there are no applicable effects to either of these standards and within this allotment there is no capability to cause an effect to water quality either.

This resource discussion will not be carried further in the Environmental Consequences Section.

3.3.6.1.4 Special Status Plants

No occurrences of specials status plants are recorded in the allotment, and based on the highly altered vegetation it is unlikely that any occur there. No botanical surveys are documented in the allotment.

3.3.6.1.5 Wildlife and Special Status Animals

In addition to the general overview of the Affected Environment for Wildlife Resources in the Fossil Butte Group allotments presented above, descriptions of the current condition of species and their habitats within the Murphy FFR allotment are based on the 2013 Rangeland Health Evaluation and Determination Report (USDI BLM, 2013a), Affected Environment sections of the Vegetation and Water and Riparian Resources Specialist Reports, recent personal observations, current element occurrences in IFWIS (IDFG, 2012), and consultation with local wildlife professionals.

Standards/Idaho S&Gs
Standards 1- 7 provide the basis for general wildlife habitats within the Murphy FFR Allotment that support Standard 8, Threatened and Endangered Animals. Wildlife habitat requirements specific to individual special status animal species are evaluated under Standard 8, as described in USDI-BLM 1997.

Upland Habitat
Information used to evaluate Standard 8 for upland habitats include the 2003 Assessment, 2012 utilization monitoring and photographs, aerial photography, PNNL vegetation cover data, and BLM's noxious weed GIS layer. The 2003 Assessment and Determination indicated that the amount of ground cover remaining at the end of the grazing season was marginal. No noxious weeds were present, but the pasture was dominated by annual grasses. Very few Sandberg bluegrass plants were observed and bare ground was a little higher than expected. Utilization is available only for May 2012, and indicated negligible use (<5% utilization) on cheatgrass. Utilization photos show high cover by cheatgrass (Figure 3.3.26).

The Murphy FFR Allotment is managed as an exotic plant community due to the loss of perennial bunchgrasses and the dominance of cheatgrass. Upland habitats managed under Standard 6 do not meet the requirements of Standard 8. Vegetation composition, structure, and function are lacking or absent in these communities, substantially reducing effective nesting, hiding, escape, travel, and foraging cover values for all upland wildlife species.

No indication of significant progress in native plant community health is apparent, so there is no indication of progress being made toward meeting the threatened and endangered animals Standard. Current livestock grazing management does not appear to be a significant causal factor because the season of use occurs mostly during perennial plants' dormant season, which has fewer effects than growing-season grazing.

A significant causal factor for not meeting Standard 8 is the presence of invasive weeds, primarily cheatgrass. Invasive weeds have become dominant in the understory due to the reduction in large bunchgrasses as a result of historic grazing practices.

Riparian Habitat

Riparian habitat does not occur on public lands within this allotment. Consequently, Murphy FFR is not analyzed under Standard 8 for riparian wildlife habitat.

Focal Special Status Wildlife Species

Greater sage-grouse

In addition to the general discussion of sage-grouse, the majority of the Murphy FFR allotment provided suitable habitat for sage-grouse historically, and the area may have supported significant populations (USDI-USFWS 2013b). Currently, suitable sage-grouse habitats are very limited or absent within the allotment. The majority of potential sage-grouse habitat has been highly altered due to historic livestock grazing. Plant communities are highly altered from reference conditions because of the loss of virtually all of the expected shrubs, large perennial bunchgrasses, and native forbs in the allotment.

Based on an interim, updated (2012) version of the Idaho Sage-grouse Habitat Planning Map (ISHPM) completed by the Idaho Sage-grouse Advisory Committee ((ISAC) 2006), the entirety of the Murphy FFR allotment (100%, all land ownerships included) is not considered sage-grouse habitat of any kind. Makela and Major (2012) identified the allotment as containing no areas rated as PPH or PGH.

Typically, sage-grouse in the vicinity of the allotment congregate on communal strutting grounds (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 as 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 data acquired through lek surveys, telemetry studies, and incidental observations, sage-grouse do not occupy seasonal habitats within the allotment.

No sage-grouse habitat assessments have been conducted within the Murphy FFR allotment. However, the 2003 Assessment and 2012 utilization monitoring indicated insufficient sagebrush and perennial grass canopy cover to provide adequate cover and forage for sage-grouse. These data indicate a general lack of marginal (missing some necessary indicators) or suitable (necessary food/cover indicators are present) sage-grouse habitat throughout the allotment due to a reduction in sagebrush and large stature perennial bunchgrasses, dominance of cheatgrass in the understory, and low preferred forb diversity and abundance.

Sage-grouse have been shown to select brood-rearing habitat with taller grasses and increased herbaceous cover; increased herbaceous biomass is correlated with invertebrate prey abundance, and the increased vertical and horizontal cover it affords most likely imbues greater protection from predators, both of which could increase juvenile survival (Kaczor et al. 2011). No assessments of late brood-rearing habitat are known to have been conducted within the Murphy FFR allotment. There are no know riparian or wetland areas on public lands within the allotment that sage-grouse could potentially use as late brood-rearing habitat. Agriculture activities on adjacent private land could provide some degree of late-brood rearing habitat. However, the distance from active leks and lack of suitable nesting habitat within the allotment likely precludes brood rearing from occurring within or in the vicinity of the allotment.

No known leks occur within the Murphy FFR allotment. The allotment is not located within the 75% breeding bird density (BBD) buffer (4 miles) of any occupied lek or lek with undetermined status (based on the presence of 2 or more males observed during surveys in the last five years) within Idaho. The 75 % BBD buffer is highly correlated to breeding habitat surrounding leks and encapsulates 75% of male lek attendance along with 60% of currently occupied habitat within Zone IV (Makela and Major 2012). The remaining 40% of currently occupied habitat (which occurs outside the 75% BBD) is likely the more fragmented habitat (Doherty et al. 2011).

Due to the distance from occupied leks, the lack of suitable seasonal habitats due to vegetation community shifts, and the lack of recorded sage-grouse observations within the area, effects to sage-grouse from permitted livestock grazing on the Murphy FFR allotment will not be discussed further.

Columbia River Redband Trout

A general discussion of affected environment for reband trout has been discussed previously. Riparian habitat does not occur on public lands within the Murphy FFR allotment. Utilization indicated negligible use (<5% utilization) on cheatgrass. Utilization photos show high cover by cheatgrass.

Based on this information, BLM has determined that currently permitted livestock grazing on the Murphy FFR allotment does not contribute to excess sediment loads or increased water temperature in the Snake River or within the Lower Rabbit Creek Sub-watershed. Due to the allotment's extremely small proportion of public land (0.2%) when compared to the total area of the Lower Rabbit Creek Sub-watershed and the lack of any lentic or lotic resources on public lands within the allotment, it is unlikely that any BLM authorized grazing activities within the allotment will have a measurable impact to sediment loads or increased water temperatures in the Snake River or the sub-watershed. Therefore, effects to redband trout from permitted livestock grazing on the Murphy FFR allotment will not be discussed further.\

Migratory Birds, Raptors, and other Birds (including Special Status Species)

In addition to the general discussion of migratory birds, raptors, and other bird species and their habitats in Section 3.1.5, a variety of bird species have the potential to occur or have been documented within and in the vicinity of the Murphy FFR allotment (Appendix E).

Big Game and other Mammals (including Special Status Species)

In addition to the general discussion of big game and other mammal species and their habitats in Section 3.1.5, various big game and special status mammal species use a variety of habitats in the Murphy FFR allotment for some or all of their seasonal needs.

3.3.6.1.6 Social and Economic Values

The socioeconomic environment for the Montini FFR Allotment is as described in Section 3.1.7.

As there is no change proposed in Alternatives B-D, the sections analyzing those alternative do not include a discussion of socioeconomic values. Please refer to the Section 3.3.6.2.5.5 for a discussion of the effects of not authorizing grazing in the Montini FFR Allotment for 10 years.

3.3.6.1.7 Cultural and Paleontological Resources

The small amount of public land in this FFR has not been surveyed for archaeological materials and none are recorded within its boundaries.

3.3.6.2 Murphy FFR Environmental Consequences

3.3.6.2.1 Alternative A

Under this alternative, grazing use would occur as allowed under the existing permit. Alternative A is not being analyzed in detail for the Murphy FFR Allotment because it is virtually the same as Alternative C (the permittee proposal).

3.3.6.2.2 Alternative B

3.3.6.2.2.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table. These figures indicate the degree of effects relating to the season, intensity, duration, frequency, and distribution of use, as well as the weed introduction potential and effects to biological soil crusts, all as described in Section 3.2.

Table 3.3.40 - Murphy FFR Allotment Vegetation Indicators for Alternative B

Indicator	Murphy FFR
Season of use (Dates)	3/1 – 3/31
Duration (Days per pasture)	31
Frequency	Once, every year
Total AUMs	5
Acres/AUM	11.2
Utilization	Expected light; limit <50%
Water haul sites	0
Number of livestock*	Not specified

*FFR allotment permits allow livestock numbers at permittee's discretion, as long as resource degradation doesn't occur on public land.

With implementation of Alternative B, conditions would continue as they currently are, as described in the affected environment. This alternative includes no rest for an entire season, but use would be limited to short period of early critical growing period use that allows for undisturbed regrowth. Utilization levels up to 50% would be allowed, but based on recent years' data would be expected to be light. The relatively short duration of use mean plants would not be re-grazed, and the remainder of the growing season would be available for plant recovery. The stocking rate is within the typical range, and appropriate based on utilization measurements; FFR allotment stocking rates are also highly influenced by use on adjacent private lands. With no change in livestock intensity or distribution, concentrated use areas would be expected to be the same as current conditions. The potential for weed seed introduction (based on the number of livestock) is difficult to evaluate because the permit allows discretion in livestock numbers within permitted AUMs and because of livestock movement between public and private lands.

The Murphy FFR Allotment would continue to meet Standard 6 because adequate ground cover (mostly cheatgrass litter) would remain after grazing use, and existing perennials would be maintained. Early growing season use (March) is partially within the critical growing period, but use levels would be expected to continue to be light. Only a short period of critical growing season use is expected, leaving adequate critical growing season time for remnant perennial plant regrowth to occur without being re-grazed. Cheatgrass would continue to dominate the herbaceous communities in the allotment, and existing shrubs and remnant biological soil crusts and Sandberg bluegrass would be maintained. Noxious weeds would continue to be absent.

3.3.6.2.2.2 Soils

See Sections 3.2.1.2 above.

3.3.6.2.2.3 Special Status Plants

No special status plants are known or expected from the Murphy FFR Allotment, so no environmental effects from Alternative B would occur.

3.3.6.2.2.4 Wildlife and Special Status Animals

Under Alternative B, the allotment would continue to not meet Standard 8 for threatened and endangered species in upland habitats. Livestock grazing would not be a causal factor for not meeting the Standard because use typically occurs in the late winter/early spring and would be expected to be light. Only a short period of critical growing season use (if any) is expected, leaving adequate critical growing season time for remnant perennial plant regrowth to occur. Adequate ground cover and existing perennials would be maintained. Cheatgrass would continue to dominate the herbaceous communities in these allotments and Sandberg bluegrass would be maintained.

Effects to individual wildlife species and their habitats resulting from Alternative B in the Murphy FFR Allotment are detailed under Winter (Section 3.2.1.5) and Spring (Section 3.2.2.5) Grazing in Environmental Consequences Common to All Allotments.

3.3.6.2.2.5 Cultural and Paleontological Resources

No known archaeological sites or fossil localities are present within the Murphy FFR, and sites or exposed fossils are unlikely in any significant quantity or quality for the minor differences between any of the alternatives to make any difference to important attributes of any such resources that may be present. Because the area has been grazed for many decades and surface deposits are already mixed, the presence or absence of several cattle will have no effect under any alternative.

3.3.6.2.3 Alternative C

3.3.6.2.3.1 Vegetation, including Noxious Weeds

In Alternative C, the season and duration of use would be at the permittee's discretion, as shown in the following table of vegetation indicators.

Table 3.3.41 - Murphy FFR Allotment Vegetation Indicators for Alternative C

Indicator	Murphy FFR
Season of use (Dates)	Discretionary yearlong
Duration (Days per pasture)	Discretionary
Frequency	Discretionary
Total AUMs	5
Acres/AUM	11.2

Indicator	Murphy FFR
Utilization	Expected light; limit <50%
Water haul sites	0
Number of livestock*	Not specified

*FFR allotment permits allow livestock numbers at permittee's discretion, as long as resource degradation doesn't occur on public land.

The Murphy FFR Allotment would be used at the permittee's discretion for season and duration of use and number of cattle, as long as total AUMs and 50% utilization limits were not exceeded. Thus, up to 50% use during the growing season could impact the few native perennial grasses present, resulting in not meeting Standard 6, although adequate soil cover by litter is expected to maintain the exotic annual plant community. If use continued as it has in the past, with expected light use primarily outside of the growing season, then environmental consequences would be the same as Alternative B, and Standard 6 would be met. Cheatgrass would be expected to continue to dominate plant communities, and noxious weeds would be expected to continue to be absent.

3.3.6.2.3.2 Soils

See Sections 3.2.1.2 above.

3.3.6.2.3.3 Special Status Plants

No special status plants are known or expected from the Murphy FFR Allotment, so no environmental effects from Alternative C would occur.

3.3.6.2.3.4 Wildlife and Special Status Animals

The allotment would be used at each permittee's discretion for season and duration of use and number of cattle, as long as total AUMs and 50% utilization limits were not exceeded. Thus, up to 50% use during the growing season could impact the few native perennial grasses present in these allotments, resulting in not meeting Standard 8 for threatened and endangered animals in upland habitat, although adequate soil cover and maintenance exotic annual plant community is expected. If use continued as it has in the past, with expected light use primarily outside of the growing season, then environmental consequences in upland habitats would be the same as Alternative B, and Standard 8 in would not be met due to past plant community changes, but current livestock grazing management would not be a causal factor. Cheatgrass would be expected to continue to dominate plant communities in both allotments, and noxious weeds would be expected to be static.

3.3.6.2.3.5 Cultural and Paleontological Resources

See the discussion under Alternative B above.

3.3.6.2.4 Alternative D

3.3.6.2.4.1 Vegetation, including Noxious Weeds

Grazing management indictors that affect vegetation are shown in the following table.

Table 3.3. 42 - Murphy FFR Allotment Vegetation Indicators for Alternative D

Indicator	Murphy FFR
Season of use (Dates)	11/1 – 3/31
Duration (Days per pasture)	151
Frequency	Once, every year
Total AUMs	5
Acres/AUM	11.2

Indicator	Murphy FFR
Utilization	Expected light; limit <50%
Water haul sites	0
Number of livestock*	Not specified

*FFR allotment permits allow livestock numbers at permittee's discretion, as long as resource degradation doesn't occur on public land.

The Murphy FFR Allotment would be limited to winter and early spring use, similar to current management (Alternative B) except with a longer allowable period within the dormant season (starting November 1 rather than March as in current management, with the same end date). The level of use, based on AUMs and stocking rate, would be unchanged from current management. A longer season could be used, but because it is almost entirely within the dormant season, there would not be re-grazing impacts to growing plants. As in the other alternatives, because there would be no limit on the number of animals, the AUMs could be used with more animals over a shorter time period or fewer animals over the longer time (up to151 days in this alternative); with a higher number of animals, the potential for weed seed introduction is increased over a lower number of animals. Overall impacts to grasses, shrubs, forbs, weeds, and biological soil crusts would be nearly the same as current management because a longer season of use within the dormant season with the same overall use would have virtually the same effects on these resources. Thus, Alternative D would continue to meet Standard 6 in the Murphy FFR Allotment.

3.3.6.2.4.2 Soils

See Sections 3.2.1.2 above.

3.3.6.2.4.3 Special Status Plants

No special status plants are known or expected from the Murphy FFR Allotment, so no environmental effects from Alternative D would occur.

3.3.6.2.4.4 Wildlife and Special Status Animals

The allotment would be limited to winter and early spring use, similar to current management except with a longer allowable period within the dormant season (starting November 1 rather than January or March as in current management). Murphy FFR Allotment's end date (3/31) is the same between these two allotments. The level of use, based on AUMs and stocking rate, would be unchanged from current management. A longer season could be used, but because it is almost entirely within the dormant season, there would not be re-grazing impacts to growing plants. As in the other alternatives, because there would be no limit on the number of animals, the AUMs could be used with more animals over a shorter time period or fewer animals over the longer time (up to 135 or 151 days respectively for the two allotments). Overall impacts to upland habitats would be nearly the same as or less than current management because a longer season of use within the dormant season, with the same overall use, would have virtually the same effects on these resources. With the same intensity of use as current management, but reduced growing season effects, grazing management in the allotments under Alternative D would continue to not meet Standard 8 for threatened and endangered species in upland habitats due to past plant community changes, invasive weeds, and water diversions. Livestock grazing would not be a causal factor for not meeting the Standard because use typically occurs in the late winter/early spring and would be expected to be light.

3.3.6.2.4.5 Cultural and Paleontological Resources

See the discussion under Alternative B above.

3.3.6.2.5 Alternative E

3.3.6.2.5.1 Vegetation, including Noxious Weeds

Effects to vegetation from Alternative E in the Murphy FFR Allotment are described in Section 3.2.5.1 (Environmental Consequences Common to All Allotments).

3.3.6.2.5.2 Soils

See Sections 3.2.1.2 above.

3.3.6.2.5.3 Special Status Plants

No special status plants are known or expected from the Murphy FFR Allotment, so no environmental effects from Alternative E would occur.

3.3.6.2.5.4 Wildlife and Special Status Animals

Effects to individual wildlife species and their habitats resulting from Alternative E in the Murphy FFR Allotment are detailed in Section 3.2.5.5 of Environmental Consequences Common to All Allotments.

3.3.6.2.5.5 Social and Economic Values

This alternative would cancel all authorized use AUMs on the allotment for a period of 10 years, after which applications for grazing permits would be accepted. The total loss of value to the community if these five AUMs were completely removed from Owyhee County would be $334.70.

3.3.6.2.5.6 Cultural and Paleontological Resources

Effects to Cultural and Paleontological Resources for Alternative E are listed under Environmental Consequences Common to All Allotments (Section 3.2.5.8).

3.4 Cumulative Effects

3.4.1 Past, Present, and Reasonably Foreseeable Actions Common to Group Allotments

3.4.2 Vegetation Resources

Scope

Cumulative effects of proposed grazing management alternatives on vegetation resources (as used here: upland vegetation, noxious and invasive weeds, and special status plants) are considered in the context of other activities and natural processes, described below. For cumulative effects, the allotments are considered collectively. The area of analysis for cumulative effects for vegetation resources is the central Owyhee Front, which includes all six allotment areas; the boundary is roughly drawn from various topographic features. It is defined approximately as the Snake River along the east/northeast, South Fork and main fork Rabbit Creek on the west, and Catherine and Pickett creeks on the south (Figure 3.4.1). Highway 78 runs diagonally through the center of the analysis area. It is an area of about 133,446 acres. This effects analysis area is appropriate for vegetation resources because relevant disturbances such as fire, livestock grazing, and weed movement affect ecological processes at this landscape scale, and it is expected that activities outside this area would generally not have additive effects to the activities proposed in this document. It is appropriate to consider a combined cumulative effects analysis area for all six allotments because concurrent permit renewals on adjacent allotments may have similar effects on the landscape. Within the cumulative effects analysis area, 75% of the area is public lands managed by BLM or Bureau of Reclamation, 22% is private lands, and 3% is managed by Idaho State. The six allotments make up 57% of the cumulative effects analysis area.

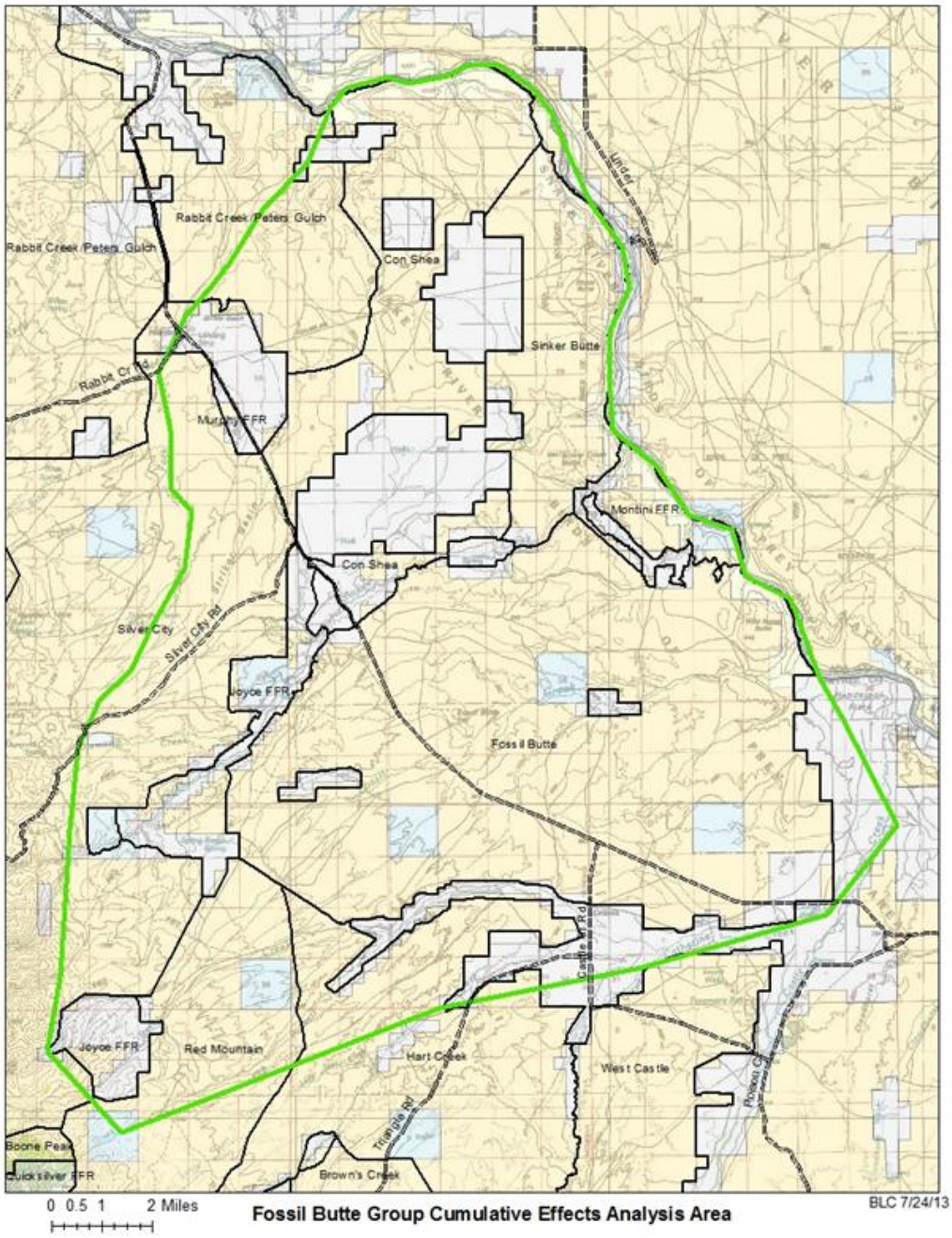

Figure 3.4.1 - Fossil Butte Group Cumulative Effects Analysis Area for Vegetation Resources

The timeframe considered covers past activities since about 1980 to create current conditions, reasonably foreseeable activities planned within about the next three years (a typical planning cycle), and the expected duration of effects from those activities (generally 10 to 20 years) and their temporal overlap with direct and indirect effects described above.

Current Conditions

Past activities that have affected vegetation resources in the cumulative effects analysis area include livestock grazing and associated range improvements; roads, buildings, utility/water lines, airstrips, and other infrastructure; agriculture; and recreation (including implementation of the Murphy Travel

Management Plan). Wildfires have also affected large parts of the cumulative effects area. The impacts of these activities/events and the resultant effects on vegetation resources are summarized in Table 3.4.1, and briefly discussed below.

The spatial extent of these actions and events was calculated using the best available BLM GIS data. The terms for magnitude of vegetation effects are defined as:

- Low – activity affects only a very small percentage of vegetation in the area, or has only a temporary effect on vegetation in a larger area;
- Moderate – activity affects more than a small percentage but less than a majority of the area with noticeable changes in vegetative structure, or affects a majority of the area with changes to vegetative species composition but not necessarily structure; and
- High – activity affects vegetation composition and structure within the majority of the area.

Table 3.4.1 - Past Activities and Events in Vegetation Resources Cumulative Effects Area

Activity or Event	Timeframe	Indicator/ Degree	Extent	Magnitude of Effect on Vegetation	Type of Effect
Livestock Grazing	Ongoing, continuous	11 active allotments (parts or whole); 15,899 active AUMs (all allotments)	Across virtually entire analysis area except some agriculture fields	Moderate	Species composition shifts to less palatable plants and fewer large bunchgrasses
Fences	Most constructed before 1980; a few additions each decade	Approximately 214 miles of fence total	Distributed across analysis area, but cumulatively covering a small percentage of area	Low	Short-term, localized construction & maintenance disturbance; chronic cattle trails trampling vegetation
Troughs, cattle-guards, corrals, water haul sites, salting/supplement sites	Most constructed before 1980; a few additions each decade	Estimated 50-100 total	Distributed across analysis area, but cumulatively covering a small percentage of area	Low	Short-term, localized construction & maintenance disturbance; chronic cattle congregation trampling vegetation
Wildfire	Fire records 1957-2012, but mostly since 1980	24 large wildfires totaling 27,522 acres within analysis area (includes areas burned multiple times)	Mostly the northern quarter of analysis area	Moderately high within burn area; moderate across entire area	Shift from shrub or shrub/grass-dominated to grass (usually invasive annuals or crested wheatgrass) plant community.

Activity or Event	Timeframe	Indicator/ Degree	Extent	Magnitude of Effect on Vegetation	Type of Effect
Roads and Trails	Roads nearly all in place before 1980; ATV and motorcycle trails proliferated since about 1990.	Approximately 727 miles of roads and trails total: 32 miles paved, 14 miles gravel, the rest unsurfaced. One ATV/ motorcycle trailhead. Two air strips.	Distributed across analysis area, with highest density west of Hwy 78, within Murphy Travel Plan area.	High on road way or trail, moderate throughout analysis area.	Elimination of vegetation; introduction of noxious and invasive weeds
Structures	Many in place before 1980, but several additions each decade.	A few dozen houses and commercial buildings in Murphy. Several ranch/farm complexes. Numerous narrow utility corridors.	Most buildings at Murphy; ranch, farm, and utility corridors scattered, collectively occupying <1% of the area	Moderately high in localized areas; low across entire area	Localized elimination of vegetation
Agriculture	Nearly all in place before 1980	Approximately 13,100 acres total, or 10% of the analysis area.	In several large blocks within area.	High in localized areas; moderately low across entire area	Irrigated crop fields replacing native vegetation
Noxious Weed Treatment	Ongoing, continuous	Estimated <1,000 acres treated since 1980s	Patchy, throughout analysis area	Low	A few adjacent native plants killed; native plant communities protected from noxious weed invasion
Recreation	Ongoing, continuous	High spring and fall use of OHV trails (see Roads and Trails). Highway 78 and Silver City Road heavily used almost year-round. Seasonal hunting, bird-watching, flower-watching.	Mostly near Highway 78 and Silver City Road	Moderately high (roads/trails), otherwise low	Localized vegetation trampling (besides roads/trails)

Livestock grazing is the dominant land use activity in the area, and approximately 85% of the land area is managed for grazing. Vegetation in the central Owyhee Front has been affected by livestock grazing because livestock selectively eat larger bunchgrasses, altering the species composition over time. Heavy grazing in this area in the early 1900s and following has altered the vegetation (reduced large bunchgrass, increased Sandberg bluegrass and cheatgrass), although rangeland conditions have gradually improved over the years with reductions in growing-season use, particularly since the implementation of Rangeland Health Standards in 1997. Additionally, a variety of range improvements such as spring developments, fences, cattle-guards, troughs, and water haul and supplement sites have been implemented across the

landscape to aid in livestock management; these improvements remove or disturb vegetation in localized areas.

Wildfires, mostly since 1980, have collectively burned almost 21% of the analysis acreage, although the actual burned footprint is somewhat less because that includes areas that have burned more than once. Burn areas on the central Owyhee Front are largely devoid of shrub recovery, but rather are dominated by cheatgrass, Sandberg bluegrass, and/or crested wheatgrass. Burned areas dominated by cheatgrass often produce flashy fuel loads susceptible to wildfire within a year or two after burning, perpetuating an increased fire frequency cycle that precludes shrub establishment.

Roads, trails, structures, and other recreation facilities and activities have extensively fragmented native vegetation in the landscape by creating bare ground and weedy openings within the sagebrush steppe plant communities. Vehicles and travel-ways act as noxious and invasive weed vectors for the spread of weed seed. Ongoing noxious weed treatment (usually spot herbicide application) helps to keep these invaders from spreading into native plant communities, but several noxious weeds (particularly whitetop and Russian knapweed) are quite widespread and well-established in lower elevations within the analysis area.

Agricultural lands make up at least 10% of the cumulative effects analysis area, and include riparian floodplains converted to grass hay meadows and upland grain, alfalfa, or other crop irrigated fields in the uplands. Within these agricultural areas, native vegetation has been entirely replaced by cultivated species.

The combination of activities and wildfires described above has altered vegetation within the cumulative effects analysis area. The shrub/large bunchgrass plant communities expected under reference conditions are rare. The shrub component has been lost in some areas (burns, agriculture, roads and other developments), while the large bunchgrass component has been lost throughout most of the area (whether shrubs are present or not). Large bunchgrasses (and in some cases shrubs) have been mostly replaced by Sandberg bluegrass, cheatgrass, and other annual weeds. Special status plants occur mostly on specialized habitats throughout the area, and habitat conditions range from undisturbed to impacted by cheatgrass and other weeds, cattle trampling, and/or off-road vehicle disturbance.

Reasonably foreseeable activities within the cumulative effects analysis area include livestock grazing permit renewals (such as Hart Creek, West Castle, and Red Mountain allotments planned for 2013 and Silver City Allotment scheduled for 2014), a transportation management plan for Owyhee County (outside of the Murphy Travel Management Plan area), and additional energy corridors (Gateway West alternatives). No land exchanges are currently proposed in the analysis area. Climate change is expected to affect long-term precipitation patterns, adding to other environmental stressors, but its magnitude and site-specific effects for the time period of analysis are difficult to determine (Beschta et al. 2012).

Grazing permit renewals are expected to maintain or improve vegetation conditions within the analysis area. No additional fences or range developments are anticipated from these renewals. Recreation use, particularly OHV and motorcycle travel, is expected to increase as the Treasure Valley's population expands; Owyhee Travel Management Planning is expected to help manage the increased use by designating authorized roads and trails and limiting off-road travel. As a result, impacts to vegetation from recreational traffic are anticipated to remain stable rather than increase. Construction of a large utility corridor (up to 16 miles through the cumulative effects analysis area under one Gateway West alternative) would disturb vegetation in localized areas (tower footprints and construction/access roads), creating bare or potentially weedy areas, at least in the short term until sites are re-vegetated and stabilized. Pre-construction special status plant surveys are expected to identify occurrence areas to avoid or otherwise mitigate disturbance.

As a result of these upcoming activities, along with past and present activities described above, vegetation resources are expected to remain much as they currently are. Plant communities would continue to consist of a coarse mosaic of salt desert shrub, Wyoming sagebrush, and cheatgrass/Sandberg bluegrass communities, along with developed agriculture and town areas, overlaid by an extensive road and trail system. Noxious weeds are expected to continue to be frequent throughout the area, but not increasing. Past, present, and reasonably foreseeable activities are expected to produce similar conditions for special status plants and their habitats. Some occurrences would continue to be impacted by cheatgrass and other weeds. Localized effects from OHVs and grazing may also occur. No indication of substantial change to special status plant habitat is anticipated within the cumulative effects analysis area from reasonably foreseeable activities.

Cumulative Effects of All Alternatives

Grazing activities analyzed in this EA would contribute toward cumulative effects on vegetation resources by incrementally influencing plant species composition and plant community biodiversity in the central Owyhee Front, as described in direct and indirect effects. The magnitude of these six allotments' incremental additions to effects from the activities described above is displayed in Table 3.4.1, and discussed below. The number of permitted active AUMs is used as an indicator of the magnitude of effects.

The alternatives are expected to maintain or improve vegetation resources (with a few exceptions that would not make significant progress toward meeting standards, as noted below). Therefore, the additive effects from most alternatives to cumulative effects are expected to be minor, and in most cases similar to baseline conditions. Note that the indicator for baseline conditions is permitted rather than actually used AUMs for the allotments within the cumulative effects analysis area. Alternative A would be the same as baseline conditions, so no additional cumulative effects would be expected. Alternative B has an overall slight increase in AUMs (made up of a 294 AUM reduction in Fossil Butte, a 177 AUM increase in Con Shea, a 64 AUM increase in Sinker Butte, and a 159 AUM increase for Joyce FFR for a net 106 AUM increase) which is a very small (0.7%) increase from baseline AUMs for the analysis area. This small change in overall AUMs is unlikely to have noticeable changes to vegetation resources across the analysis area, so no additional cumulative effects would be apparent. Under Alternative C, grazing management in some allotments is not expected to make progress toward meeting vegetation Standards (Standards 4, 5, and/or 6, as applicable) due to the level and/or season of use, so the direct and indirect effects from grazing would be cumulatively added to other vegetation stressors in the analysis area. However, this Alternative's 1.5% increase in AUMs (based on an increase of 84 AUMs for the Sinker Butte Allotment and 159 increase for Joyce FFR Allotment) is not likely to produce a cumulatively noticeable change in vegetation resources across the analysis area. Alternatives D and F would have a 1.4% reduction in AUMs from baseline conditions, and grazing management would not cause any allotment to not make progress toward meeting the vegetation Standard(s). Thus no additional negative cumulative effects to vegetation would be expected under this alternative.

No figures for AUM levels for additional allotments in the analysis area undergoing permit renewals are available, but it is reasonably foreseeable that AUM levels would be similar to or somewhat lower than currently permitted numbers. Thus, combining reasonably foreseeable activities, current management, and effects from the different alternatives would result in conditions fairly similar to current conditions, with perhaps some improvement in vegetation from reductions in the level of use and/or use during critical growing periods. Note that the level of AUM changes between Alternatives A-D and F are fairly minor, resulting in relatively small differences in direct and indirect effects, and so cumulative impacts to vegetation at the analysis area scale compared to baseline conditions are not expected to be noticeable.

Alternative E, no grazing for the term of the permit, would be quite different from typical management in the cumulative effects analysis area, and have beneficial effects by contributing no detrimental grazing effects to the cumulative effects analysis area. This 23% reduction in AUMs (compared to the current permitted level) would provide an overall increase in ground cover and potential increase in plant vigor within the analysis area. These beneficial indirect effects would cumulatively help ameliorate impacts from other activities, such as soil/plant disturbance from OHV/motorcycle trail proliferation. There could be an increase in fence construction on private land associated with Alternative E if landowners wanted to continue grazing private land that had been grazed with a BLM allotment. This construction would disturb vegetation in localized areas, with short-term effects expected to last only a few years until naturally revegetated.

Table 3.4.2 – Cumulative Effects of Alternatives on Vegetation Resources from Livestock Grazing in Central Owyhee Front

Current Permitted Level (Baseline)	Reasonably Foreseeable	Alternative A	Alternative B	Alternative C	Alternatives D & F	Alternative E
15,899 AUMs	No decision yet on Group 3 Permit renewals, but AUM levels for Hart Creek, West Castle, & Red Mountain Allotments is likely to be similar to (or less than?) current permitted level.	No change from baseline	+106 AUMs; 0.7% increase from baseline	+243 AUMs; 1.5% increase from baseline	-230 AUMs; 1.4% decrease from baseline	-3,710 AUMs; 23% decrease from baseline

3.4.3 Soils, Riparian, and Water Quality

Scope

The scope of cumulative effects for these resources consists of the entire watershed area that encompasses the project area and its connection or lack thereof with the Snake River. Historic livestock grazing and fire have degraded the lower elevation areas along the Owyhee Front to the point where they have transitioned into an invasive annuals dominated understory state. Decades of this state has resulted in loss of site productivity and hydrologic function. Transition from this state can go different ways, that is, to a more degraded state (where the shrub component is lost and other invasive forb species dominate) or to a slightly improved state (where there is an increase in frequency and diversity of native bunchgrass and biological soil crusts).

The low elevation ecological sites represented in these allotments are part of a larger ecological system (the entire front range of sedimentary influenced soils) with few remaining areas where intact biotic components still exist. As sites are impacted and transition to less desirable states throughout the range, there will be a gradual elimination of any remnant areas where these sites exist.

Livestock grazing has occurred in this area historically with rampant damage to the soils and vegetative community up until the enactment of the Taylor Grazing Act. Under this Act, livestock were managed in

a more controlled manner and gradual improvement in the ecological health of the land was observed. Recently (the last several decades), the combination of invasive species introduction and establishment, increased wildland fire frequency, climate change, and existing grazing has contributed to a slow overall recovery from the historic damage from activities on the same landscape. Therefore the evidence of past impacts to soils and productivity within the physiographic region is readily apparent still today. OHV use in these allotments and adjoining area is increasing and has resulted in localized impacts to the soils in terms of damage to surface soils and accelerated erosion. This is most prominent in the lower elevation soils where rills and gullies are evident on the sloping terrain. Current grazing management, especially the application of riparian terms and conditions would maintain or slightly improve conditions in most areas even when combined with other activities in the area.

Because the direct and indirect effects associated with this project's alternatives are not substantially dependent on current grazing, the cumulative effects are also not significant, especially when considering the project area in proportion to the total watershed area.

3.4.4 Wildlife and Special Status Animals

Scope

Cumulative effects of proposed grazing management alternatives on wildlife resources (as used here: upland and riparian vegetation, noxious and invasive weeds, and individual and grouped wildlife species discussed previously) are considered in the context of other activities and natural processes described below. For cumulative effects, the allotments are considered collectively. The area of analysis for cumulative effects for wildlife resources is the central Owyhee Front, which includes all six allotment areas; the boundary is roughly drawn from various topographic features. It is defined approximately as the Snake River along the east/northeast, South Fork and main fork Rabbit Creek on the west, and Catherine and Pickett creeks on the south (Figure 3.4.1). Highway 78 runs diagonally through the center of the analysis area. It is an area of about 133,446 acres. It is appropriate to consider a combined cumulative effects analysis area for all six allotments because concurrent permit renewals on adjacent allotments may have similar effects on the landscape. Within the cumulative effects analysis area, 75% of the area is public lands managed by BLM or Bureau of Reclamation, 22% is private lands, and 3% is managed by Idaho State. The six allotments make up 57% of the cumulative effects analysis area.

This effects analysis area is appropriate for wildlife resources because relevant disturbances such as fire, livestock grazing, and weed movement affect local wildlife populations and ecological processes at this landscape scale, and it is expected that activities outside this area would generally not have additive effects to the activities proposed in this document. Selection of too broad an analysis area, such as the entire range of the "north-central Nevada/southeast Oregon/southwest Idaho" (i.e., Owyhee) sage-grouse sub-population (an area of ~5,723,000 acres), would likely dilute any potential cumulative effects of a grazing permit. The central Owyhee Front effects analysis area comprises less than 1% of the Owyhee sage-grouse subpopulation area (Figure 3.4.2). Consequently, the Owyhee sage-grouse sub-population would not be an appropriate effects analysis area for activities or wildlife resources discussed in this EA.

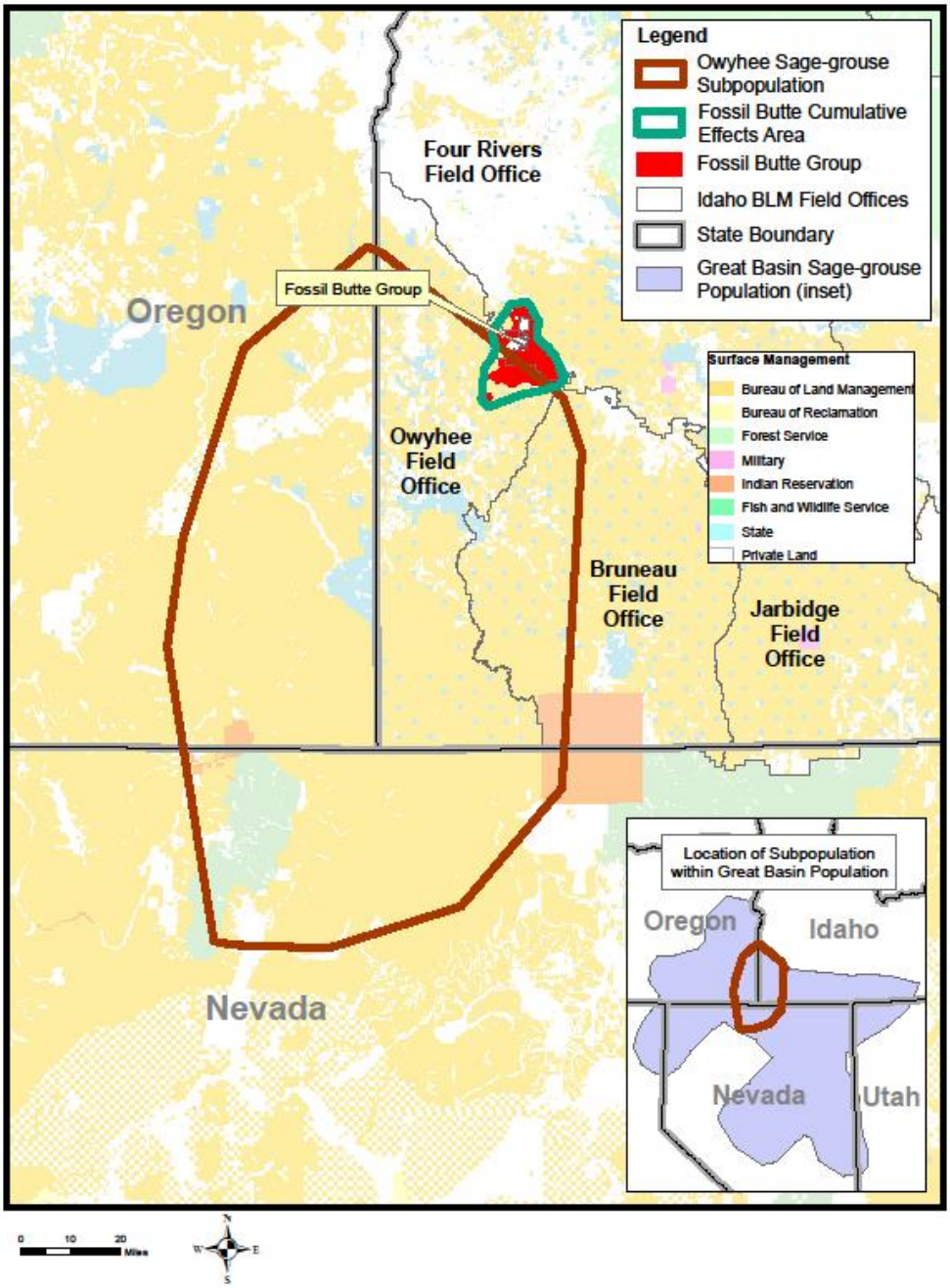

Figure 3.4.2 - Fossil Butte Group Cumulative Effects Analysis Area for Wildlife Resources

The timeframe considered covers past activities since about 1980 to create current conditions, reasonably foreseeable activities planned within about the next three years (a typical planning cycle), and the expected duration of effects from those activities (generally 10 to 20 years) and their temporal overlap with direct and indirect effects described above.

Current Conditions

Past activities that have affected wildlife resources in the cumulative effects analysis area include livestock grazing and associated range improvements; roads, buildings, utility/water lines, airstrips, and other infrastructure; agriculture; and recreation (including implementation of the Murphy Travel

Management Plan). Wildfires have also affected large parts of the cumulative effects area. The impacts of these activities/events and the resultant effects on vegetation including upland wildlife habitat are summarized in Table 3.4.1, and briefly discussed below. Cumulative effects to riparian habitat are discussed in the above section.

The reduction in deep rooted perennial grasses is likely limiting concealment cover for ground nesting and foraging species such as sage-grouse, raptors, mammals, reptiles, and various migratory birds. Additionally, a variety of range improvements such as spring developments, fences, cattle guards, troughs, and water haul and supplement sites have been implemented across the landscape to aid in livestock management. These improvements remove or disturb vegetation in localized areas and can potentially lead to wildlife mortality due to collisions and drowning.

Wildfires, mostly since 1980, have collectively burned almost 21% of the analysis acreage, although the actual burned footprint is somewhat less because that includes areas that have burned more than once. Burned areas on the central Owyhee Front are largely devoid of shrub recovery, and are dominated by cheatgrass, Sandberg bluegrass, and/or crested wheatgrass. The reduction in shrubs and deep-rooted perennial grasses in burn areas is also likely limiting concealment cover for the same shrub-steppe obligate, ground nesting, and foraging species discussed above.

Roads, trails, structures, and other recreation facilities and activities have extensively fragmented native upland habitats throughout the landscape by creating bare ground and weedy openings within the sagebrush steppe plant communities. Vehicles and travel paths act as noxious and invasive weed vectors for the spread of weed seed. Ongoing noxious weed treatment (usually spot herbicide application) helps to keep these invaders from spreading into native plant communities, but several noxious weeds (particularly whitetop and Russian knapweed) are quite widespread and well-established in lower elevations within the analysis area. The presence of invasive plant species is also contributing to reduced cover and forage production for various special status species.

Agricultural lands make up at least 10% of the cumulative effects analysis area, and include riparian floodplains converted to grass hay meadows and upland grain, alfalfa, or other crop irrigated fields in the uplands. Within these agricultural areas, native vegetation has been entirely replaced by cultivated species and provides limited use as wildlife habitat.

The combination of activities and wildfires described above has altered vegetation within the cumulative effects analysis area. The shrub/large bunchgrass plant communities expected under reference conditions are rare. The shrub component has been lost in some areas (burns, agriculture, roads and other developments), while the large bunchgrass component has been lost throughout most of the area (whether shrubs are present or not). Large bunchgrasses (and in some cases shrubs) have been mostly replaced by Sandberg bluegrass, cheatgrass, and other annual weeds. These widespread plant community changes do not provide suitable habitat for the majority of wildlife species expected to occur within the allotments. Special status animal species occur mostly on specialized habitats throughout the area, and habitat conditions range from undisturbed areas of suitable habitat to unsuitable areas impacted by historic livestock grazing, wildfires, cheatgrass and other weeds, and/or off-road vehicle disturbance.

Reasonably foreseeable activities within the cumulative effects analysis area include livestock grazing permit renewals (such as Hart Creek, West Castle, and Red Mountain allotments planned for 2013 and Silver City Allotment scheduled for 2014), a transportation management plan for Owyhee County (outside of the Murphy Travel Management Plan area), and additional energy corridors (Gateway West alternatives).

Grazing permit renewals are expected to maintain or improve vegetation conditions within the analysis area. No additional fences or range developments are anticipated from these renewals. In addition, the cumulative effects and risk of propagation and transmission of West Nile Virus (WNV) are not expected to increase with these renewals because none involve water developments that would increase breeding habitat for WNV vector insect species. Recreation use, particularly OHV and motorcycle travel, is expected to increase as the Treasure Valley's population expands; Owyhee Travel Management Planning is expected to help manage the increased use by designating authorized roads and trails and limiting off-road travel. As a result, impacts to wildlife and their habitats from recreational traffic are anticipated to remain stable rather than increase. Construction of a large utility corridor (up to 16 miles through the cumulative effects analysis area under one Gateway West alternative) would disturb upland habitat in localized areas (tower footprints and construction/access roads), creating bare or potentially weedy areas, at least in the short term until sites are re-vegetated and stabilized. Tower construction would also offer increased nesting and perching sites for various raptor species, which may increase reproductive and hunting success throughout the area. However, these increases would likely be offset by the increased chance of electrocution mortality through collision with utility power lines.

As a result of these upcoming activities, along with past and present activities described above, wildlife habitats are expected to remain much as they currently are. Plant communities would continue to consist of a coarse mosaic of salt desert shrub, Wyoming sagebrush, and cheatgrass/Sandberg bluegrass communities, along with developed agriculture and town areas, overlaid by an extensive road and trail system. Noxious weeds are expected to continue to be frequent throughout the area, but not increase. Past, present, and reasonably foreseeable activities are expected to produce similar conditions for special status animals and their habitats. No indication of substantial change to special status animals or associated habitats is anticipated within the cumulative effects analysis area from reasonably foreseeable activities.

Cumulative Effects of Alternatives

All Alternatives

Grazing activities analyzed in this EA would contribute toward cumulative effects on wildlife resources by incrementally influencing wildlife habitat composition and plant community biodiversity in the central Owyhee Front, as described in direct and indirect effects. The magnitude of these six allotments' incremental additions to effects from the activities described above is displayed in Table 3.4.1, and discussed below. The number of permitted active AUMs is used as an indicator of the magnitude of effects.

The alternatives are expected to maintain or improve wildlife resources (with a few exceptions that would not make significant progress toward meeting standards, as noted below). Therefore, the additive effects from most alternatives to cumulative effects are expected to be minor, and in most cases similar to baseline conditions. Note that the indicator for baseline conditions is permitted rather than actually used AUMs for the allotments within the cumulative effects analysis area. Alternative A would be the same as baseline conditions, so no additional cumulative effects would be expected. Alternative B has an overall slight reduction in AUMs (made up of a 294 AUM reduction in Fossil Butte, a 250 AUM increase in Con Shea, and a 10 AUM increase in Sinker Butte for a net 34 AUM reduction) which is a very small (0.2%) decrease from baseline AUMs for the analysis area. This small change in overall AUMs is unlikely to have noticeable changes to wildlife resources across the analysis area, so no additional cumulative effects would be apparent. Under Alternative C, grazing management in some allotments is not expected to make progress toward meeting the threatened and endangered wildlife Standard due to the level and/or season of use, so the direct and indirect effects from grazing would be cumulatively added to other habitat stressors in the analysis area. However, this Alternative's 0.5% increase in AUMs (based on an increase of 84 AUMs for the Sinker Butte Allotment) is not likely to produce a cumulatively noticeable change in

wildlife resources across the analysis area. Alternatives D and F would have a 1.4% reduction in AUMs from baseline conditions, and grazing management would not cause any allotment to not make progress toward meeting Standard 8. Thus no additional negative cumulative effects to wildlife resources would be expected under this alternative.

No figures for AUM levels for additional allotments in the analysis area undergoing permit renewals are available, but it is reasonably foreseeable that AUM levels would be similar to or somewhat lower than currently permitted numbers. Thus, combining reasonably foreseeable activities, current management, and effects from the different alternatives would result in conditions fairly similar to current conditions, with perhaps some improvements in habitat from reductions in the level of use and/or use during critical growing periods. Note that the level of AUM changes between Alternatives A-D and F are fairly minor, resulting in relatively small differences in direct and indirect effects, and so cumulative impacts to wildlife at the analysis area scale compared to baseline conditions are not expected to be noticeable.

Alternative E, no grazing for the term of the permit, would be quite different from typical management in the cumulative effects analysis area, and have beneficial effects by contributing no detrimental grazing effects to the cumulative effects analysis area. This 23% reduction in AUMs (compared to the current permitted level) would provide an overall increase in ground cover and potential increase in plant vigor within the analysis area. Vegetative structure and diversity, perennial herbaceous vegetation heights, residual cover, and available forage would increase in all habitat types. However, without grazing to reduce its biomass, cheatgrass production in the Fossil Butte Group allotments is likely to be high, resulting in a higher, continuous, flashy fuel loading, potentially increasing wildfire size and intensity (Davies et al 2009). The reduction in shrubs and deep-rooted perennial grasses in burn areas resulting from wildfire would limit concealment cover for shrub-steppe obligate, ground nesting, and foraging wildlife species. Beneficial indirect effects from Alternative E would cumulatively help mitigate impacts from other disturbance events or activities, such as habitat disturbance caused by OHV/motorcycle trail increases or wildfire. There could be an increase in fence construction on private land associated with Alternative E if landowners wanted to continue grazing private land that had been grazed with a BLM allotment. This construction would disturb vegetation in localized areas, with short-term effects expected to last only a few years until naturally revegetated.

3.4.5 Recreation and Visual Resources

Scope

Cumulative effects to recreation and visual resources within the Allotments would primarily be the result of grazing, utility corridors, and current and future actions that stem from the OPLMA. The area of analysis for cumulative effects is the resource area south and west of the Snake River, with Castle Creek serving as the eastern boundary, Reynolds Creek the western boundary, and the Silver City Mountain Range the southern boundary. This area is a good representation of the recreation activity that occurs within the area. The timeframe considered activities since OPLMA for current conditions and activities planned within the next 3 years, and the expected duration of effects from those activities (generally 10 to 20 years).

Recreation – All Alternatives

Cumulative analysis of the alternatives when added to past, present, and future actions, within the cumulative analysis area, would have minimal effects to recreation overall. Because there are very few effects that are expected from any of the alternatives, positive or negative, cumulative effects would be minimal for recreation. Opportunities for recreational activities in the cumulative analysis area are abundant and would endure the minimal impacts from any of the alternatives.

Impacts associated with past, present, and future activities would consist of range improvements, such as fences, identified throughout the analysis area that would reduce some opportunities for non-motorized

cross country travel. Accessibility in the area for hunters and other recreationists who rely heavily on roads and trails for motorized access could potentially be impacted as a result of future travel planning. Impacts to recreationists from future utility corridors would be minimal, as utility corridors currently exist within the cumulative management area, and proposed lines would be in proximity to existing lines. During periods of livestock use, there would be an increase in potential human/livestock interactions.

In the long term, the combined effects of suitable grazing management and travel management planning within the cumulative analysis area would be beneficial to the overall health and scenic quality of the area, which in turn would result in an improved recreation experience.

Visual Resources – All Alternatives
Few effects to visual resources are expected from any of the alternatives within the cumulative analysis area. Grazing activities throughout the analysis area would contribute in varying magnitudes toward cumulative effects by influencing plant species composition within the uplands as well as riparian areas. While these impacts may be greater or lesser within differing allotments, overall these impacts would be considered minimal throughout the cumulative analysis area as a whole.

Power lines currently exist throughout the analysis area, and a new 500KV power line is proposed for the area as well. The proposed line, if constructed, would travel through Class IV VRM. Although there are obvious impacts to visual resources associated with 500KV power lines, these impacts are considered to be minimal, due to the fact the utility corridors would occur within Class IV VRM and these impacts are considered acceptable with the VRM objectives for the area.

The effects of future actions such as travel management planning throughout the cumulative analysis area would be beneficial to the overall health and scenic quality as resources are further protected. Overall, the combined effects of suitable grazing management, or no grazing, and travel management planning within the cumulative analysis area would be beneficial to the overall health and scenic quality of the area.

3.4.6 Social, Economics, and Range Management

The scope of this analysis covers Owyhee County, ID.

Past and present actions
Past actions taken regarding grazing permit renewals will affect the socioeconomic conditions because they influence decisions the operators make regarding their ranches. There are 124,982 active use AUMs permitted in Owyhee County (135,116 active use AUMs in the ORMP (USDI BLM, 1999a) minus the 9,558-AUM reduction in the Owyhee River Group Final EA (DOI-BLM-ID-B030-2012-0012-EA) and the 576-AUM reduction in the Pole Creek Allotment Final EA (DOI-BLM-ID-B030-2009-0004-EA)),. Table 3.4.4 shows the net annual effect of the change in AUMs for each of the alternatives in this EA combined with the changes in the Owyhee River Group and Pole Creek allotments. Based on estimates from Darden et al (see Section 3.1.7), the total active use AUMs here contribute more than $35.6 million to the local economy.

For Alternatives A-D, as long as the ranches remain in business, they will continue contributing to employment and the purchase and sale of goods and services in the local areas, and community cohesion will be maintained. For Alternative E, not renewing the permits would mean that the BLM would no longer be contributing to the ranching community by providing grazing land, and if the ranches chose to close, the operators would no longer be contributing to employment or the purchase and sales of goods and services in the community.

Table 3.4.3 - Net value change of Fossil Butte Group and other grazing actions in Owyhee County

Alternative	Net Annual Effect (Dollar Value of Change +/- Difference in Grazing Fees)	Other Owyhee 68 Net Annual Effect (Dollar Value of Change +/- Diff. in Grazing Fees) **	Owyhee River Group Net Annual Effect (Dollar Value of Change +/- Diff. in Grazing Fees)	Pole Creek Net Annual Effect (Dollar Value of Change +/- Diff. in Grazing Fees)	Total Net Annual Effect (Dollar Value of Change +/- Diff. in Grazing Fees)
A	$0	$548,572.99	$-108,197.00)	$-6,520.00	**$433,855.99**
B	$0	$548,572.99	$-108,197.00)	$-6,520.00	**$433,855.99**
C	$1,664.04	$548,572.99	$-108,197.00)	$-6,520.00	**$435,520.03**
D	$-2,501.72	$548,572.99	$-108,197.00)	$-6,520.00	**$431,354.27**
E	$-41,284.04	$548,572.99	$-108,197.00)	$-6,520.00	**$392,571.95**

**Assuming no change from active AUMs

The U.S. government would continue contributing to the county through payments in lieu of taxes (PILT), which totaled more than $9.5 million in Owyhee County from 2003 to 2012, for an average of about $956,000 per year. Ranching plays a large role in both counties, so although the loss of any or all of the Fossil Butte Group ranches alone could have a substantial impact on the local communities, the loss, which is small in proportion to the total livestock operations' contributions to the county, likely would not have a cumulative effect on a larger scale. However, AUM changes incorporated in the alternatives presented here, combined with AUM reductions in the Owyhee 68 allotment permits, could have either positive or negative impacts to local suppliers, since the operators associated with all of these allotments might choose to alter ranch operations in ways that would require either increases or reductions in supply purchases.

Reasonably foreseeable future actions

The allotments addressed in this EA and in the Owyhee 68 livestock permit renewals. Livestock grazing permits for all of the Owyhee 68 allotments must be renewed by December 31, 2013. In addition to the final decisions for the Pole Creek and Owyhee River Group allotments, several allotments are currently under review. Environmental Assessments are currently being prepared for the Nickel Creek FFR(109 active AUMS[12]), Trout Springs (2,927 active AUMs), and Hanley FFR (7 active AUMs) allotments as well as the Toy Mountain (19,431 active AUMs), South Mountain (1,368 active AUMs), and Morgan (3,660 active AUMs) priority allotment groups. For any allotments that meet all Standards and Guidelines, reductions in AUMs may not occur; however, because AUMs have been reduced on allotments in the Owyhee River and Chipmunk Groups that have not met Standards or Guidelines, it is reasonable to assume that future reductions may occur on any allotments that are not meeting Standards or Guidelines.

Those potential reductions, combined with reductions already instated, could have substantial impacts on local economic activity. Social and economic effects experienced locally from reductions on each ranch would be compounded on a county-wide or regional basis. While it is not possible to analyze those impacts in this EA because future possible changes in the management of the Owyhee 68 allotment groups have not all been developed or analyzed, estimates of impacts based on a range of AUMs are presented below in Table 3.4.4. As noted above, renewing permits for all of the allotments currently under review at currently permitted levels would maintain active permitted use at 46,848 AUMs. Renewing the

[12] Active AUMs are allocated in the Oywhee RMP (USDI BLM, 1999a).

permits at 75 percent of current levels would total 35,136 AUMs; 50 percent renewal would total 23,424 AUMs; 25 percent renewal would total 11,712 AUMs. If the no-grazing alternative were chosen for all of these allotments, 0 active use AUMs would be authorized and grazing would not occur on any of the allotments for 10 years.

Table 3.4.4 - Net effects of past, present, and reasonably foreseeable future livestock grazing

Alternative	Total Net Annual Effect** ($ Value of Change +/- Diff. in Grazing Fees)	Total Net Annual Effect w/75% authorization	Total Net Annual Effect with 50% authorization	Total Net Annual Effect with 25% authorization	Total Net Annual Effect with no grazing
A	$433,855.99	$325,391.99	$216,928.00	$108,464.00	-$114,717.00
B	$433,855.99	$325,391.99	$216,928.00	$108,464.00	-$114,717.00
C	$435,520.03	$326,640.02	$217,760.02	$108,880.01	-$113,052.96
D	$431,354.27	$323,515.70	$215,677.14	$107,838.57	-$117,218.72
E	$392,571.95	$294,428.96	$196,285.98	$98,142.99	-$156,001.04

**Total net annual effect from Tables 3.16 through 3.19; ten-year average market value of forage per AUM in Idaho, 2002 - 2011 (non-irrigated private ground) is $12.67

3.4.7 Cultural and Paleontological Resources

Cumulative effects of proposed grazing management alternatives on cultural resources (as used here: prehistoric and historic archaeological sites and culturally significant resources) are considered in the context of other activities and natural processes described below. For cumulative effects, the allotments are considered collectively with a division drawn between sites within and sites outside of the Guffey Butte-Black Butte Archaeological District. The area of analysis for cumulative effects for cultural resources is the portion of the central Owyhee Front within a quarter mile of the six allotment areas encompassing the entire Guffey Butte-Black Butte Archaeological District including an area north of the Snake River. It is appropriate to consider this larger cumulative effects area because many sites within it are related temporally and spatially, and loss of significant data at individual sites within the area can affect the potential to interpret cultural and environmental patterns in the general vicinity.

This effects analysis area is appropriate because disturbances such as fire, livestock grazing, and recreation are expected to have similar influences throughout the NRHP district, while sites outside the district are more sparse and generally less significant, though with similar expected effects. The period for analysis begins with the earliest scientific site recordings in the area in 1929 since descriptions of site conditions at that time can be compared to current conditions and most effects to archaeological sites are cumulative and irreversible.

Past effects on the allotment range from more severe damage or destruction from looting, mining, burning of historic structures has caused changes in NRHP eligibility in the past, but protection afforded by NHPA, improved monitoring activities, and other efforts makes it less likely that sites will continue to suffer from such serious impacts. Mining is prohibited over much of the area, and any ground disturbing activities have cultural resource surveys prior to implementation. Minor surface disturbances such as those caused by grazing or trailing across sites, wildfires at lithic scatters, fence lines and associated increased fence-line wandering by cattle or congregations at salting or watering areas, ATV traffic, small swaths of roads or trails through sites, and similar events that may cause slight vertical or horizontal artifact movement or minor breakage or burial, but will not change the overall integrity or NRHP eligibility of sites. The combined effects of grazing in addition to all past, present, and reasonably foreseeable activities is not expected to limit access to cultural resources, cause changes to NRHP eligibility of sites, or significantly affect any historic properties.

Table 3.4.5 - Past Activities and Events on Archaeological Sites in Cumulative Effects Area

Activity or Event	Timeframe	Indicator/Degree	Extent	Magnitude of Effect on Sites	Type of Effect
Livestock Grazing	Ongoing, continuous	11 active allotments (parts or whole); 15,899 active AUMs (all allotments)	Across virtually entire analysis area except some agriculture fields	None or "Minor" on all but two: severe (1977 BLM, 2006 State-owned)	Pawing into archaeological deposits, trailing causing erosion
Fences	Most constructed before 1980; a few additions each decade	Approximately 214 miles of fence total	Distributed across analysis area, but cumulatively covering a small percentage of area	None to "Low"	Short-term, localized construction & maintenance disturbance; chronic cattle trails trampling surface artifacts
Troughs, cattle-guards, corrals	Most constructed before 1980; a few additions each decade	Estimated 50-100 total	Distributed across analysis area, but cumulatively covering a small percentage of area	None observed in approx. 10% surveyed, but rest unknown.	Short-term, localized construction & maintenance disturbance; chronic cattle congregation trampling artifacts and possibly exposing cultural deposits
Wildfire	Fire records 1957-2012, but mostly since 1980	24 large wildfires totaling 27,522 acres within analysis area (includes areas burned multiple times)	Mostly the northern quarter of analysis area	None to "Slight" to "Severe"	Destruction of some wooden structures and features, possible long-term damage to rock art panels, possible exposure to looting
Roads and Trails	Roads nearly all in place before 1980; ATV and motorcycle trails proliferated since about 1990.	Approximately 727 miles of roads and trails total: 32 miles paved, 14 miles gravel, the rest unsurfaced. One ATV/ motorcycle trailhead. Two air strips.	Distributed across analysis area, with highest density west of Hwy 78, within Murphy Travel Plan area.	None to "Minor" to "Moderate"	Elimination of vegetation, deflation, artifact displacement (many are historic in nature)
Structures	Many in place before 1980, but several additions each decade.	A few dozen houses and commercial buildings in Murphy. Several ranch/farm complexes. Numerous narrow utility corridors.	Most buildings at Murphy; ranch, farm, and utility corridors scattered, collectively occupying <1% of the area	Unknown	Some are historic in nature
Agriculture	Nearly all in place before 1980	Approximately 13,100 acres total, or 10% of the analysis area.	In several large blocks within area.	Unknown, but likely severe in areas	Irrigated crop fields replacing native vegetation

Activity or Event	Timeframe	Indicator/Degree	Extent	Magnitude of Effect on Sites	Type of Effect
Mining	Pre-1960s	Dozens of affected acres visible on aerial photos, exact extent unknown	Mainly along Snake River	None to "Minor" to "Severe", likely total destruction of some sites prior to NEPA	Portions of (and possibly entire) sites completely disturbed by placer mining, though mine sites are now historic sites themselves
Recreation	Ongoing, continuous	High spring and fall use of OHV trails. Various activities along Snake River.	Mostly along Snake River, also trails in south portion	"Minor" to "Severe" (roads/trails), otherwise none to "Low"	Localized vegetation trampling (besides roads/trails)
Looting and Vandalism	Ongoing, continuous, but mainly pre-1980	Numerous affected sites within the Guffey Butte-Black Butte Archaeological District	Mostly along Snake River and in archaeological district	None at many, rest "Moderate" to "Severe" Relatively small areas but significant in terms of scarcity and importance of damaged or destroyed resources	Illegal digging and theft of surface artifacts, vandalism of rock art panels. Most significant effects in terms of loss of site integrity and NRHP eligibility status.

The cumulative effects and area of analysis area for paleontological resources is generally the same as for cultural resources, though no distinction is made for lands within the archaeological district, and localities as much as two miles from the allotments were considered due to their geological and taxonomic relationships and the fall-off in known fossil density beyond that point. The time frame for analysis is from the late 1960s to present, since nearly all records and collections were made during that time. Effects to fossil finds can include trampling, erosion, natural deterioration after exposure, theft, and other affects similar to those found at archaeological sites. Records of past effects were either not kept, or are not available for specific localities recorded within the area, but two of the larger locations were monitored in 2012 and both were found to be in good condition with no observable adverse effects. No cumulative effects to fossil resources are expected under any of the alternatives discussed in this EA and no significant impacts to scientific values are expected.

4 CONSULTATION AND COORDINATION

Through the scoping process the BLM coordinated with the affected tribes, permittees, IDFG and other interested publics as described in Section 1.7. SHPO has been consulted. Meetings were held with individual permittees regarding alternative development for the Fossil Butte Group Allotments. Additional coordination occurred with the US Fish and Wildlife Service.

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7 APPENDICES

Appendix A – 2013 Evaluations/Determinations (and 2003 Murphy FFR)
Appendix B – Response to Scoping Comments
Appendix C – Plant Names
Appendix D – Special Status Animal Species
Appendix E – Migratory Bird Species
Appendix F – Utilization
Appendix G – Response to Draft EA Comments