Record of Decision

Introduction

This Record of Decision (ROD) documents my decision and rationale for the selection of Alternative 3 Modified from the Joseph Creek Rangeland Analysis (JCRA) Final Environmental Impact Statement (FEIS).

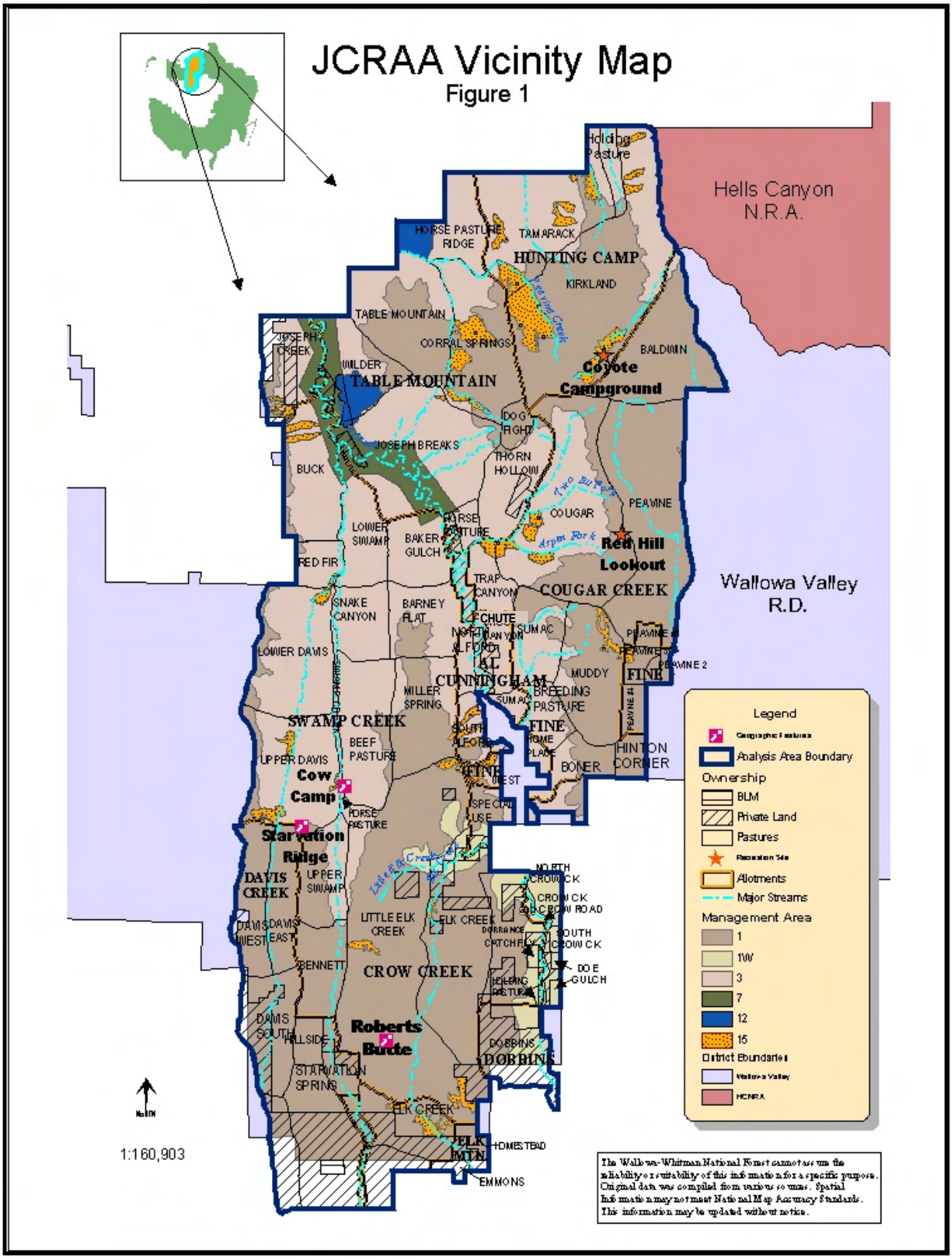
Decision

As Wallowa-Valley District Ranger, I have decided to authorize livestock grazing on eleven livestock allotments within the 95,555-acre Joseph Creek Rangeland Analysis Area (JCRAA) as described in Alternative 3 Modified of the Joseph Creek Rangeland Analysis Final Environmental Impact Statement. The eleven allotments are Al-Cunningham, Cougar Creek, Crow Creek, Davis Creek, Dobbins, Elk Mountain, Fine, Hunting Camp/Table Mountain, Joseph Creek, and Swamp Creek Allotments. Refer to Figure 1 for a vicinity map. A detailed description of Alternative 3 Modified and its accompanying mitigation and monitoring measures are contained in Chapter 2 of the FEIS, Pages 31 to 46 and 66 to 74.

Purpose and Need

The Wallowa-Valley District Ranger has identified a purpose and need for forage allocation for commercial livestock grazing. The purpose and need for action is based on the premise that livestock forage production is to be offered where forage is in excess to basic plant and soil needs, wildlife forage is available, and other specific resource conditions are achieved or maintained (Wallowa-Whitman National Forest Land and Resource Management Plan, Page 4-3). This plan, referred to as the Forest Plan, recognizes that the local livestock industry desires to maintain and increase National Forest grazing which coincides with Forest and Rangeland Renewable Resources Act (RPA) projections of increases in National population and total demand for beef (Forest Plan, Page 2-10). However, the Forest Plan also notes the complications that are involved regarding livestock effects on streamside damage to soil, vegetation and water quality, and the cost of improvements needed to alleviate these effects (Page 2-10).

The purpose and need is represented by the difference between the area's desired and existing conditions with respect to the management direction for the area.


JCRAA Vicinity Map
Figure 1
Hells Canyon N.R.A.
Wallowa Valley R.D.
HORSE PASTURE RIDGE
TAMARACK
HUNTING CAMP
KIRKLAND
TABLE MOUNTAIN
CORRAL SPRINGS
JOSEPH CREEK
WILDER
TABLE MOUNTAIN
BALDWIN
Coyote Campground
DOG FIGHT
JOSEPH BREAKS
BUCK
THORN HOLLOW
PEAVINE
COUGAR
LOWER SWAMP
BAKER GULCH
HORSE PASTURE
Red Hill Lookout
FED FIR
TRAP CANYON
COUGAR CREEK
SNAKE CANYON
BARNEY FLAT
CHUTE
SUMAC
LOWER DAVIS
MUDDY
FINE
CUNNINGHAM
MILLER SPRING
BREEDING PASTURE
SWAMP CREEK
FINE
HOME PLACE
BEEF PASTURE
UPPER DAVIS
HINTON CORNER
BONER
Cow Camp
FINE WEST
SPECIAL USE
HORSE PASTURE
Starvation Ridge
NORTH CROW CK
DAVIS CREEK
UPPER SWAMP
CROW CK
CROW ROAD
LITTLE ELK CREEK
ELK CREEK
DAVIS WEST
DAVIS EAST
SOUTH CROW CK
DORRANCE CATCHFLY
BENNETT
CROW CREEK
DOE GULCH
HOLDING PASTURE
DAVIS SOUTH
HILLSIDE
Roberts Butte
DOBBINS
DOBBINS
STARVATION SPRING
ELK CREEK
ELK MTN
HOMESTEAD
EMMONS
1:160,903
Legend
Geographic Features
Analysis Area Boundary
Ownership
BLM
Private Land
Pastures
Recreation Site
Allotments
Major Streams
Management Area
1
1W
3
7
12
15
District Boundaries
Wallowa Valley
HCNRA
The Wallowa-Whitman National Forest cannot assume the reliability or suitability of this information for a specific purpose. Original data was compiled from various sources. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notice.

Desired Condition

Basic rangeland, wildlife, and resource conditions are defined by the Forest Plan specific to each Management Area. The Joseph Creek Rangeland Planning Area contains Forest Plan allocations of Timber Emphasis (Management Area 1), Timber/Big Game Emphasis (Management Area 3), Wild and Scenic Rivers (Management Area 7), Proposed Research Natural Areas (Management Area 12), and Old Growth Emphasis (Management Area 15). Refer to Figure 1 for the location of these management areas. Desired range, wildlife, and resource conditions for each management area are described below.

For Management Areas 1 and 3, desired conditions are prescribed by the Forest Plan as 'satisfactory' range conditions. In ecological terms, 'satisfactory' rangelands are those in fair to good condition with static or upward trend. Satisfactory condition rangelands are assumed to be represented by mid to late-seral plant communities. Management Area 3 distinguishes winter range for big game, which adds provisions that adequate forage be available for wintering big game. Desired riparian vegetation conditions within these management areas are to be established by setting measurable objectives for key parameters such as stream surface shade, streambank stability, and shrub cover (Forest Plan, Page 4-54). Regional Forester Amendment #3, referred to as PacFish, established streambank stability standards of at least 80 percent. Desired conditions for Swamp Creek are to reach shrub density and diversity conditions on the meadow segment similar to the lower canyon segment.

For Management Area 7, desired rangeland conditions are prescribed by the Forest Plan as those needed to protect or enhance the Outstandingly Remarkable Values for the Joseph Creek Wild and Scenic River. The Joseph Creek Wild and Scenic River Management Plan (Page 6) gives the following description for rangeland desired conditions.

> "The desired future condition for this resource will consist of sustained production of both palatable and non-palatable species for grazing by livestock and dependent wildlife. The areas will remain ecologically diverse and provide excellent winter browse for big game species. The variety of grasses, forbs, shrubs, and trees will be more representative of the natural community at the time of Euro-American settlement. On the grasslands, native bunchgrass communities will predominate, browse species such as ocean spray, snowberry, ninebark, and serviceberry will predominate. Riparian habitat will improve and approximate the natural potential of each site and contain dense stands of willow with a fair component of black cottonwood and aspen. Recreational/grazing conflicts and livestock presence in riparian zone, however few, will be reduced. Recreationists, from late fall to spring, will encounter evidence of cattle on the trails, and the physical presence of livestock, but this will be less than in the past."

For Management Area 12, desired conditions are prescribed by the Forest Plan as those needed to preserve options for future establishment of Research Natural Areas (RNA). The potential Horse Pasture Ridge RNA and the Haystack Rock RNA comprise the area allocated to Management Area 12 within the JCRAA. Both areas were identified as

potential RNAs for their representation of native bunchgrass communities. In ecological terms, the desired condition for the potential RNAs is for maintenance of late-seral plant communities.

For Management Area 15, desired conditions are not addressed, as rangeland forage presence in designated old growth stands is considered incidental and transitory due to competition with the conifer overstory.

Existing Condition

Existing conditions can be described in the context of two scenarios: as if no livestock grazing occurred, or if the current grazing regime continued. Because the existing range condition developed from a grazing history that predates the National Environmental Policy Act and in some cases pre-dates establishment of the National Forest, existing conditions are described here under the scenario of current grazing as influenced by historical grazing. Further information regarding range conditions is provided in Chapter 3 of this analysis.

Range conditions were evaluated for each of the 65 pastures of the Joseph Creek Rangeland Planning Area. All except for 4 pastures were found to have 'satisfactory' range condition. A description of range conditions by Management Area follows.

For pastures primarily within Management Area 1, range conditions are 'satisfactory' with the exception of the Bennett and Upper Swamp pastures of the Swamp Creek Allotment and the Bennett pasture of the Davis Creek Allotment. Portions of the riparian areas in these pastures are in an early seral stage, although in an upward trend. Swamp Creek has been altered through a history of railroad logging, homesteading, road construction, and grazing. The 8.5-mile segment referred to as the Meadow Segment was recently acquired through a land exchange. In this segment, shrub species diversity and quantity are lacking and some streambank reaches are unstable. Much of the herbaceous plants include non-native seeded grasses such as timothy, orchard, and brome. Although beaver occur downstream, they are not found in the Meadow Segment, probably because the food source is limited. The stream system supports steelhead, and the meadow supports a variety of wildlife.

Range conditions for pastures primarily within Management Area 3 are 'satisfactory' with the exception of the Sumac Pasture of the Cougar Creek Allotment. Condition and Trend monitoring for this pasture indicates that areas are in an early seral stage as indicated by a substantial drop in native perennial grasses such as bluebunch wheatgrass and Sandberg's bluegrass.

Management Area 3 emphasizes big-game winter range. Under the current grazing system, big-game winter range has been adequate, according to Oregon Department of Fish and Wildlife biologists. Current Rocky Mountain elk and mule deer populations are below Management Objectives, however. The decline in big-game populations can be attributed to factors such as open road densities, lack of hiding cover, hunting pressure, and predation.

If deer and elk populations were to increase to Management Objectives, additional forage may be needed than currently available at the end of the livestock grazing period.

For areas within Management Area 7, range conditions in the Joseph Creek Wild and Scenic River corridor are 'satisfactory' with isolated small areas of 'unsatisfactory' range condition. The 'unsatisfactory' condition is evident where annual non-native plant species such as cheat grass and introduced grass species exist as a relic of homesteading in this area before establishment of the National Forest. Riparian shrubs are present along Joseph Creek and its tributaries at a density and species diversity that would occur naturally. This condition is assumed to occur when utilization of shrubs by livestock and big game is less than 20 percent.

For areas within Management Area 12, range conditions in the proposed Research Natural Areas are in a good to excellent ecological condition, and a static to upward trend. These areas are represented by late-seral plant communities.

For areas within Management Area 15, the existing range condition is mixed because the conifer overstory generally precludes sustainable rangeland.

Refer to Chapter 3, Rangeland Resources in the FEIS, for further description of existing range conditions.

Public Involvement

Scoping

Public scoping for the JCRA was initiated in January 1999 with the project's inclusion on the January Schedule of Proposed Actions mailed from the Wallowa Mountains Office in Enterprise, Oregon. Also in January 1999, a project information letter was mailed to over 100 individuals, organizations, and agencies for their comment. These individuals and organizations included grazing permittees, State and Federal resource management agencies, and other special interest organizations. A Notice of Intent to prepare an Environmental Impact Statement was published in the Federal Register on February 18, 1999.

Contacts were made with employees of the Nez Perce Tribe and Confederated Tribes of the Umatilla. An office meeting was held in October 2002 with fisheries/environmental policy representatives of the Nez Perce Tribe, and follow-up meetings were held throughout the process thereafter. A field review was conducted with fisheries/environmental policy employees from the Confederated Tribes of the Umatilla in October 2002.

The permittees holding grazing permits on the allotments analyzed in this EIS were included throughout the process. The permittees provided input for alternatives and site-specific development proposals for their respective allotments.

Coordination with Oregon Department of Fish and Wildlife was conducted for this proposal through two September 2003 meetings and several telephone conversations.

These scoping efforts generated responses from 19 agencies, organizations, tribes, or individuals. Responses are documented in 15 letters, as well as several e-mails, telephone conversation records, and meeting notes.

To clarify the concerns, follow-up telephone conversations, meetings, and e-mails were made between the Interdisciplinary Team and those who submitted comments. Much of the correspondence focused on what information should be provided in the EIS. Information obtained from the scoping process is contained in the JCRA analysis file.

Some respondents expressed concerns about how grazing management might affect specially designated areas, such as the Joseph Creek Wild and Scenic River, and potential Research Natural Areas. Key Issues 1, 2, and 3 were developed to respond to these concerns. Concerns about water quality and fisheries habitat were expressed, particularly in Swamp Creek. Key Issue 2 responds to those concerns. Range health and potential conflicts between livestock management and listed plant species were mentioned by some respondents. Key Issue 4 was developed to respond to those concerns. Several livestock grazing permittees expressed concerns about how increasing constraints on their operations sometimes inhibit their ability to manage the range resource effectively. Key Issue 5 was developed to address these concerns. Key Issue 5 also addresses concerns raised by the Nez Perce Tribe about flexibility in grazing systems if the tribe should assert treaty rights related to pasturing of cattle or horses within these allotments. Consultation with Oregon Department of Fish and Wildlife biologists about big-game use of the analysis area resulted in few concerns with the current grazing program. However, the biologists emphasized the need to maintain big-game winter range in key locations, even in drought years. Key Issue 6 was developed to address this concern. Several respondents stressed the need to design grazing systems that provide for long-term rangeland health. Key Issue 7 was developed to address this concern.

Comments on Draft Environmental Impact Statement

A Draft Environmental Impact Statement (DEIS) which responded to the 7 key issues was circulated to all participants in the scoping process, along with the various agencies offered opportunity for review. The Notice of Availability of a DEIS was published in the Federal Register on September 24, 2004.

A total of 7 letters and 7 e-mails were received in response to the DEIS. These comments were reviewed and addressed by the interdisciplinary team. Refer to Appendix B of the FEIS for individual comments and responses.

Consultation with Indian Tribes

Consultation with the Nez Perce Tribe and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) was completed through a series of field and office meetings. A field meeting with staff members for the CTUIR was held in October 2002. A November 2002 letter from the CTUIR Department of Natural Resources director was then received. This

letter was addressed throughout the DEIS. Appendix A of the FEIS lists how the comments in the letter were addressed. Although a letter inviting comment on the DEIS was sent to the department director in October 2003, along with a copy of the DEIS in September 2004, no further comments were received.

Several meetings were held and telephone calls exchanged with staff members for the Nez Perce Tribe starting in 2002 and continuing to the present (refer to the analysis file for a record of these contacts). A letter inviting comment on the Draft EIS was sent to the Chair of the Natural Resources Subcommittee for the Nez Perce Tribe on November 17, 2003, and a copy of the DEIS was then sent in September 2004. The Nez Perce Tribe Executive Committee sent a letter dated October 26, 2004 which contained a detailed response to information in the DEIS. Meetings between tribal and agency staff members continued after the October 26, 2004 letter to clarify concerns and suggest approaches for resolving concerns. A letter that confirmed the agency's interest in and approach to responding to the committee's letter was sent to the Executive Committee on April 6, 2005. Refer to Appendix B of the FEIS for specific comments on the DEIS and how the agency responded to each comment in the FEIS. An update on the status of the JCRA was presented by the District Ranger and Forest Supervisor at an August 16, 2005 Executive Committee meeting and a September 20, 2005 Natural Resources Subcommittee Meeting.

Issues

Issues that could best be addressed by forming an alternative or introducing mitigation or monitoring were identified and categorized as 'Key Issues'. An issue tracking sheet in Appendix A of the FEIS lists other issues considered by the team and either addressed in the analysis or considered outside the scope of this analysis. The following seven key issues and their indicators for measurement were developed from comments on the proposal.

Key Issue 1 - Authorizing livestock grazing within the Joseph Creek Wild and Scenic River may degrade water quality to the point that the Outstandingly Remarkable Values of 'Fish and Water Quality' and 'Wildlife' are neither protected nor enhanced.

- Percent streambank stability in 10 years
- Increases in average maximum summer water temperature in 10 years
- Increases in percent cobble embeddedness in 10 years
- Decreases in percent stream shade in 10 years
- Allowable shrub utilization in the Wild and Scenic River Corridor
- Allowable forage utilization in the Wild and Scenic River Corridor

Key Issue 2 - Authorizing livestock grazing along Swamp Creek may degrade water quality before it reaches the Wild and Scenic River so that the Outstandingly Remarkable Value of 'Fish and Water Quality' is neither protected nor enhanced.

- Allowable shrub utilization in the Meadow Segment of Swamp Creek
- Anticipated streambank stability along the Meadow Segment of Swamp Creek in five to ten years

Key Issue 3 - Authorizing livestock grazing as proposed may not preserve options for establishing Research Natural Areas for the Haystack Rock and Horse Pasture Ridge potential Research Natural Areas.

- Area within the Haystack Rock potential RNA where late-seral plant communities are maintained.
- Area within the Horse Pasture Ridge potential RNA where late-seral plant communities are maintained.

Key Issue 4 - Authorizing livestock grazing within the Tommy's Ridge and Fire Ridge areas as proposed may or may not adequately protect a Threatened plant, Spalding's catchfly, from livestock trampling and habitat alteration. It may or may not adequately protect unknown Spalding's catchfly occurrences in uninventoried portions of the analysis area.

- Uninventoried Spalding's catchfly risk areas subjected to livestock grazing impacts after 3 years
- Acres of risk areas that would be inventoried for the presence of Spalding's catchfly within 3 years.

Key Issue 5 - Authorizing livestock grazing as proposed throughout the Joseph Creek Rangeland Analysis Area may not be adaptive enough to allow a timely or effective response to changing conditions.

- Minimum area for which season of use is defined
- Can tribal treaty rights for pasturing of horses be asserted without initiating a new proposal under NEPA?

Key Issue 6 - Authorizing fall livestock grazing in areas designated as big-game winter range may not provide enough winter range for over-wintering big game.

- Percent plant material retained at the end of fall grazing in areas designated as big-game winter range (Management Area 3)

Key Issue 7 - Grazing as proposed for the JCRAA may not adequately provide for long-term range health in the 4 pastures which were identified as having areas with early seral stage plant communities.

- Predominant seral stage of plant communities within 10 to 20 years in the Sumac Pasture of the Cougar Allotment
- Allowable shrub utilization in the Meadow Segment of Swamp Creek

Alternatives Considered in Detail

A total of six alternatives were considered by the interdisciplinary team. Alternative 1, no grazing; Alternative 2, current management and Proposed Action; Alternative 3 Modified, and Alternative 4 were analyzed in detail in the FEIS. Alternative 3 from the DEIS was dropped from analysis in the FEIS. A sixth alternative was not analyzed in detail.

Alternative 1 - No Action

Alternative 1 represents the 'no grazing' alternative. Under this alternative, all Term Grazing Permits would be canceled upon implementation of the decision and resolution of the appeals process. No permits would be issued for the eleven affected allotments.

For a more detailed description of Alternative 1 refer to Page 18 of the FEIS.

Alternative 2 - The Proposed Action

Alternative 2 represents continuation of the current grazing systems and is the Proposed Action. The 11 allotments and their associated pastures would be stocked at the same level that is currently authorized. Permits would be issued to continue the current grazing system.

For a more detailed description of Alternative 2 refer to Pages 18-30 and 63-64 of the FEIS.

Alternative 3 Modified

Alternative 3 Modified was developed with acknowledgement that changes will occur in resource conditions, issues, and agency direction throughout time. This alternative incorporates adaptive management techniques to address those changes. Potential changes that this alternative may respond to include wildfire, drought, ranching operational changes, ecological conditions, Federal listing of additional species under the Endangered Species Act, Forest Plan revision, and possible execution of Tribal treaty rights. Alternative 3 is the 'preferred alternative'. The 11 allotments would be stocked at the same level as Alternative 2. Stocking of individual pastures within the 11 allotments would be determined by resource conditions rather than recent stocking levels. Modifications to the alternative were made in response to comments received during the public review period related to steelhead habitat, big-game winter range, Spalding's catchfly protections, and stocking of the Swamp Creek Allotment.

For a more detailed description of Alternative 3 Modified refer to Pages 31-46 and 63-64 of the FEIS.

Alternative 4

Alternative 4 was developed in response to comments received during the 45-day public review period of the DEIS. This alternative focuses on a different approach to riparian area management, Wild and Scenic River management, and botanical resources management as suggested by commenters on the DEIS. Alternative 4 is patterned after Alternative 2 in that it specifies stocking levels and grazing durations for each pasture of each allotment. Under Alternative 4, a specific prescription was made to reduce the presence of livestock grazing on fish-bearing streams to an incidental level. This would be accomplished through fencing, herding, and changing the periods in which livestock are permitted to graze.

For a more detailed description of Alternative 4 refer to Pages 47-64 of the FEIS.

Comparison of Alternatives

The following Tables 1 and 2 compare the alternatives.

Table 1 – Comparison of Alternatives

Features	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Need for Action Elements – Range Condition in 10 to 20 years				
Sumac Pasture of the Cougar Creek Allotment	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Bennett Pasture of the Swamp Creek Alloment	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Upper Swamp Pasture of the Swamp Creek Allotment	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Bennett Pasture of the Davis Creek Allotment	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Authorization				
Livestock Type	None	Cattle and Incidental Horse	Cattle and/or Horse	Cattle and/or Horse
Maximum Stocking (Animal Months)				
Al-Cunningham	0	321	321	0
Cougar	0	2,702	2,702	2,702
Crow Creek	0	262	262	232
Davis Creek	0	631	631	631
Dobbins	0	378	378	378
Elk Mountain	0	179	179	179
Fine	0	253	253	253
Hunting Camp / Table Mountain	0	3,104	3,104	2,548
Joseph Creek	0	135	135	95
Swamp Creek	0	4,901	4,901	4,901
Total	0	12,866	12,866	11,919

Table 2 – Key Indicators by Alternative

Issue and Indicators	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Issue 1: Wild and Scenic River				
• Percent streambank stability in 10 years	95	95	95	95
• Increases In average summer water temperature in 10 years	0	0	0	0
• Increases in % cobble embeddedness in 10 years	0	0	0	0
• Decreases in % stream shade in 10 years	0	0	0	0
• Allowable shrub utilization in WSR Corridor (%)	wildlife only	30	20	incidental
• Allowable forage utilization in WSR Corridor (%)	wildlife only	55	50	incidental
Issue 2: Wild and Scenic River				
• Allowable utilization of shrubs in the Meadow Segment of Swamp Creek (%)	0	Up to 30	Determined by monitoring	Determined by monitoring
• Streambank stability along the Meadow segment of Swamp Creek in five to ten years (%)	95	75 to 85	85 to 95	85 to 95
Issue 3 - Potential Research Natural Areas				
• Area within the Horse Pasture Ridge potential RNA where late-seral plant communities are maintained	250 acres	250 acres	250 acres	250 acres
• Area within the Haystack Rock potential RNA where late-seral plant communities are maintained	400 acres	400 acres	400 acres	400 acres
Issue 4 – Spalding's Catchfly				
• Acres of uninventoried Spalding's catchfly risk areas subjected to livestock grazing impacts after 3 years	0	7630	0 to 4740	0 to 4740
• Acres of additional risk areas that would be inventoried for the presence of Spalding's catchfly within 3 years	0	0	2890 to 7630	2890 to 7630
Issue 5 – Adaptive Management				
• Minimum area for which season of use is defined	Not Applicable	Pasture	Allotment	Pasture
• Can tribal treaty rights for pasturing of cattle be asserted without initiating a new NEPA analysis?	Not Applicable	Yes	Yes	Yes
• Can tribal treaty rights for pasturing of horses be asserted without initiating a new NEPA analysis?	Not Applicable	No	Yes	Yes
Issue 6 – Big Game Winter Range				
• Percent plant material retained at the end of fall grazing in designated big-game winter range	Wildlife use only	45	50 to 60	50 to 60
Issue 7 – Range Condition				
• Predominant seral stage of plant communities within 10 to 20 years in the Sumac Pasture of the Cougar Allotment	Mid to Late	Mid to Late	Mid to Late	Mid to Late
• Allowable shrub utilization in the Meadow Segment of Swamp Creek (%)	Wildlife use	Less than 30	Determined by monitoring	Determined by monitoring

Rationale for the Decision

As the Responsible Official, it is my decision to select Alternative 3 Modified as described in the FEIS for the Joseph Creek Rangeland Analysis (Chapter 2, Pages 31–46, and 63-64), including the mitigation and monitoring requirements described in the FEIS (Chapter 2, Pages 66-74). I selected this alternative after considering how it meets the purpose and need for action, how it addresses the key issues, the trade-off of environmental effects identified in the FEIS, and its responsiveness to public comments received on the DEIS.

Purpose of and Need for Action

I selected Alternative 3-Modified because it is the best alternative for meeting the purpose of and need for action. The purpose of and need for action is that livestock forage production is to be offered where forage is in excess to basic plant and soil needs, where wildlife forage is available, and where other specific resource conditions are achieved or maintained. This condition was defined for this analysis as maintaining satisfactory range conditions while allowing forage beyond basic plant and soil needs to be made available for wildlife and livestock.

I selected Alternative 3-Modified because it provides for a level of livestock grazing that I believe will maintain satisfactory range conditions. Alternative 3 Modified authorizes the same stocking level as the current grazing systems. As shown on Pages 82-88 of the FEIS, monitoring of the current stocking level since 1995 indicates that utilization standards have been met at least 95 percent of the time, and condition and trend surveys indicate unsatisfactory range conditions in portions of just 4 of the 65 pastures within the JCRAA. Three out of the four pastures with unsatisfactory range conditions are associated with riparian conditions along Swamp Creek that are recovering from more intensive use while the pastures were held in private ownership. Considering the variability associated with measuring utilization levels, I am comfortable with 95 percent compliance. The prevalence of satisfactory range condition and relative success in complying with utilization standards indicates to me that reductions in stocking to maintain satisfactory range condition over time are not needed. Rather, problem areas in the JCRAA with respect to range condition appear to be localized. Localized problem areas are addressed by Alternative 3 Modified through mitigation and monitoring, which I believe will be more effective than simply reducing stocking levels. Alternative 3-Modified authorizes a total of 12,866 head-months of livestock grazing. I believe that this level of stocking is allowing for basic plant and soil needs. Oregon Department of Fish and Wildlife biologists assessed the current livestock grazing level in the JCRAA as not limiting winter forage for big game. At the same time, this level of stocking supports viable livestock grazing operations.

Alternative 1, the no-grazing alternative, does not make forage beyond that needed for basic plant and soils needs and for wildlife available for livestock grazing. Therefore, it does not meet the purpose of and need for action, and I did not select it. Alternative 2, current management, provides for the same level of stocking as Alternative 3-Modified. However, I prefer Alternative 3-Modified because it adopts a monitoring program for

adjusting livestock grazing use along the Meadow Segment of Swamp Creek. While riparian conditions along this segment of Swamp Creek are continuing to recover from an "unsatisfactory" condition since their acquisition from a private landowner, Alternative 3-Modified would allow for a greater rate of recovery by initiating a monitoring program for streambank stability and shrub utilization. I did not select Alternative 4 because while it meets the purpose of and need for action, it does so at a cost that would threaten the viability of livestock operations that have shown a 10-year record of leaving adequate forage for plant and soil and wildlife needs and therefore meeting the purpose of and need for action.

Key Issues

The key issues were developed from responses to comment and resource specialist information regarding the proposed action. Refer to Table 2 for a summary of how the alternatives respond to the key issues. Key issues were developed with respect to the Joseph Creek Wild and Scenic River (Issue 1) and potential Research Natural Areas (Issue 3). Based on analysis of these issues however, the indicators did not point to distinct differences between alternatives. We included the issues, however, because of public interest and the disclosure of potential effects provided by the analysis of these issues. Information in the FEIS indicates that a certain level of livestock grazing is appropriate for the Wild and Scenic River (Pages 209-216) and potential Research Natural Areas (Pages 216-219). Recent grazing systems for these areas have successfully maintained the conditions for which these areas were designated, and little difference among the alternatives was noted in the FEIS. In a similar vein, the issue related to forage health (Issue 7) is resolved among all of the alternatives, due to normal range monitoring and application of Forest Plan Standards and Guidelines.

My selection of Alternative 3 Modified focuses on the differences among alternatives with respect to Swamp Creek (Issue 2), Spalding's catchfly (Issue 4), adaptive management (Issue 5), and big game (Issue 6). I prefer the monitoring approach for determining shrub utilization and streambank stability for Swamp Creek, which is included in Alternative 3 Modified. I think it is imperative to complete adequate inventory and monitoring of Spalding's catchfly potential habitat to reduce the potential risk to the species, and Alternative 3 Modified commits to completion of that inventory. The adaptive management associated with Alternative 3 Modified allows greater flexibility in responding to change and allows for more timely response to assertion of tribal treaty rights for pasturing of cattle or horses. I also support a measured approach to providing for big-game winter range that considers fluctuating climatic and resource conditions. Alternative 3 Modified provides for adequate big-game forage, but without undue changes in livestock use.

Environmental Effects

I considered the balance of environmental effects presented in Chapter 3 of the FEIS before selecting Alternative 3 Modified. I noted that all of the alternatives were consistent with applicable laws such as the Endangered Species Act and Clean Water Act. While Alternative 1 is the environmentally preferable alternative and shows a clear difference in

impacts on the biological and physical environment from the other alternatives, I did not select Alternative 1 partly because of the adverse social and economic impacts associated with it. Alternative 1 also does not address Forest Plan direction to make available for livestock grazing the forage that is surplus to the needs of plants, soil, and wildlife. Clearly there is a demand for use of this surplus forage, and not offering it for livestock utilization would be inconsistent with management direction. Between Alternatives 2, 3, Modified, and 4, I found a similarity in impacts between Alternatives 2 and 3 Modified as opposed to Alternative 4. Alternative 4 would lessen impacts on fisheries and water quality at a higher economic cost to the livestock permittees. As the FEIS compares impacts on aquatic resources to livestock grazing standards in the Forest Plan, as established by PacFish and InFish (FEIS, Pages 151-159), I see that none of the alternatives would retard attainment of RMOs. Alternative 4 provides a different approach for livestock management in Nonetheless, this different approach is at the economic detriment to viable livestock grazing operations. I narrowed my selection to Alternatives 2 or 3 Modified because they provide for a rate of recovery for aquatic resources consistent with Forest Plan standards and guidelines, and livestock grazing systems in these alternatives are similar to recently used systems which have proven to be viable over time. My decision to select Alternative 3 Modified over Alternative 2 is then based on the adaptive management feature of Alternative 3 Modified. The FEIS identifies foreseeable future actions (Page 77), but experience shows that unforeseeable future actions are likely to occur as well (FEIS, Page 31). I like the flexibility that Alternative 3 Modified affords to respond to changing conditions with fewer ties to traditional grazing systems. I believe that managing environmental effects within the sideboards of Forest Plan standards and guidelines would be more readily achieved under Alternative 3 Modified than under Alternative 2.

Comments on the DEIS

I selected Alternative 3 Modified because I believe it is the most responsive alternative to comments received on the DEIS. The individual comments and responses are contained in Appendix B of the FEIS. The comments represented a wide variety of viewpoints on the preferred alternative. Some comments stated that the preferred alternative was too restrictive on livestock grazing operations while other comments stated that the preferred alternative did not contain enough restrictions on livestock grazing operations. I considered all of the comments carefully in making my decision.

I considered the government to government and staff to staff communications that we have maintained throughout the analysis process with the Nez Perce Tribe and the Confederated Tribes of the Umatilla Indian Reservation. With the JCRAA being part of Nez Perce Tribe ceded lands, I acknowledge our responsibility to address the reserved rights of hunting, fishing, gathering, and the pasturing of cattle and horses. Consequently, I instructed the interdisciplinary team to develop and address Alternative 4 and to modify and address Alternative 3. The new and modified alternatives emphasize protection of those rights to a greater degree than the proposed action. Alternative 4 provided for greater protection of steelhead-bearing streams from the presence of livestock grazing through fencing and altering livestock use. It also halted fall grazing of the Joseph Creek canyon, and limited livestock grazing to spring use, thus providing ample winter forage for big-game. In Alternative 4, it is also anticipated that if the Blue Mountain Land Exchange proposal is

finalized, that the Al-Cunningham allotment would not be stocked. Vacant allotments provide logical placements for tribal grazing if treaty rights are asserted. Obviously, Alternative 4 addresses the Nez Perce Tribe's concerns to a greater degree than the other alternatives. Modifications to Alternative 3 between the DEIS and FEIS also addressed tribal comments, albeit to a lesser extent than Alternative 4. Alternative 3 Modified includes some streamside fencing of steelhead fisheries, adopts the tribe's suggested controls on fall use of forage in big-game winter range, and adopts greater protections for Spalding's catchfly. When I consider the full range of comments received on the DEIS, however, Alternative 3 Modified emerges as a better balance, as described below.

Comments were received from a group of permittees that elected to submit a single letter. These comments focused on how information in the DEIS inaccurately characterized resource conditions in the JCRAA as degraded. These comments concluded with a preference towards a blending of Alternatives 2 and 3 so that producers would have more assurances in the future. These comments and responses to the comments are contained in Appendix B of the FEIS. Of particular concern in the permittee letter was the characterization of range condition within the South Crow and Doe Gulch Pastures of the Crow Creek Allotment. An October 2004 field review by the interdisciplinary team confirmed that range condition ratings used in the DEIS were overly broad and mischaracterized the range condition of these two pastures. The permittees also commented on how detrimental effects on aquatic and wildlife resources in the DEIS were presented as the general condition rather than isolated concern areas. The interdisciplinary team considered each of these comments and where warranted, revised the FEIS by clarifying the extent of any detrimental effects. I believe that the adaptability introduced by Alternative 3 Modified could be either beneficial or detrimental to permittee operations, depending on the adaptation that is needed. Therefore, I do not believe that my selection of Alternative 3 Modified constitutes an undue threat to the viability of livestock grazing operations in the JCRAA.

Of the 14 letters or e-mails we received on the DEIS, 11 of these contacts expressed a preference for no grazing or strictly limited grazing within the Joseph Creek Wild and Scenic River Corridor. One commenter submitted a detailed photo monitoring report taken along the Wild and Scenic River Corridor in August 2004 along with a letter referencing the report. The letter and photo report outlined what the commenter believed was substantial ongoing damage to the riparian vegetation and streambanks due to livestock grazing. Normally, the Wild and Scenic River corridor is grazed in the summer and fall. However, in August 2004, as described in the response to comment 7c.20, in Appendix B of the FEIS, a group of 10 cow-calf pairs and 1 dry cow were missed when moving a herd from the Swamp Creek allotment and spent about two weeks in the vicinity of Joseph Creek before they were detected. The livestock were removed upon notifying the permittee. We also received several reports of a moose residing in the corridor that summer, and elk presence along the river is not uncommon. All of these factors contributed to evidence of large animals being in the vicinity of Joseph Creek in August 2004.

When I review the monitoring photos, I note the evidence of large animals such as bent grass and some hoof prints along the river bank. However, when this relatively subtle amount of impact is compared to the standards established by the Joseph Creek Wild and Scenic River Management Plan, I believe that the impacts noted in August 2004 are well within the plan's desired condition. Joseph Creek is designated as a Wild River bounded by

an area designated Management Area 3 (big-game winter range). The Management Plan gives specific desired conditions to be achieved within the corridor related to livestock grazing. While I understand the value that individuals would place on this unique area, I also believe that the Management Plan, a Forest Plan amendment, is the basis from which I am obliged to manage the area. The FEIS clearly describes the existing condition within the corridor and projects future effects from livestock grazing that would be well within the limits of the Management Plan (Pages 165-166 and 214-216). Therefore, I feel that the level of protection provided to the Wild and Scenic River by Alternative 3 Modified is consistent with the Forest Plan. One commenter suggested that the Forest Plan be amended by my decision on the JCRA so that more restrictive standards could be placed on livestock-induced effects. I find no compelling need for a Forest Plan amendment, rather I note that a commenter simply disagrees with the standards implemented by the original Management Plan for the Joseph Creek Wild and Scenic River Management Plan.

Several letters on the DEIS were submitted by organizations that prepared detailed comments, and in response, the interdisciplinary team prepared detailed responses (Appendix B of the FEIS). I used these comments as information for modifying Alternative 3 and for developing Alternative 4. The level of concern about big-game indicated to me that Alternatives 3 Modified and 4 would best be designed to maintain in the fall 50 to 60 percent of available forage in designated big-game winter range. Protections for known Spalding's catchfly sites were strengthened for Alternatives 3 Modified and 4, based on these comments. Since Alternative 4 was developed partly in response to these comments, I expect that these commenters would support selection of Alternative 4 or perhaps an even more restrictive alternative. However, my selection of Alternative 3 Modified does address some of the concerns in these comments.

When I evaluate the comments received on the DEIS, I believe that Alternative 3 Modified strikes a reasonable balance by addressing comments that are within the scope of my authority as well as consistent with how grazing management has been represented by the Forest Plan and its amendments.

Findings Required by Other Laws, Regulations, and Orders

National Forest Management Act

The Forest Plan guides all natural resource management activities through the establishment of Forest-wide and Area-specific standards and guidelines. These standards and guidelines are based on the NFMA management requirements set forth at 36 CFR 219.27. The analysis contained in Pages 77 to 232 of the JCRA and the analysis contained in the Analysis File address (1) the NFMA management requirements of resource protection, riparian areas, soil and water, and diversity and (2) the Forest-wide and Area-specific standards and guidelines of the Forest Plan.

I find that these analyses demonstrate that the JCRA is consistent with the requirements of the NFMA and the standards and guidelines of the Forest Plan. Therefore, based on the effects analysis contained in Pages 77 to 232 of the JCRA, and the data in the Analysis File,

I find that the implementation of Alternative 3 Modified is consistent with Management Direction for the Forest Plan.

Endangered Species Act

As analyzed in the Lower Grande Ronde Biological Assessment, the proposed action 'may affect, but is not likely to adversely affect' listed Snake River steelhead. This is supported by the determination that the proposed actions would maintain or improve the environmental baseline of Matrix indicators for streams within the analysis area and would decrease the risk of aggregate and cumulative effects on population and/or habitat. A risk of direct effects from trampling of steelhead redds is identified, but the risk would be minimized through protection measures adopted for allotments containing steelhead habitat. Refer to Pages 145-169 of the FEIS for further information on direct, indirect, aggregate, and cumulative effects. National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS) have reviewed the best available information and concur with information presented in the Lower Grande Ronde Subbasin Multi-Species Biological Assessment (contained in the Analysis File). Both agencies concur with the Wallowa-Whitman National Forest finding that authorizing grazing in the JCRAA May Affect, but is not Likely to Adversely Affect listed Snake River steelhead trout. This concurrence was documented in a joint Letter of Concurrence from the two agencies received on April 30, 2001 and contained in the analysis file.

With respect to Spalding's catchfly, a determination of May Affect Likely to Adversely Affect was made for the Al-Cunningham, Cougar Creek, Crow Creek, Davis Creek, Hunting Camp, Table Mountain, and Swamp Creek Allotments, a determination of May Affect, Not Likely to Adversely Affect was made for the Joseph Creek Allotment, and a determination of No Effect was made for the Dobbins, Elk Mountain, and Fine Allotments. Refer to Pages 102-120 of the FEIS for further rationale behind these determinations. The USFWS concurred with these determinations through its Biological Opinion dated September 16, 2005.

Effects on threatened or endangered wildlife species, or species proposed for listing, were evaluated, and a determination of No Effect was made (refer to the Wildlife Biological Assessment in the Analysis File). Under interagency guidelines for implementing Section 7 of the Endangered Species Act, such a determination requires no consultation with USFWS.

Based on the process followed in making determinations of effect and consulting with USFWS and NMFS on these effects, I find that implementation of Alternative 3 Modified is consistent with Section 7 of the Endangered Species Act.

Clean Water Act

The Clean Water Act provides direction "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters". To carry out this law, the State of Oregon has established state water quality standards for factors such as water temperature, sedimentation, habitat modification and pH, and an anti-degradation policy to protect water quality conditions. Under the anti-degradation policy in Section 303(d), water bodies that do not meet water quality standards are designated as "water quality limited".

Alternative 3 Modified is consistent with the Clean Water Act because as noted in the FEIS (Page 159), there would be no additional effect to the parameters for which certain streams in the JCRAA were placed on the ODEQ 303(d) list. Therefore, I find that implementation of Alternative 3 Modified is consistent with the Clean Water Act.

National Historic Preservation Act

The Oregon State Historic Preservation Officer (SHPO) has been consulted concerning proposed activities in the JCRAA. The SHPO concurred with findings by the project archaeologist that the project will have an effect on known cultural resources through a letter dated July 21, 2005. A Memorandum of Agreement will be drafted between the Forest Service and SHPO for implementing the mitigations and monitoring contained in the FEIS for archaeological site protection. I therefore find that Alternative 3 Modified is consistent with the National Historic Preservation Act.

Civil Rights, Women, and Minorities

Adverse effects on civil rights, women and minorities are not expected from implementing Alternative 3 Modified, as addressed on Page 231 of the FEIS. To the greatest extent possible, all populations have been provided the opportunity to comment before decisions are rendered on proposals and activities affecting human health or the environment. The activities in this decision will not have a direct or indirect negative effect on minority or low-income populations.

Environmental Justice

On February 11, 1994, President Clinton signed Executive Order 12898. This order directs each Federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. The President also signed a memorandum on the same day, emphasizing the need to consider these types of effects during NEPA analysis. On March 24, 1995, the Department of Agriculture completed an implementation strategy for the executive order. Where Forest Service proposals have the potential to disproportionately adversely affect minority or low-income populations, these effects must be considered and disclosed (and mitigated to the degree possible) through the NEPA

analysis and documentation. Effects on the human environment from implementation of Alternative 3 Modified are expected to be similar for all human populations, regardless of nationality, gender, race, or income (refer to Page 231 of the FEIS). I therefore find that Alternative 3 Modified is consistent with Executive Order 12898.

Wetlands and Floodplains

Executive Order 11988 requires government agencies to take actions that reduce the risk of loss due to floods, to minimize the impact of floods on human health and welfare, and to restore and preserve the natural and beneficial values served by floodplains. Wetlands and floodplains are affected by the decision in this ROD. Livestock grazing will occur within 100-year floodplains, however, the requirements in Alternative 3 Modified minimize impacts and in the case of Swamp Creek, would contribute to the restoration of the flood plain (Page 231 of the FEIS). I therefore find that Alternative 3 Modified is consistent with Executive Order 11988.

Executive Order 11990 requires that government agencies take action to minimize the destruction, loss, or degradation of wetlands. Streamside riparian areas, seeps, springs, and other wet habitats exist within the JCRAA and would be grazed by livestock. Management requirements and site-specific mitigation will minimize the effects of livestock grazing on wetlands (refer to Page 231 of the FEIS. I therefore find that Alternative 3 Modified is consistent with Executive Order 11990.

The Environmentally Preferable Alternative

In this decision, I have described the selected alternative and given rationale for its selection. It is also required by law that one or more environmentally preferable alternatives be disclosed [40 CFR 1505.2(b)]. The environmentally preferable alternative is not necessarily the alternative that will be implemented and it does not have to meet the underlying need for the project. It does, however, have to cause the least damage to the biological and physical environment and best protect, preserve, and enhance historical, cultural, and natural resources (Title I, Section 101, NEPA as amended).

In the case of the JCRA, I have determined that Alternative 1, no action, is the environmentally preferable alternative: Because Alternative 1 does not authorize livestock grazing, the influence of livestock on the biological and physical environment and historical, cultural, and natural resources would be eliminated. As previously noted, however, Alternative 1 does not meet the purpose of and need for action. Alternatives 2, 3 Modified, and 4 all authorize livestock grazing, along with the livestock-induced effects upon the biological and physical environment and upon historical, cultural, and natural resources. Refer to effects on the environment described in Chapter 3 of the FEIS.

Mitigation Measures

Mitigation measures pertinent to the action alternatives are listed below. Mitigation measures address potential impacts by avoiding adverse impacts, minimizing adverse impacts by limiting activities, or rectifying adverse impacts through rehabilitation. In addition to the mitigation measures listed below, measures are included from the Forest Plan (including PacFish/InFish) and agreements reached during the ESA consultation process for this proposal.

- Riparian/upland utilization standards will be met through season of use, riding, placing salt, and maintaining upland water sources.

- Allotments identified with unsatisfactory range conditions will be managed to promote upward trends. Specific direction will be identified in the subsequent Allotment Management Plans and the Annual Operating Instructions for each allotment.

- Permittees will be provided with a current list of noxious weeds and Threatened, Endangered, and Sensitive plant identification material. A map showing known noxious weed infestations and Threatened, Endangered, or Sensitive plant sites within each allotment will be reviewed at each annual operating meeting. Permittes will be asked to add known noxious weed locations not shown on the map.

- To reduce the risk of introducing noxious weeds, all heavy equipment used to maintain range improvements will be cleaned in a manner sufficient to prevent noxious weeds from being carried onto the analysis area. This requirement does not apply to passenger vehicles or other equipment used exclusively on roads. Cleaning will occur off of National Forest System lands. Cleaning will be inspected and approved by the Forest Officer in charge of administering the project, although permittees may complete the inspection.

- To reduce the risk of introducing noxious weeds, annual instructions include quarantining livestock that come from known weed infested areas before turning out on the National Forest and also inspection and treatment for allotment entry units if livestock have come from weed infested areas.

- To reduce the risk of introducing noxious weeds, any seed used in the maintenance of water developments or in restoration projects will be certified weed free.

- To reduce cattle impacts on riparian vegetation and stream channels, permittees will herd cattle during the grazing season at a frequency needed to reduce livestock concentration in riparian areas.

- To reduce cattle impacts on riparian vegetation and stream channels, permittees will select stock driveway locations that are on existing roads or avoid riparian areas.

- To reduce cattle impacts on riparian vegetation and stream channels, permittees will not place salt for livestock within ¼- mile of riparian areas.

- In the Catchfly, Holding, North Crow, South Crow, and Doe Gulch Pastures, protect Spalding's catchfly sites between approximately mid-May and late-August by not grazing in those pastures during that critical growth time period. Alternatively, avoid grazing management impacts to Spalding's catchfly sites in those pastures at that time by utilizing various fencing techniques to eliminate livestock around the Spalding's catchfly sites.

- In the North Crow, South Crow, Doe Gulch, Holding, Catchfly, and Dorrance Pastures, place salt so that livestock will not be encouraged to move toward the known populations of Spalding's catchfly. Keep salting locations greater than 1/4th mile from known occurrences unless site specific conditions dictate otherwise and the Forest Service concurs.

- Manage the South Crow and Doe Gulch Pastures in a manner that continues their recovery and transition past a mid-seral stage.

- To reduce the risk of mortality to Sensitive bat species, watering troughs will be installed with escapement ramps, and troughs will be checked each year.

- Strategize and set inventory priorities for areas where potential habitat for Spalding's catchfly has been identified and is at risk to impacts from livestock grazing as provided by this analysis. A range of 2,890 to 7,630 acres of risk areas would be inventoried. If sites are found, they would be protected utilizing the suite of actions being employed at the currently known sites in the Crow Creek and Swamp Creek Allotments.

- Herding activities that move livestock (not part of the Crow Creek allotment permit) through the Doe Gulch pastures in the fall, enroute from the Swamp Creek Allotment to deeded ground will be contained to the Doe Gulch roadway.

- Through project design, summer grazing of pastures containing Spalding's catchfly will be avoided under foreseeable circumstances, with the exception of the Dorrance pasture. In the Dorrance pasture, summer grazing will occur every other season and the Spalding's catchfly sites will be protected with herding or similar active management techniques, alternative fencing, during this use period.

- Permittees will be provided with a current list of noxious weeds and Threatened, Endangered, and Sensitive plant identification material. A map showing known noxious weed infestations and Threatened, Endangered, or Sensitive plant sites within each allotment will be reviewed at each annual operating meeting. Permittes will be asked to add known noxious weed locations not shown on the map.

- If a severe spring drought situation is declared for the range land in the northern part of Wallowa County as a result of recommendations from agencies within the Department of Agriculture, avoid spring grazing around the Spalding's catchfly sites

in the South Crow, Doe Gulch and Catcfhly pastures. As an alternative to this pasture use, consider utilizing portions of the Dorrance, or Holding pastures (with permittee concurrence). Do not spring graze these pastures more than 3 seasons in a row.

- To Sensitive plant populations, salt placement to improve distribution during the grazing season would not occur within 1/4 mile of known Sensitive plant populations unless site-specific conditions dictate otherwise and the Forest Service concurs.

- To limit physical damage to known occurrences of Wallowa Mountain Ricegrass, Engelmann's daisy, and Hazel's prickly phlox, work with permittees on identification of these plants and their locations. Instruct permittees to photograph selected occurrences of Wallowa Mountain Ricegrass and Engelmann's daisy at the end of each grazing season and submit the photos to the Forest Service at the annual operating meeting.

- To reduce the potential for physical impacts from livestock management to Engelmann's daisy and Hazel's prickly phlox, instruct permittees not to establish any new stock drive-ways in steep canyon terrain without first surveying for this species, and routing the driveway to avoid any found occurrences.

- To reduce the risk to sensitive riparian areas, the following steps will be taken or projects identified. Where site-specific ground-disturbing projects are identified, a separate environmental analysis will be completed to address potential impacts associated with the ground-disturbing activities:

  Use adaptive techniques such as herding, salting, adjusting season of use, developing upland water sources, and fencing to draw livestock away from sensitive areas.

  Relocate water gaps to appropriate sites, harden gaps with rock and wood placement, and develop offsite water sources.

  When livestock trailing causes premature channelization or headcutting of intermittent streams and ephemeral draws, place woody material, fence, or change the timing of grazing to address these problems as they occur.

  Continue to re-locate troughs from in-channel locations.

Monitoring

The following items are needed to keep impacts at acceptable levels while moving range conditions toward desired conditions. These items would be applied to the project as it is implemented on the ground. These monitoring items address Forest Plan direction, Section 7 conclusions by the Level 1 ESA Consultation Team as documented in Biological Assessments and letters of concurrence, commitments within the Lower Grande Ronde Subbasin Biological Assessment (USDA 2001), terms and conditions within the Biological

Opinion for Effects on Steelhead from Implementing the Forest Plan (DOC 1999), Interagency Implementation Team's implementation and effectiveness monitoring (IIT), and additional elements determined necessary by the Interdisciplinary Team for the JCRAA. Refer to the FEIS for a definition of monitoring terminology (Pages 71-72).

- Complete trigger monitoring as needed during the grazing season to ensure end of season standards can be met.

- Complete end of season utilization monitoring annually at selected key areas. Priority key areas may include where resource concerns emerge or where previous years' utilization standards were exceeded.

- Carry out compliance monitoring as needed to ensure livestock are in appropriate pastures.

- Collect streambbank disturbance data where needed.

- Complete Interagency Implementation Team implementation monitoring on key areas within the JCRAA.

- Participate in the Interagency Implementation Team Effectiveness monitoring when watersheds within the planning area are selected for review.

- Complete Condition and Trend monitoring using the appropriate methodology needed to identify trends for particular attributes (Parker 3-step, ecoplot, photo trend etc.).

- Follow the National Riparian Service Team's recommendations (refer to Appendix C) for annual monitoring of shrub utilization and streambank stability in the meadow segment of Swamp Creek in the Upper Swamp and Bennett Pastures of Swamp Creek Allotment and the Bennett Pasture of Davis Creek Allotment.

- Establish and monitor several key areas in elk winter range areas to ensure that 50 to 60 percent of the available forage is retained after fall livestock grazing on key species such as bluebunch wheatgrass and Idaho fescue.

- Monitor key areas in the Sumac Pasture of the Cougar Allotment for compliance with "unsatisfactory" range condition utilization standards until the pasture indicates mid to late seral stage plant communities. At this time, utilization standards for "satisfactory" range condition would be applied and compliance monitoring will continue for the revised standard.

- Shrub utilization monitoring on identified riparian areas will be documented using the riparian ocular utilization estimate form.

- Monitor and evaluate patterns of use of the Swamp Creek Allotment for three years to determine if stocking exceeds the allotment's capacity.

- Coordinate the development and implementation of population trend monitoring for the Spalding's catchfly found along Crow Creek. Trend monitoring implementation will be dependent upon budgets, available methodologies and recommendations within the Spalding's Catchfly Recovery Plan. Seek partnerships and academic assistance with monitoring plan establishment, re-reading and reporting. Utilize site visits and census techniques (where applicable) to look at site persistence until other monitoring techniques can be employed.

- To monitor forage utilization near Spalding's catchfly, ensure that adequate numbers of "key areas" are established in terrain that represents grassland conditions in the vicinity of the known Spalding's catchfly sites. Make these a priority for reading.

- Establish and conduct vegetation trend monitoring (using an appropriate methodology) in representative pastures where populations of Spalding's catchfly occur, to ensure that range condition is stable or on an upward trend.

- During grazing seasons, monitor conditions around representative Spalding's catchfly sites in the Crow Creek and Swamp Creek allotment for livestock impacts each year for 5 years. If no impacts are observed after 5 years, document and review again every 3rd year, or when there is a change in a permittee or a change in livestock class. Seasonally document monitoring results with photos and or short reports (memos). If signs of detrimental impacts, specifically new cattle trails, bedding/dusting areas, or more than incidental hoof impacts are identified within the sites, implement one or more of the following actions:

    i. Change the grazing season, numbers or duration, to protect the occurrences from impacts.

    ii. Fence or cage all or significant portions of the Spalding's catchfly sites.

    iii. Herd, salt, or use other active management techniques to draw livestock away from the Spalding's catchfly sites.

    iv. Move gates or alter cross pasture fences to better facilitate cattle movement away from Spalding's catchfly.

    v. Avoid grazing during the critical growth period (approximately mid-May through late-August).

- In the Dorrance pasture, monitor as stated above and avoid summer grazing more than 3 years in a row. In the Catchfly pasture, monitor as stated above and avoid spring grazing more than 3 years in a row.

- Engelmann's daisy - While conducting utilization monitoring, observe the representative Engelmann's daisy patches in the Holding and Tamarack Pastures of the Hunting Camp Allotment. If needed, move key areas to better represent range conditions and Engelmann's daisy populations. If more than incidental livestock use

(trailing or herbivory) of Engelmann's daisy is observed, actively manage cattle to minimize the impacts.

- Wallowa Mountain Ricegrass - Revisit representative Wallowa Mountain Ricegrass occurrences in pastures being grazed in the spring at least once every 5 years.

Appeal Rights

Appeals under 36 CFR 215 must be fully consistent with 36 CFR 215.14, "Appeal Content." The notice of appeal must be filed hard copy with Steven A. Ellis, P.O. Box 907, Baker City, Oregon, faxed to 541-523-1315, sent electronically to appeals-pacificnorthwest-wallowa-whitman@fs.fed.us, or hand-delivered to the above address between 7:45AM and 4:30PM, Monday through Friday except legal holidays. The appeal must be postmarked or delivered within 45 days of the date the Notice of Availability for this decision appears in the ***Federal Register***. The publication date of the Notice of Availability is the exclusive means for calculating the time to file an appeal and those wishing to appeal should not rely on dates or timeframes provided by any other source.

Electronic appeals must be submitted as part of the actual e-mail message, or as an attachment in Microsoft Word, rich text format, or portable document format only. E-mails submitted to e-mail addresses other than the one listed above or in other formats than those listed or containing viruses will be rejected. Only individuals or organizations who submitted substantive comments during the comment period may appeal. This project may be implemented 50 days after this legal notice if no appeal is received. If an appeal is received, the project may not be implemented for 15 days after the appeal decision.

Contact Person

For additional information regarding this decision, please contact

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BARBARA C. WALKER
Wallowa Valley District Ranger
Wallowa-Whitman National Forest

Date

Joseph Creek Rangeland Analysis

Final Environmental Impact Statement

Wallowa County, Oregon
September 2005

Lead Agency	USDA – Forest Service
Responsible Official	Barbara C. Walker, Wallowa Valley District Ranger
Further Information	Alicia Glassford, Team Leader Wallowa Valley Ranger District Wallowa-Whitman National Forest 88401 Highway 82 Enterprise, OR 97828 (541) 426-5689 aglassford@fs.fed.us
Abstract	This final Environmental Impact Statement documents four alternatives analyzed in detail for the Joseph Creek Rangeland Analysis which is a proposal to allocate forage for commercial livestock grazing on eleven allotments in the vicinity of Joseph Creek. The Joseph Creek Rangeland Analysis Area is located approximately 15 miles north of Enterprise, Oregon. Alternatives include Alternative 1 (no grazing), Alternative 2 (current management and the proposed action), Alternative 3 Modified, and Alternative 4. The preferred alternative is Alternative 3 Modified which would authorize grazing using an adaptive approach to grazing management while implementing specific protections for sensitive areas.

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Summary of the Final Environmental Impact Statement

This final Environmental Impact Statement (FEIS) analyzes and discloses the potential site-specific environmental effects of a proposal to authorize livestock grazing within the Joseph Creek Rangeland Analysis Area (JCRAA). The JCRAA includes 11 livestock grazing allotments and covers 95,555 acres on the Wallowa Valley Ranger District of the Wallowa-Whitman National Forest. Refer to Figure 1 in the FEIS.

Purpose of and Need for Action

The Wallowa-Valley District Ranger has identified a purpose and need for forage allocation for commercial livestock grazing. The purpose and need for action is based on the premise that livestock forage production is to be offered where forage is in excess to basic plant and soil needs, wildlife forage is available, and other specific resource conditions are achieved or maintained (Wallowa-Whitman National Forest Land and Resource Management Plan, Page 4-3). This plan, referred to as the Forest Plan, recognizes that the local livestock industry desires to maintain and increase National Forest grazing which coincides with Forest and Rangeland Renewable Resources Act (RPA) projections of increases in National population and total demand for beef (Forest Plan, Page 2-10). However, the Forest Plan also notes the complications that are involved regarding livestock effects on streamside damage to soil, vegetation and water quality, and the cost of improvements needed to alleviate these effects (Page 2-10).

The purpose of and need for action is generated by the difference between existing conditions and desired conditions for forage in the JCRAA. Desired conditions are for satisfactory range conditions as evaluated on a pasture-wide basis. Satisfactory range conditions occur where range is in fair to good condition with stable or upward trend. A more specific description of desired range conditions by Management Area is contained in the FEIS.

Existing range conditions were evaluated for each of the 65 pastures of the Joseph Creek Rangeland Planning Area. All except for 5 pastures were found to have satisfactory range condition. A description of range conditions by Management Area is contained in the FEIS.

Key Issues

Of the public and agency concerns raised during the scoping process, seven key issues were developed as follows. The remaining concerns were addressed throughout the analysis as outlined in Appendix A.

Issue 1

Key Issue - Authorizing livestock grazing within the Joseph Creek Wild and Scenic River may degrade water quality to the point that the Outstandingly Remarkable Values of 'Fish and Water Quality' and 'Wildlife' are neither protected nor enhanced.

Measures for evaluating this issue are

- Percent streambank stability in 10 years
- Increases in average maximum summer water temperature in 10 years
- Increases in percent cobble embeddedness in 10 years
- Decreases in percent stream shade in 10 years
- Allowable shrub utilization in the Wild and Scenic River Corridor
- Allowable forage utilization in the Wild and Scenic River Corridor

Issue 2

Key Issue - Authorizing livestock grazing along Swamp Creek may degrade water quality before it reaches the Wild and Scenic River so that the Outstandingly Remarkable Value of 'Fish and Water Quality' is neither protected nor enhanced.

Measures for evaluating this issue are

- Allowable shrub utilization in the Meadow Segment of Swamp Creek
- Anticipated streambank stability along the Meadow Segment of Swamp Creek in five to ten years

Issue 3

Key Issue - Authorizing livestock grazing as proposed may not preserve options for establishing Research Natural Areas for the Haystack Rock and Horse Pasture Ridge potential Research Natural Areas.

Measures for evaluating this issue are

- Area within the Haystack Rock potential RNA where late-seral plant communities are maintained.
- Area within the Horse Pasture Ridge potential RNA where late-seral plant communities are maintained.

Issue 4

Key Issue - Authorizing livestock grazing within the Tommy's Ridge and Fire Ridge areas as proposed may or may not adequately protect a Threatened plant, Spalding's catchfly, from

livestock trampling and habitat alteration. It may or may not adequately protect unknown Spalding's catchfly occurrences in uninventoried portions of the analysis area.

The measure for evaluating this issue is

- Uninventoried Spalding's catchfly risk areas subjected to livestock grazing impacts after 3 years
- Acres of risk areas that would be inventoried for the presence of Spalding's catchfly within 3 years.

Issue 5

Key Issue - Authorizing livestock grazing as proposed throughout the Joseph Creek Rangeland Analysis Area may not be adaptive enough to allow a timely or effective response to changing conditions.

Measures for evaluating this issue are

- Minimum area for which season of use is defined
- Can tribal treaty rights for pasturing of horses be asserted without initiating a new proposal under NEPA?

Issue 6

Key Issue - Authorizing fall livestock grazing in areas designated as big-game winter range may not provide enough winter range for over-wintering big game.

The measure for this issue is

- Percent plant material retained at the end of fall grazing in areas designated as big-game winter range (Management Area 3)

Issue 7

Key Issue - Grazing as proposed for the JCRAA may not adequately provide for long-term range health in the 4 pastures which were identified as having areas with early seral stage plant communities.

Measures for this issue are

- Predominant seral stage of plant communities within 10 to 20 years in the Sumac Pasture of the Cougar Allotment
- Allowable shrub utilization in the Meadow Segment of Swamp Creek

Alternatives

A total of six alternatives were considered by the interdisciplinary team. Alternative 1, no grazing; Alternative 2, current management and Proposed Action; Alternative 3 Modified, and Alternative 4 are analyzed in detail in the FEIS and are described below. Alternative 3 from the DEIS was dropped from analysis in the FEIS. A sixth alternative was considered but not analyzed in detail.

Alternative 1 represents the 'no grazing' alternative. Under this alternative, all Term Grazing Permits would be canceled upon implementation of the decision and resolution of the appeals process. No permits would be issued for the eleven affected allotments.

Alternative 2 represents continuation of the current grazing systems and is the Proposed Action. The 11 allotments and their associated pastures would be stocked at the same level that is currently authorized. Permits would be issued to continue the current grazing system.

Alternative 3 Modified was developed with acknowledgement that changes will occur in resource conditions, issues, and agency direction throughout time. This alternative incorporates adaptive management techniques to address those changes. Potential changes that this alternative may respond to include wildfire, drought, ranching operational changes, ecological conditions, Federal listing of additional species under the Endangered Species Act, Forest Plan revision, and possible execution of Tribal treaty rights. Alternative 3 is the 'preferred alternative'. The 11 allotments would be stocked at the same level as Alternative 2. Stocking of individual pastures within the 11 allotments would be determined by resource conditions rather than recent stocking levels. Modifications to the alternative were made in response to comments received during the public review period related to steelhead habitat, big-game winter range, Spalding's catchfly protections, and stocking of the Swamp Creek Allotment.

Alternative 4 was developed in response to comments received during the 45-day public review period of the DEIS. This alternative focuses on a different approach to riparian area management, Wild and Scenic River management, and botanical resources management as suggested by commenters on the DEIS. Alternative 4 is patterned after Alternative 2 in that it specifies stocking levels and grazing durations for each pasture of each allotment. Under Alternative 4, a specific prescription was made to reduce the presence of livestock grazing on fish-bearing streams to an incidental level. This would be accomplished through fencing, herding, and changing the periods in which livestock are permitted to graze.

Resolution of Issues by Alternative

The following table displays how the alternatives respond to the key issues.

Issue and Indicators	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Issue 1: Wild and Scenic River				
• Percent streambank stability in 10 years	95	95	95	95
• Increases In average summer water temperature in 10 years	0	0	0	0
• Increases in % cobble embeddedness in 10 years	0	0	0	0
• Decreases in % stream shade in 10 years	0	0	0	0
• Allowable shrub utilization in WSR Corridor	wildlife only	30	20	incidental
• Allowable forage utiliziation in WSR Corridor	wildlife only	55	50	incidental
Issue 2: Wild and Scenic River				
• Allowable utilization of shrubs in the Meadow Segment of Swamp Creek (%)	0	Up to 30	Determined by monitoring	Determined by monitoring
• Strambank stability along the Meadow segment of Swamp Creek in five to ten years (%)	95	75 to 85	85 to 95	85 to 95
Issue 3 - Potential Research Natural Areas				
• Area within the Horse Pasture Ridge potential RNA where late-seral plant communities are maintained	250 acres	250 acres	250 acres	250 acres
• Area within the Haystack Rock potential RNA where late-seral plant communities are maintained	400 acres	400 acres	400 acres	400 acres
Issue 4 – Spalding's Catchfly				
• Acres of uninventoried Spalding's catchfly risk areas subjected to livestock grazing impacts after 3 years	0	7630	0 to 4740	0 to 4740
• Acres of additional risk areas that would be inventoried for the presence of Spalding's catchfly within 3 years	0	0	2890 to 7630	2890 to 7630
Issue 5 – Adaptive Management				
• Minimum area for which season of use is defined	Not Applicable	Pasture	Allotment	Pasture
• Can tribal treaty rights for pasturing of cattle be asserted without initiating a new NEPA analysis?	Not Applicable	Yes	Yes	Yes
• Can tribal treaty rights for pasturing of horses be asserted without initiating a new NEPA analysis?	Not Applicable	No	Yes	Yes
Issue 6 – Big Game Winter Range				
• Percent plant material retained at the end of fall grazing in designed big-game winter range	Wildlife use only	45	50 to 60	50 to 60
Issue 7 – Range Condition				
• Predominant seral stage of plant communities within 10 to 20 years in the Sumac Pasture of the Cougar Allotment	Mid to Late	Mid to Late	Mid to Late	Mid to Late
• Allowable shrub utilization in the Meadow Segment of Swamp Creek (%)	Wildlife use	Less than 30	Determined by monitoring	Determined by monitoring

Affected Environment and Environmental Consequences

The affected environment and environmental consequences were disclosed for range, botanical, aquatic, wildlife, recreation, and scenic resources and specially designated areas. The alternatives were found to be consistent with Forest Plan standards and guidelines, including Forest Plan amendments such as PacFish, the Joseph Creek Wild and Scenic River Management Plan, and the Wallowa-Whitman Integrated Noxious Weed Management Plan. The environmental consequences indicate consistency with the Clean Water Act and the Wild and Scenic River Act and processes have been followed consistent with the Endangered Species Act. For further information, refer to Chapter 3 starting on Page 77 of the FEIS.

Changes from the DEIS to the FEIS

Several changes were made to the DEIS which responded to public comments on the DEIS and which corrected errors in the DEIS. Appendix B of the FEIS lists the comments received on the DEIS and contains a specific response to each comment. Many of these responses note changes that were made to the DEIS. A general summary of changes to the DEIS follows.

Alternative 3 Modified was developed and incorporated into the FEIS. This alternative responds to many of the comments on the DEIS.

Alternative 3 from the DEIS was dropped from further analysis.

Alternative 4 was developed and incorporated into the FEIS. This alternative responds to many of the comments on the DEIS, particularly those related to fish-bearing streams, Wild and Scenic Rivers, and Spalding's catchfly sites.

The terminology of satisfactory/unsatisfactory range condition used in the DEIS was changed to a more descriptive terminology related to the seral stage of plant communities.

A review of the South Crow and Doe Gulch Pastures in the Crow Creek Allotment indicated that range conditions were misrepresented in the DEIS. Corrections were made to the FEIS.

Alternative descriptions, mitigation, and monitoring were streamlined in Chapter 2 of the FEIS to improve the reader's understanding of the alternatives.

Various errors and inconsistencies contained in the DEIS were corrected in the FEIS. Many of these items were noted by commentors and are described in Appendix B of the FEIS.

Chapter 1 - Purpose of and Need for Action

The Wallowa-Valley District Ranger is proposing to authorize livestock grazing on eleven livestock allotments within the 95,555-acre Joseph Creek Rangeland Analysis Area. The allotment names are Al-Cunningham, Cougar Creek, Crow Creek, Davis Creek, Dobbins, Elk Mountain, Fine, Hunting Camp/Table Mountain, Joseph Creek, and Swamp Creek. Refer to Figure 1 for a vicinity map.

The chapter begins with an explanation of the purpose and need for action and a statement of the proposed action developed to meet that purpose and need. The chapter also addresses the decision framework, outlines applicable management direction, and identifies the analysis area and location of the analysis file. The chapter closes by listing the issues identified during scoping and by summarizing the scoping process.

Purpose of and Need for Action

The Wallowa-Valley District Ranger has identified a purpose and need for forage allocation for commercial livestock grazing. The purpose and need for action is based on the premise that livestock forage production is to be offered where forage is in excess to basic plant and soil needs, wildlife forage is available, and other specific resource conditions are achieved or maintained (Wallowa-Whitman National Forest Land and Resource Management Plan, Page 4-3). This plan, referred to as the Forest Plan, recognizes that the local livestock industry desires to maintain and increase National Forest grazing which coincides with Forest and Rangeland Renewable Resources Act (RPA) projections of increases in National population and total demand for beef (Forest Plan, Page 2-10). However, the Forest Plan also notes the complications that are involved regarding livestock effects on streamside damage to soil, vegetation and water quality, and the cost of improvements needed to alleviate these effects (Page 2-10).

The purpose and need is represented by the difference between the area's desired and existing conditions with respect to the management direction for the area.

Desired Condition

Basic rangeland, wildlife, and resource conditions are defined by the Forest Plan specific to each Management Area. The Joseph Creek Rangeland Planning Area contains Forest Plan allocations of Timber Emphasis (Management Area 1), Timber/Big Game Emphasis (Management Area 3), Wild and Scenic Rivers (Management Area 7), Proposed Research Natural Areas (Management Area 12), and Old Growth Emphasis (Management Area 15). Refer to Figure 1 for the location of these management areas. Desired range, wildlife, and resource conditions for each management area are described below.

For Management Areas 1 and 3, desired conditions are prescribed by the Forest Plan as 'satisfactory' range conditions. In ecological terms, 'satisfactory' rangelands are those in fair to good condition with static or upward trend. Satisfactory condition rangelands are assumed to be represented by mid to late-seral plant communities. Management Area 3 distinguishes winter range for big game, which adds provisions that adequate forage be available for wintering big game. Desired riparian vegetation conditions within these management areas are to be established by setting measurable objectives for key parameters such as stream surface shade, streambank stability, and shrub cover (Forest Plan, Page 4-54). Regional Forester Amendment #3, referred to as PacFish, established streambank stability standards of at least 80 percent. Desired conditions for Swamp Creek are to reach shrub density and diversity conditions on the meadow segment similar to the lower canyon segment.

For Management Area 7, desired rangeland conditions are prescribed by the Forest Plan as those needed to protect or enhance the Outstandingly Remarkable Values for the Joseph Creek Wild and Scenic River. The Joseph Creek Wild and Scenic River Management Plan (Page 6) gives the following description for rangeland desired conditions.

> "The desired future condition for this resource will consist of sustained production of both palatable and non-palatable species for grazing by livestock and dependent wildlife. The areas will remain ecologically diverse and provide excellent winter browse for big game species. The variety of grasses, forbs, shrubs, and trees will be more representative of the natural community at the time of Euro-American settlement. On the grasslands, native bunchgrass communities will predominate, browse species such as ocean spray, snowberry, ninebark, and serviceberry will predominate. Riparian habitat will improve and approximate the natural potential of each site and contain dense stands of willow with a fair component of black cottonwood and aspen. Recreational/grazing conflicts and livestock presence in riparian zone, however few, will be reduced. Recreationists, from late fall to spring, will encounter evidence of cattle on the trails, and the physical presence of livestock, but this will be less than in the past."

For Management Area 12, desired conditions are prescribed by the Forest Plan as those needed to preserve options for future establishment of Research Natural Areas (RNA). The potential Horse Pasture Ridge RNA and the Haystack Rock RNA comprise the area allocated to Management Area 12 within the JCRAA. Both areas were identified as potential RNAs for their representation of native bunchgrass communities. In ecological terms, the desired condition for the potential RNAs is for maintenance of late-seral plant communities.

For Management Area 15, desired conditions are not addressed, as rangeland forage presence in designated old growth stands is considered incidental and transitory due to competition with the conifer overstory.

Existing Condition

Existing conditions can be described in the context of two scenarios: as if no livestock grazing occurred, or if the current grazing regime continued. Because the existing range condition developed from a grazing history that predates the National Environmental Policy Act and in some cases pre-dates establishment of the National Forest, existing conditions are described here under the scenario of current grazing as influenced by historical grazing. Further information regarding range conditions is provided in Chapter 3 of this analysis.

Range conditions were evaluated for each of the 65 pastures of the Joseph Creek Rangeland Planning Area. All except for 4 pastures were found to have 'satisfactory' range condition. A description of range conditions by Management Area follows.

For pastures primarily within Management Area 1, range conditions are 'satisfactory' with the exception of the Bennett and Upper Swamp pastures of the Swamp Creek Allotment and the Bennett pasture of the Davis Creek Allotment. Portions of the riparian areas in these pastures are in an early seral stage, although in an upward trend. Swamp Creek has been altered through a history of railroad logging, homesteading, road construction, and grazing. The 8.5-mile segment referred to as the Meadow Segment was recently acquired through a land exchange. In this segment, shrub species diversity and quantity are lacking and some streambank reaches are unstable. Much of the herbaceous plants include non-native seeded grasses such as timothy, orchard, and brome. Although beaver occur downstream, they are not found in the Meadow Segment, probably because the food source is limited. The stream system supports steelhead, and the meadow supports a variety of wildlife.

Range conditions for pastures primarily within Management Area 3 are 'satisfactory' with the exception of the Sumac Pasture of the Cougar Creek Allotment. Condition and Trend monitoring for this pasture indicates that areas are in an early seral stage as indicated by a substantial drop in native perennial grasses such as bluebunch wheatgrass and Sandberg's bluegrass.

Management Area 3 emphasizes big-game winter range. Under the current grazing system, big-game winter range has been adequate, according to Oregon Department of Fish and Wildlife biologists. Current Rocky Mountain elk and mule deer populations are below Management Objectives, however. The decline in big-game populations can be attributed to factors such as open road densities, lack of hiding cover, hunting pressure, and predation. If deer and elk populations were to increase to Management Objectives, additional forage may be needed than currently available at the end of the livestock grazing period.

For areas within Management Area 7, range conditions in the Joseph Creek Wild and Scenic River corridor are 'satisfactory' with isolated small areas of 'unsatisfactory' range condition. The 'unsatisfactory' condition is evident where annual non-native plant species such as cheat grass and introduced grass species exist as a relic of homesteading in this area before establishment of the National Forest. Riparian shrubs are present along Joseph Creek and its tributaries at a density and species diversity that would occur

naturally. This condition is assumed to occur when utilization of shrubs by livestock and big game is less than 20 percent.

For areas within Management Area 12, range conditions in the proposed Research Natural Areas are in a good to excellent ecological condition, and a static to upward trend. These areas are represented by late-seral plant communities.

For areas within Management Area 15, the existing range condition is mixed because the conifer overstory generally precludes sustainable rangeland.

Refer to Chapter 3, Rangeland Resources, for further description of existing range conditions.

Proposed Action (Alternative 2)

The Wallowa Valley District Ranger proposes to authorize continued grazing on eleven cattle allotments within the Joseph Creek Rangeland Analysis Area. The allotment management plans that emerge from this analysis would be implemented in Spring 2006. The proposed action is represented by Alternative 2 in Chapter 2. Refer to Pages 18-31 for a description of the proposed action.

Decision Framework

The decision framework refers to the nature of the decision that will be made by the Wallowa Valley District Ranger based on the analysis contained in this document and the comments submitted during the public review and comment period for this Environmental Impact Statement. The decision framework does not describe the actual content of the District Ranger's pending decision.

At the conclusion of the public review and comment period, the Wallowa Valley District Ranger will decide whether to implement management of the Joseph Creek Rangeland Analysis Area as proposed, to implement management in a modified fashion, or not to implement management at all. The District Ranger's decision will also determine if the project might require amendment of the Forest Plan. Implementation of the decision is anticipated in Spring of 2006.

The Record of Decision accompanies the Final Environmental Impact Statement, and it identifies the selected alternative. Selection of alternatives will be based on the analysis contained in the FEIS, including factors such as: how the alternatives meet the purpose of and need for action, respond to the key issues, consider the environmental effects, comply with the Forest Plan, and respond to public comments.

Analysis Area

The Joseph Creek Rangeland Analysis Area is located north of Enterprise, Oregon, within the Wallowa Valley Ranger District of the Wallowa-Whitman National Forest. The JCRAA encompasses approximately 95,555 acres of National Forest and interspersed private land. The range analysis area contains portions of the Upper Joseph and Lower Joseph Creek Watersheds and includes the following major tributaries: Crow Creek, Elk Creek, Davis Creek, and Swamp Creek. Refer to Figure 1 for a vicinity map. The analysis area is currently managed under 11 livestock grazing allotments which are administered under 13 permits. The area of each allotment is shown in Table 1.

Table 1 - Allotment Acreages

Allotment	NFS Acres	Private Land Acres
Al-Cunningham	1,630	392
Cougar Creek	17,583	0
Crow Creek	1,573	395
Davis Creek	5,738	0
Dobbins	255	1,360
Elk Mountain	207	355
Fine	1,467	48
Hunting Camp	10,228	0
Joseph Creek	1,002	569
Swamp Creek	33,046	1,444
Table Mountain	14,591	478

Management Direction

Management direction is derived from the Wallowa-Whitman National Forest Land and Resource Management Plan (Forest Plan), as amended which incorporates PacFish, InFish, and the Wallowa-Whitman Integrated Noxious Weed Management Plan.

Management Areas

Management Areas prescribed by the Forest Plan are listed in Table 1 by allotment. Figure 1 displays a map of the management areas (MA) within the JCRAA. A summary of the resource objectives behind each management area follows.

Table 2 - Management Area Acres by Allotment

Allotment	MA 1 Acres	MA 1W Acres	MA 3 Acres	MA 7 Acres	MA 12/12-7 Acres	MA 15 Acres	MA 15-7 Acres
Al-Cunningham	114		1,376			140	
Cougar Creek	11,984		5,180			419	
Crow Creek	628	804	130			11	
Davis Creek	5,577		5			156	
Dobbins	101	154					
Elk Mountain	207						
Fine	987		342			138	
Hunting Camp/ Table Mountain	8,543		12,255	1,595	705/55	1,666	
Joseph Creek	90		453	375		84	
Swamp Creek	15,646	1,098	15,312	340		640	10
Total acres	43,877	2056	35,053	2310	760	3254	10
Percent of analysis area	50	2	40	3	1	4	Less than 0.1

MA1/1W - Management emphasizes wood fiber production on suitable lands while providing relatively high levels of forage and recreational opportunities. Areas designated as 1W describe where winter range overlaps with MA1.

MA3 - This management area is identified as big game winter range. Management is similar to MA1, but timber management is designed to provide near-optimum cover and forage conditions.

MA7 - Management is intended to preserve the special values of those rivers or river segments (river plus associated corridor) which are part of the National Wild and Scenic Rivers System.

MA12/12-7 - These areas are designated as Research Natural Areas and are established to preserve examples of all significant ecosystems to serve as comparison for those influenced by human activities. Research Natural Areas within the Wild and Scenic River corridor are 12-7.

MA15/15-7 – These areas are intended to maintain habitat diversity, preserve aesthetic values, and to provide old-growth habitat for wildlife. MA 15-7 displays areas where old growth managed habitat occurs within the Wild and Scenic river corridor.

Standards and Guidelines

Forest Plan standards and guidelines (as amended) describe the management direction for livestock management within the JCRAA.

1) Forage production in excess to that needed for the health of the plant and soil resources will be made available for harvest by wildlife and domestic livestock within the forage and browse utilization standards and guidelines from the Forest Plan (Pages. 4-51 and 52).

2) Give management and enhancement of water quality, protection of watercourses and streamside management units, and fish habitat priority over uses described or implied in all other management standards or guidelines (Page 4-22).

3) Manage riparian areas so as to avoid measurably increasing water temperatures on Class I streams. On Class II streams, management will limit temperature increases to the criteria in State standards (Page 4-23).

4) Mitigate negative impacts causing reduction in water quality to return water quality to previous levels in as short a time as possible (Page 4-23).

5) Enhance streambank vegetation where it can be effective in improving channel stability or fish habitat (Page 4-23).

6) Give areas in which water quality or channel stability are being adversely impacted high priority for treatment to minimize the effects of the impact or to correct the impacting activity (Page 4-23).

7) Habitats will be protected and managed for the perpetuation and recovery of Proposed, Endangered, Threatened and Sensitive species (Page 4-30).

8) Management will strive for maintenance of native and desirable introduced or historical plant and animal species, and will provide for all seral stages in abundance and distribution (Page 4-1).

9) Habitat will be provided for viable populations of existing native and desirable non-native vertebrate wildlife species (Page 4-2).

10) Manage for timber and grazing so as to provide protection of tree plantations through improvements in livestock management (Page 4-58).

11) Consider the effects of all Forest Service undertakings on significant cultural resources and avoid or mitigate any adverse effects (Page 4-20).

12) All environmental analyses conducted under NEPA for ground- disturbing activities will consider noxious weed management (Integrated Noxious Weed Management Plan, Decision Notice, Page.2).

13) All projects incorporate noxious weed prevention strategies (Integrated Noxious Weed Management Plan, Appendix D, Page 79).

14) GM-1 Modify grazing practices (e.g.) accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of Riparian Management Objectives (PacFish, Appendix C).

15) GM-2 Locate new livestock handling and/or management facilities outside of Riparian Habitat Conservation Areas. For existing livestock handling facilities inside the Riparian Habitat Conservation Areas, assure that facilities do not prevent

attainment of Riparian Management Objectives. Relocate or close facilities where these objectives cannot be met (PacFish, Appendix C).

16) GM-3 Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that will not retard or prevent attainment of Riparian Management Objectives or adversely affect inland native fish (PacFish, Appendix C).

Analysis File

The analysis file that supports this Environmental Impact Statement is available at the Wallowa Valley Ranger District in Enterprise, Oregon.

Public Involvement

Scoping

Public scoping for the JCRAA was initiated in January 1999 with the project's inclusion on the January Schedule of Proposed Actions mailed from the Wallowa Mountains Office in Enterprise, Oregon. Also in January 1999, a project information letter was mailed to over 100 individuals, organizations, and agencies for their comment. These individuals and organizations included grazing permittees, State and Federal resource management agencies, and other special interest organizations. A Notice of Intent to prepare an Environmental Impact Statement was published in the Federal Register on February 18, 1999.

Contacts were made with employees of the Nez Perce Tribe and Confederated Tribes of the Umatilla. An office meeting was held in October 2002 with fisheries/environmental policy representatives of the Nez Perce Tribe, and follow-up meetings were held throughout the process thereafter. A field review was conducted with fisheries/environmental policy employees from the Confederated Tribes of the Umatilla in October 2002.

The permittees holding grazing permits on the allotments analyzed in this EIS were included throughout the process. The permittees provided input for alternatives and site-specific development proposals for their respective allotments.

Coordination with Oregon Department of Fish and Wildlife was conducted for this proposal through two September 2003 meetings and several telephone conversations.

These scoping efforts generated responses from 19 agencies, organizations, tribes, or individuals. Responses are documented in 15 letters, as well as several e-mails, telephone conversation records, and meeting notes.

To clarify the concerns, follow-up telephone conversations, meetings, and e-mails were made between the Interdisciplinary Team and those who submitted comments. Much of the correspondence focused on what information should be provided in the EIS. Information obtained from the scoping process is contained in the JCRA analysis file.

Some respondents expressed concerns about how grazing management might affect specially designated areas, such as the Joseph Creek Wild and Scenic River, and potential Research Natural Areas. Key Issues 1, 2, and 3 were developed to respond to these concerns. Concerns about water quality and fisheries habitat were expressed, particularly in Swamp Creek. Key Issue 2 responds to those concerns. Range health and potential conflicts between livestock management and listed plant species were mentioned by some respondents. Key Issue 4 was developed to respond to those concerns. Several livestock grazing permittees expressed concerns about how increasing constraints on their operations sometimes inhibit their ability to manage the range resource effectively. Key Issue 5 was developed to address these concerns. Key Issue 5 also addresses concerns raised by the Nez Perce Tribe about flexibility in grazing systems if the tribe should assert treaty rights related to pasturing of cattle or horses within these allotments. Consultation with Oregon Department of Fish and Wildlife biologists about big-game use of the analysis area resulted in few concerns with the current grazing program. However, the biologists emphasized the need to maintain big-game winter range in key locations, even in drought years. Key Issue 6 was developed to address this concern. Several respondents stressed the need to design grazing systems that provide for long-term rangeland health. Key Issue 7 was developed to address this concern.

Comments on Draft Environmental Impact Statement

A Draft Environmental Impact Statement (DEIS) which responded to the 7 key issues was circulated to all participants in the scoping process, along with the various agencies offered opportunity for review. The Notice of Availability of a DEIS was published in the Federal Register on September 24, 2004.

A total of 7 letters and 7 e-mails were received in response to the DEIS. These comments were reviewed by and addressed by the interdisciplinary team. Refer to Appendix B for individual comments and responses.

Consultation with Indian Tribes

Consultation with the Nez Perce Tribe and the Confederated Tribes of the Umatilla was completed through a series of field and office meetings. A field meeting with staff members for the Confederated Tribes of the Umatilla was held in October 2002. Multiple meetings were held and telephone calls exchanged with staff members for the Nez Perce Tribe starting in 2002 and continuing to the present (refer to the analysis file for a record of these contacts). These contacts focused on addressing tribal treaty rights in the Proposed Action and alternatives and responding in the FEIS to comments in the Nez Perce Tribe Executive Committee dated October 26, 2004. A letter that confirmed the agency's interest in and

approach to responding to the committee's letter was sent on April 6, 2005. Refer to Appendix B for specific comments and how the agency responded to each comment.

Issues

Issues that could best be addressed by forming an alternative or introducing mitigation or monitoring were identified and categorized as 'Key Issues'. An issue tracking sheet in Appendix B lists other issues considered by the team and either addressed in the analysis or considered outside the scope of this analysis. The following seven key issues were developed from comments on the proposed action.

Issue 1

Key Issue - Authorizing livestock grazing within the Joseph Creek Wild and Scenic River may degrade water quality to the point that the Outstandingly Remarkable Values of 'Fish and Water Quality' and 'Wildlife' are neither protected nor enhanced.

Management of the Joseph Creek Wild and Scenic River corridor is prescribed by the Joseph Creek Wild and Scenic River Management Plan, which was amended into the Forest Plan in 1994. The corridor is approximately 1/2- mile in width and is designated Management Area 7. This area includes the Wilder and Joseph Breaks pastures of the Table Mountain Allotment, the Joseph Creek Pasture of the Joseph Creek Allotment, and the Buck Pasture of the Swamp Creek Allotment. Refer to the area designated as Management Area 7 on Figure 1 for a map of the Wild and Scenic River corridor. Outstandingly Remarkable Values (ORV) for Joseph Creek include 'Fish and Water Quality' and 'Wildlife'.

Resource objectives established by the Wild and Scenic River Management Plan state that livestock grazing will be managed so that the area remains ecologically diverse and provides excellent winter browse for big-game species. The variety of grasses, forbs, shrubs, and trees will be more representative of the natural community at the time of Euro-American settlement. On the grasslands, native bunchgrass communities will predominate, browse species such as ocean spray, snowberry, ninebark, and serviceberry will predominate. Riparian habitat will improve and approximate the natural potential of each site.

The plan establishes specific parameters for maintaining the water quality and fisheries ORV. Streambank stability will be at least 90 percent. Maximum summer stream temperatures will be 68 degrees Fahrenheit or at least on a decreasing trend. Cobble embeddedness (a measure of sediment accumulation) will be less than 15 percent. Stream shade will be 20 to 30 percent in the downstream segment and 25 to 35 percent in the upstream segment.

Measures for evaluating this issue are

- Percent streambank stability in 10 years
- Increases in average maximum summer water temperature in 10 years
- Increases in percent cobble embeddedness in 10 years
- Decreases in percent stream shade in 10 years
- Allowable shrub utilization in the Wild and Scenic River Corridor
- Allowable forage utilization in the Wild and Scenic River Corridor

Issue 2

Key Issue - Authorizing livestock grazing along Swamp Creek may degrade water quality before it reaches the Wild and Scenic River so that the Outstandingly Remarkable Value of 'Fish and Water Quality' is neither protected nor enhanced.

While only the lower 0.75 miles of Swamp Creek are within the Wild and Scenic River corridor, Swamp Creek is a major tributary to Joseph Creek and a contributor to the water quality of Joseph Creek. The lower 8.5-mile segment of Swamp Creek is a V-shaped valley with interspersed meadows. This segment is fenced and is managed as a riparian pasture. Riparian vegetation is intact and plays the proper role in providing streambank stability and supporting beaver populations. It presents an example of desired conditions for Swamp Creek.

However, continuing upstream, Swamp Creek turns into a flat alluvial valley. This 8.7-mile segment is referred to as the Meadow Segment. Until the late 1990s, most of this segment and its adjoining floodplain was in private ownership, and grazing management was not waived to the Forest Service. The segment displays a lack of shrub species diversity and quantity, resulting in some segments of streambank instability.

The Swamp Creek Restoration project was initiated in 1999 to improve watershed condition and fisheries habitat in the Meadow Segment through fencing, planting of hardwoods, upland water source development, hardening of water gaps, and road maintenance. The desired condition would be to increase streambank stability to 90 percent. The current shrub component along Swamp Creek is sporadic and is predominately alder with some dogwood, hawthorn, willow, and water birch. Ocular estimates of current streambank stability are 75 to 85 percent in this segment, although the stability has increased since 1999. The desired condition would include more shrubs and a wider variety of species, including better representation of species other than alder. Species appropriate for this area would be mountain maple, hawthorn, aspen, willow, water birch, mountain snowberry, service berry, black elderberry, black cottonwood, and mountain ash.

This issue arises from the influence that livestock grazing will have on the rate of recovery achieved by the Swamp Creek Restoration project.

Measures for evaluating this issue are

- Allowable shrub utilization in the Meadow Segment of Swamp Creek
- Anticipated streambank stability along the Meadow Segment of Swamp Creek in five to ten years

Issue 3

Key Issue - Authorizing livestock grazing as proposed may not preserve options for establishing Research Natural Areas for the Haystack Rock and Horse Pasture Ridge potential Research Natural Areas.

The potential Haystack Rock and Horse Pasture Ridge Research Natural Areas were proposed for inclusion in the Research Natural Area system in 1990 by the Forest Plan. These areas are designated Management Area 12 as shown on Figure 1 and are both in the Table Mountain Allotment. The Haystack Rock area occurs in the Wilder and Joseph Breaks Pastures and the Horse Pasture Ridge Area occurs in the Horse Pasture Ridge Pasture. Both areas were identified as potential RNAs for their representation of native bunchgrass communities. These areas have received light livestock use in the past and continue to have only incidental use. The Horse Pasture Ridge potential RNA has some degraded range conditions at the south end due to an area where salt was traditionally placed, but is otherwise in good to excellent ecological condition. The Haystack Rock area is in good to excellent condition, although a portion of the potential RNA is shown on a privately owned parcel. Both areas are represented by late-seral plant communities. The desired conditions for potential RNAs are to preserve the values for which the area was identified so that future establishment is not precluded. Part of the establishment process is to delineate a boundary that includes the best representative portion of the desired plant communities.

Measures for evaluating this issue are

- Area within the Haystack Rock potential RNA where late-seral plant communities are maintained.
- Area within the Horse Pasture Ridge potential RNA where late-seral plant communities are maintained.

Issue 4

Key Issue - Authorizing livestock grazing within the Tommy's Ridge and Fire Ridge areas as proposed may or may not adequately protect a Threatened plant, Spalding's catchfly, from livestock trampling and habitat alteration. It may or may not adequately protect unknown Spalding's catchfly occurrences in uninventoried portions of the analysis area.

Known occurrences of Spalding's catchfly occur in the vicinity of Tommy's Ridge and Fire Ridge. Refer to Figure 4 in Chapter 3. Tommy's Ridge encompasses the area between Crow Creek and the National Forest boundary to the east. This area is currently managed within the North Crow, South Crow, and Doe Gulch Pastures of the Crow Creek Allotment. Fire Ridge encompasses the ridgeline west of Crow Creek. It is currently managed within the Dorrance, Dorrance Holding, and Catchfly Pastures of the Swamp Creek Allotment. The populations on Tommy's Ridge could be at risk to impacts from livestock and past grazing practices due to isolated areas of early seral stage plant communities, and a water

development in the Doe Gulch Pasture attracts livestock toward a known population. Continuation of the current grazing strategy may or may not adequately protect this plant or its surrounding potential habitat on Tommy's Ridge. The populations on Fire Ridge, however are in pastures demonstrating light livestock use and vegetation that is in a late seral stage. Continuation of the current grazing strategy would continue to protect this plant and its surrounding potential habitat on Fire Ridge.

Approximately 30 percent of the analysis area had been surveyed for the presence of rare plants, although those survey locations do not necessarily coincide with the areas having highest potential for Spalding's catchfly. Potential habitat for Spalding's catchfly has been determined through a model created for the Wallowa-Whitman National Forest under contract with the Oregon Natural Heritage Program. Modeled habitat occurs at varying probabilities throughout the analysis area (refer to maps in the analysis file). Spalding's catchfly risk areas within the JCRAA were delineated that have limited survey, have the highest probability for containing catchfly habitat as shown by the model and as tempered by local knowledge of the analysis area, and are grazed during periods when catchfly is at risk to livestock damage. Refer to Figure 4 for a map of these risk areas. A total of 10,662 acres have been identified as risk areas. Approximately 3032 of those acres were surveyed in the summer of 2004 for the presence of Spalding's catchfly. These surveys did not identify any new occurrences of Spalding's catchfly.

The measure for evaluating this issue is

- Uninventoried Spalding's catchfly risk areas subjected to livestock grazing impacts after 3 years
- Acres of risk areas that would be inventoried for the presence of Spalding's catchfly within 3 years.

Issue 5

Key Issue - Authorizing livestock grazing as proposed throughout the Joseph Creek Rangeland Analysis Area may not be adaptive enough to allow a timely or effective response to changing conditions.

Because grazing permits are issued for a 10-year period, resource and climatic conditions, agency policy, and legal requirements can change over the permit period. Allotment management plans that strictly define grazing management schedules and livestock use are not effective in managing these changes over time. The proposed action (current management) prescribes specific seasons of use, duration of grazing, and stocking levels for each pasture. While these specifications may be the best management system for that allotment at this time, changes in circumstances may unnecessarily limit the agency's ability to respond to future issues.

Another potential change in grazing results from tribal treaty rights related to pasturing of cattle and horses. These rights may be asserted at any time, and the agency would respond to any requests for these rights. Responding to these rights may require changing allotment or pasture boundaries, stocking vacant allotments, or possibly shifting use of current permittees. The tight scheduling associated with the proposed action would make it difficult to respond to potential changes caused by tribal assertion of treaty rights. Horse grazing has been authorized by the Forest Service on these allotments in the past, although only for incidental grazing by riding and packstock. If tribal horse grazing occurred within the JCRAA, additional analysis for this type of grazing would need to be completed.

Measures for evaluating this issue are

- Minimum area for which season of use is defined
- Can tribal treaty rights for pasturing of horses be asserted without initiating a new proposal under NEPA?

Issue 6

Key Issue - Authorizing fall livestock grazing in areas designated as big-game winter range may not provide enough winter range for over-wintering big game.

Big-game winter range occurs in the lower elevations of Joseph Creek and its tributaries. Areas designated as Management Area 3 and 1W in the Forest Plan approximate the extent of big-game winter range. The Forest Plan prescribes emphasis of big-game winter range in Management Area 3, and it prescribes managing open road densities in Management Area 1W to benefit big game.

Many of the pastures within Management Area 3 are currently grazed in the spring, although some pastures include light use in the fall. Grazing utilization standards currently guide retention of at least 45 percent of the residual plant material, although because these areas tend to occur in steep terrain, they typically receive less than the full allowable utilization. ODFW biologists conclude that current grazing practices do not

conflict with the availability of big-game forage, in either summer or winter. However, if changes in the grazing system were made, over-wintering elk should be provided for by retaining at least 50 to 60 percent of the plant material.

The measure for this issue is

- Percent plant material retained at the end of fall grazing in areas designated as big-game winter range (Management Area 3)

Issue 7

Key Issue - Grazing as proposed for the JCRAA may not adequately provide for long-term range health in the 4 pastures which were identified as having areas with early seral stage plant communities.

Condition and Trend plots were established throughout the JCRAA in the late 1950s. These plots were revisited in 2003 and the information was used to determine the range condition of the pastures. Because of the long-term nature of Condition and Trend monitoring and relative sparseness of points that have been maintained over time, it is possible for plots to erroneously indicate general pasture conditions. Where plot results conflicted with previous assessments of range conditions, the pastures were reviewed in 2004 to resolve the conflict. The conclusion of this process identified areas within 4 of the 65 pastures in the JCRAA that are in early seral stage due to current livestock grazing systems. These 4 pastures are the Sumac Pasture of the Cougar Allotment, the Bennett Pasture of the Davis Creek Allotment, and the Bennett and Upper Swamp Pastures of the Swamp Creek Allotment. Refer to Purpose and Need and the previous Issue 2, for further description of the factors which may be contributing to areas of early seral stage plant communities in these 4 pastures. The range condition issue results from the concern that pastures in an early seral stage may not improve if the current grazing system continues.

Measures for this issue are

- Predominant seral stage of plant communities within 10 to 20 years in the Sumac Pasture of the Cougar Allotment
- Allowable shrub utilization in the Meadow Segment of Swamp Creek

This page reserved for Figure 1.

Chapter 2 – Alternatives

A total of six alternatives were considered by the interdisciplinary team. Alternative 1, no grazing; Alternative 2, current management and Proposed Action; Alternative 3 Modified, and Alternative 4 are analyzed in detail in the FEIS and are described below. Alternative 3 from the DEIS was dropped from analysis in the FEIS. A sixth alternative was considered but not analyzed in detail.

Alternatives Considered but Not Analyzed in Detail

An alternative was considered which would represent grazing systems and schedules at the time the JCRAA proposal was initiated in 1999 as published in the Notice of Intent to Publish an Environmental Impact Statement. In the last five years, several changes have been made to the current grazing strategy to adapt to changing conditions. For example:

- The Davis Creek Allotment permit was modified to discontinue use of the private land in conjunction with the Forest Service permit. Areas of early seral stage communities were addressed at the same time by installing a fence to subdivide the Davis Creek Pasture into smaller pastures, improving the ability to control livestock movement. A separate fencing effort was completed in 1997, creating the Bennett Riparian Pasture on Swamp Creek for the Davis Creek Allotment. Livestock numbers were also reduced from 224 to 112 cow-calf pairs. As a result, all pastures within the Davis Creek Allotment are expected to improve in condition, stream conditions are closely controlled, and areas with early seral stage communities have been addressed.

- The permittee for the Fine Allotment has started using a private parcel so that Fine Allotment pastures can be rested every third year.

- A 700-acre stream-bottom parcel in Swamp Creek was transferred through a land exchange to National Forest System lands in 1998. This streamside area was rested for the following three years, and an active streamside restoration project has been initiated for Swamp Creek, including planting, fencing, development of off-stream watering sites, and hardening of water gaps.

An alternative that would continue grazing practices in effect in 1999 was considered but not analyzed in detail because better strategies for managing these allotments have been developed over time and are reflected in Alternative 2 as described below.

Alternatives Considered and Analyzed in Detail

Alternative 1

Alternative 1 represents the 'no grazing' alternative. Under this alternative, all Term Grazing Permits would be canceled upon implementation of the decision and resolution of the appeals process. No permits would be issued for the eleven affected allotments.

All range developments currently in existence on the allotment would be abandoned. Subsequent decisions would need to be made regarding retention of any improvements (such as water developments) for other resource needs, and funding for maintenance would need to be secured. All interior fences and any water developments not needed for wildlife or other purposes would be removed. Permittees would be reimbursed for their amortized share of cooperative range improvements where they participated in the development (FSH 1109.13 Chapter 70). Allotment exterior boundary fences would be assigned to adjacent permittees for continued maintenance.

Term Private Land Grazing Permits and Term Grazing Permits with On/Off Provisions would be cancelled. If the private landowners wanted to continue grazing the associated private lands, landowners would be obligated to fence the boundaries or to otherwise ensure that their livestock do not trespass on NFS lands.

Response to Key Issues

With respect to the key issues, Alternative 1 is responsive to Issues 1, 2, 3, 4, 6, and 7 because livestock grazing would not be authorized. These issues reflect concerns with how the authorization of grazing as shown in the proposed action addresses the Wild and Scenic River Outstandingly Remarkable Values, potential Research Natural Areas, the threatened occurrences of Spalding's catchfly, big-game winter range, and range condition. Issue 5, related to limitations on adaptive livestock management techniques, would not be responded to because no livestock grazing would be authorized.

Alternative 2

Alternative 2 represents the Proposed Action described in Chapter 1. This alternative also reflects current livestock management strategies for cattle grazing and an incidental level of horse grazing. Because many of the allotments do not operate under an Allotment Management Plan, livestock management has developed over time in response to issues. As species were listed under the Endangered Species Act, monitoring indicated that Forest Plan standards and guidelines were not being met, or permittee experience identified a more reasonable means for managing livestock within the allotment, the Annual Operating Instructions (AOI) were adjusted to address these changes. Consequently, the most recent set of AOIs for these allotments defines the current management alternative. Implementation of the allotment management plans that emerge from this analysis would

be implemented in spring 2006. A description of Alternative 2 with respect to key issues and for each of the eleven allotments follows.

Response to Key Issues

Key Issue 1 - Alternative 2 responds to Key Issue 1 (Joseph Creek Wild and Scenic River) by implementing Forest Plan standards and guidelines for residual forage within the Wild and Scenic River Corridor. Continuation of the current grazing system would continue to protect the Outstandingly Remarkable Values of Fisheries and Water Quality. The alternative would cause no increase in streambank instability, no increase in maximum summer water temperature, no increase in cobble embeddedness, and no decrease in native vegetation in Joseph Creek.

Key Issue 2 - Alternative 2 responds to Key Issue 2 (upstream effects on the Joseph Creek Wild and Scenic River) by implementing Forest Plan standards and guidelines for shrub utilization within the Meadow Segment of Swamp Creek. This alternative also specifies a discrete grazing schedule similar to current grazing schedules specified in the Annual Operating Instructions for the Swamp Creek Allotment.

Key Issue 3 - Alternative 2 responds to Key Issue 3 (proposed research natural areas) by implementing Forest Plan standards and guidelines for residual forage within the Horse Pasture Ridge and Haystack Rock proposed Research Natural Areas. This alternative also specifies a discrete grazing schedule for the Wilder and Horse Pasture Ridge Pastures of the Table Mountain Allotment.

Key Issue 4 - Alternative 2 responds to Key Issue 4 (Spalding's catchfly) by incorporating measures to protect known occurrences on Tommy's Ridge and Fire Ridge. Protections include avoiding grazing during the critical growth period for catchfly and incorporating a grazing system that continues recovery and transition past a mid-seral stage. In the Draft EIS, Alternative 2 was designed to survey approximately 3032 acres of at-risk potential catchfly habitat, which is 28 percent of the total at-risk area. These areas were surveyed in Summer 2004, and no occurrences of Spalding's catchfly were found.

Key Issue 5 - Alternative 2 responds to Key Issue 5 (adaptive livestock management techniques) by continuing authorization of livestock grazing as currently reflected in the permits and Annual Operating Instructions. Each proposed change in livestock management would be reviewed within the context of pre-specified animal months and seasons of use for each pasture. Tribal assertion of tribal rights for pasturing of horses would be accommodated, but may require additional NEPA analysis before a decision to implement that change could be made.

Key Issue 6 - Alternative 2 responds to Key Issue 6 (big-game winter range) by implementing Forest Plan standards and guidelines for managing residual forage in big-game winter range. Oregon Department of Fish and Wildlife biologists state that the current grazing system is not limiting forage availability for wintering big game.

Key Issue 7 – Alternative 2 responds to Key Issue 7 (range condition) by adopting Forest

Plan guidelines for unsatisfactory range condition on 4 pastures. For these pastures, specific changes in grazing systems would be made, including alerting permittees of the need to improve livestock distribution throughout these pastures, altering the season of use by deferment or rotation with rest, and assertion of Forest Plan utilization standards for areas with unsatisfactory range condition. The Bennett and Upper Swamp Pastures of the Swamp Creek Allotment and the Bennett Pasture of the Davis Creek Allotment would be addressed by continuation of the Swamp Creek Restoration project. Livestock use of shrubs would be held to Forest Plan allowable utilization standards. Before Forest Plan standards are exceeded, livestock would be removed from these pastures.

Description by Allotment

The grazing systems for Alternative 2 are described below. Note that with each allotment, a specific approach for addressing grazing management of federal and adjoining private lands is described. Refer to the shaded box for a description of permit types. Additional components of Alternative 2 are included in Mitigation and Monitoring on Pages 66-74. Refer to Figure 2 for a map of the allotments and pastures, and refer to Table 4 for the seasons of use that would be applied to the pastures within these allotments.

Al-Cunningham Allotment - Up to 321 head-months would be authorized for grazing the four-pasture Al-Cunningham Allotment from April to October, with 161 associated with the federal portion and 160 associated with the private portion. Livestock would graze this allotment in the spring and/or in the fall. Private lands within these four pastures would be administered under a term grazing permit with on/off provisions. Additional private lands adjoin the allotment, but are fenced from the four pastures. These private lands would be used to complete the permittee's livestock operation in the summer and winter, but would not be administered under a Forest Service permit. Resource objectives and management considerations associated with this allotment would include:

- Provide deferment for all pastures by generally having spring use the first year, spring use and light fall use the second year, and fall use the third year.
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Prior to grazing during the spawning and incubation period for listed fish species (April 15 - July 1), monitor Sumac Creek for the presence of redds. If redds are found, protect them through fencing or changing the rotation.

Managing Federal Lands and Adjoining Private Lands

Term Grazing Permit With On/Off Provisions- Where the federal land portion of the permittee's total operation is relatively small compared to the private land portion and it is feasible to use the federal and private lands in conjunction with each other, this type of permit is issued. This permit reflects the livestock numbers, pasture rotation, and grazing season agreed to by the permit administrator and the permittee for both the federal and private land portion. Management of the private lands is otherwise the responsibility of the landowner. The private land is referred to as "non-waived" because the Forest Service does not exercise control over the grazing management of those private lands other than the numbers, rotation, and schedule for the entire allotment. The federal component of the allotment, however, is subject to Forest Service standards and guidelines for grazing management.

Term Private Land Grazing Permit - Where the private land portion of the permittee's total operation is relatively small compared to the federal land portion and it is feasible to use the federal and private lands in conjunction with each other, this type of permit is issued. Livestock numbers and season of use are based upon the capacity of the private lands. Grazing management of the private land is "waived" by the landowner to the Forest Service and is subject to the same standards and guidelines that apply to the federal land portion. Private Land Grazing Permits are issued when it is advantageous to the government to take on the additional management responsibility and resource protection.

Term Grazing Permit – In circumstances where the allotment contains federal land, but not private land, this type of permit is issued.

In addition to the circumstances described above, all of the allotments have some adjacent private lands that are used as a part of the permittee's total operation. In some cases, these lands adjoin the allotment, but are separated from the federal land portion by fences. In other cases, allotments are operated in conjunction with private base ranch properties that are far removed from the allotment. Use of these private lands is not administered under a Forest Service permit. However, for purposes of this analysis, this private land use is considered when analyzing the cumulative effects of the alternatives on the human environment as described in Chapter 3.

Cougar Creek Allotment - In the Cougar Creek Allotment, up to 2702 head-months would be authorized for grazing this nine-pasture allotment from April through October. Resource objectives and management considerations associated with this allotment would include:

- Rest spring pastures every third year.
- Defer use of summer pastures until fall at least every third year.
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Prior to grazing during the spawning and incubation period for listed fish species (April 15 - July 1), monitor Sumac Creek for the presence of redds. If redds are found, protect them through fencing or changing the rotation.
- Defer grazing near Cougar Creek and Peavine Creek until after July 1 of each year to prevent livestock from entering these creeks when redds for listed fish species are present.

Crow Creek Allotment - Up to 262 head-months would be authorized for grazing the six-pasture Crow Creek Allotment from April through December, with 31 associated with private land and 231 associated with federal land. Private lands within these six pastures would be administered under a term private land grazing permit. Additional private lands adjoin the allotment, but are fenced from the six pastures. These private lands would be used to complete the permittee's livestock operation, but would not be administered under a Forest Service permit. Resource objectives and management considerations associated with this allotment would include:

- Provide deferment for all pastures at least every third year.
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Defer grazing near Crow Creek until after July 1 of each year to prevent livestock from entering these creeks when redds for listed fish species are present.
- Refer to mitigation and monitoring measures for protection of Spalding's catchfly sites within this allotment.

Davis Creek Allotment - Up to 631 head-months would be authorized to graze the seven-pasture Davis Creek Allotment from April through October. Resource objectives and management considerations associated with this allotment would include:

- Provide rest or deferment for all pastures at least every third year.
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Prior to grazing during the listed fish spawning and incubation period (April 15 - July 1), monitor Elk Creek for the presence of redds for listed fish species. If redds

are found, protect them through fencing or changing the rotation.
- Defer grazing near Swamp Creek and Davis Creek until after July 1 of each year to prevent livestock from entering these creeks when redds for listed fish species are present.

Dobbins Allotment - Up to 378 head-months would be authorized for grazing the one-pasture Dobbins Allotment from May through November with 302 head-months associated with private land and 76 head-months associated with federal land. Private lands within this pasture would be administered under a term grazing permit with on/off provisions. Resource objectives and management considerations associated with this allotment would include:

- Work cooperatively with the permittee to protect any redds for listed fish species in Crow Creek on the private land portion of the allotment by delaying livestock entry into the pasture or fencing surveyed redds.

Elk Mountain Allotment - Up to 179 head-months would be authorized to graze the two-pasture Elk Mountain Allotment from May through September with 143 head-months associated with private land and 36 head-months associated with federal land. Private lands within these two pastures would be administered under a term grazing permit with on/off provisions. Resource objectives and management considerations associated with this allotment would include:

- Work cooperatively with the permittee to protect any redds for listed fish species in Elk Creek on the private land portion of the allotment by delaying livestock entry into the pasture or fencing surveyed redds.

Fine Allotment - Up to 253 head-months would be authorized for grazing the six-pasture Fine Allotment from May through November, with 4 head-months associated with private land and 249 head-months associated with federal. Resource objectives and management considerations associated with this allotment would include:

- Provide rest or deferment for all pastures at least every third year.
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Prior to grazing during the listed fish spawning and incubation period (April 15 - July 1), monitor the Peavine Creek tributary for the presence of redds for listed fish species. If redds are found, protect them through fencing or changing the rotation.

Hunting Camp/Table Mountain Allotments - Up to 3104 head-months would be authorized to graze the three pasture Hunting Camp Allotment and the seven-pasture Table Mountain Allotment from April through December, with 220 head-months associated with private land and 2884 head-months associated with federal land. These two

allotments have been managed together for the past four years and are therefore addressed together. Private lands within the Table Mountain Pastures would be administered under a term private land grazing permit. Resource objectives and management considerations associated with these allotments would include:

- Provide rest or deferment for all pastures at least every third year.
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Monitor access of livestock to Cougar Creek during the listed fish spawning season. If livestock are able to reach the creek, protect the redds through fencing, herding, or changing the rotation.

Joseph Creek Allotment **-** Up to 135 head-months would be authorized for grazing the one-pasture Joseph Creek Allotment from April to December with 60 head-months associated with private land and 75 associated with federal land. Livestock would graze this allotment in the spring and/or in the fall. Private lands within Joseph Creek Allotment would be administered under a term private land grazing permit. Resource objectives and management considerations associated with this allotment would include:

- Provide rest or deferment for the pasture at least every third year by use of another allotment or private land.

Swamp Creek Allotment - Up to 4901 head-months would be authorized to graze the nineteen-pasture Swamp Creek Allotment from April through October, with 232 head-months associated with private land and 4669 head-months associated with federal lands. Private lands within these nineteen pastures would be administered under a term private land grazing permit. The Swamp Creek Allotment is grazed by several permittees, one of which has recently elected 'non-use' of the permit for 3 of the last 4 years. If all of the permittees elect to stock the allotment in any given year, it is possible that utilization standards would not be met without leaving the allotment early. At each annual allotment review meeting, the permittees would need to agree on management strategies for meeting resource objectives. Resource objectives and management considerations associated with this allotment include:

- Provide rest-rotation in the Buck, Lower Swamp, Red Fir, Baker, Barney, and Snake Pastures in order to promote improvement of upland vegetative condition.
- Defer grazing for all pastures at least every third year.
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Prior to grazing during the listed fish spawning and incubation period (April 15 - July 1), monitor Crow Creek for the presence of redds for listed fish species. If redds are found, protect them through fencing or changing the rotation.
- Refer to mitigation and monitoring measures for protection of Spalding's catchfly sites within this allotment.

Table 3 summarizes land ownership within the allotment boundaries and lists the permit types associated with administering the allotments.

Table 3 – Land Ownership and Permit Types for Alternative 2

Allotment Name	Federal Acres	Private Acres	Total Acres	Permit Types
Al-Cunningham	1629	393	2022	1 term grazing permits with on/off provisions
Cougar Creek	17,583	0	17,583	3 term grazing permits
Crow Creek	1275	298	1573	1 term grazing permit 1 term private land grazing permit
Davis Creek	5738	0	5738	1 term grazing permit
Dobbins	255	1360	1615	1 term grazing permit with on/off provisions
Elk Mountain	207	355	562	1 term grazing permit with on/off provisions
Fine	1515	0	1515	1 term grazing permit 1 term private land grazing permit
Hunting Camp Table Mountain	10229 14581	0 488	10229 15069	1 term grazing permit 1 term private land grazing permit
Joseph Creek	1002	569	1571	1 term private land grazing permit
Swamp Creek	33047	1444	34491	4 term grazing permits 1 term private land grazing permit

This alternative would authorize grazing of cattle with only an incidental number of horses on these allotments. Requests to graze horses would initiate a separate action under NEPA.

Table 4 displays the stocking and seasons of use for each of the eleven allotments and pastures, as well as management considerations that need to be addressed by the grazing schedule. Stocking is shown in Table 4 in terms of head-months. A head-month is a unit of measure that counts one animal for 30 days. A cow-calf pair qualifies as one animal in these calculations if the calf is 6 months of age or less.

Table 4 – Summary of Alternative 2

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
Al-Cunningham	**2022**	**April - October**		**161 federal 160 private**		
South Alford	603	April - May or September - October	45 days or 70 days	60	Big-game winter range	
Sumac	243	April - May or September - October	45 days or 70 days	65	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and inventory with protection
North Alford	542	April - May or September - October	45 days or 70 days	60	Big-game winter range	
Chute Canyon	634	April - May or September - October	45 days or 70 days	100	Big-game winter range	
Cougar Creek	**17,583**	**April - October**		**2702**		
Trap Canyon	724	April - May	45 days	150	Listed fish habitat Big-game winter range	No access to fish habitat due to rims
Breeding Pasture	693	April - May	45 days	150	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and inventory with protection
Sumac	1273	April - May or June - August	45 days	270	Listed fish habitat Range condition Big-game winter range	Addressed by pasture timing and stocking and inventory with protection
Hinton Corner and Boner	383	June	30 days	100		
Cougar	5046	July - August or September - October	50 days	785	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking
Peavine	4602	July - August or September - October	50 days	785	Listed fish habitat	Addressed by pasture timing and stocking
Baldwin	2700	August - September	30 days	475		
Muddy	2162	June	30 days	250	Big-game winter range	
Crow Creek	**1968**	**April - December**		**231 federal 31 private**		
North Crow	386	April – late-May September - December	60 days 90 days	125	Spalding's catchfly	See mitigation and monitoring section
South Crow	316	April – late-May September - December	60 days 90 days	55	Spalding's catchfly	See mitigation and monitoring section
Crow Creek & Road	220	July - August	30 days	30	Listed fish habitat	Addressed by pasture timing and stocking

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
Special Use	609	April - May September - December	60 days 90 days	90		
Doe Gulch	437	September - December	30 days	90	Spalding's catchfly	See mitigation and monitoring section
Davis Creek	**5738**	**April - October**		**631**		
Davis South	860	July - August and September -October	60 days	325	Listed fish habitat	Addressed by pasture timing and stocking
Hillside	393	June - August	15 days	120		
Elk Creek	850	April - May or June - August	20 days	155	Listed fish habitat	Addressed by riparian exclosures
Starvation	625	June - August	10 days	80		
Davis West	1510	April - May, June - August, or September - October	60 days	325	Listed fish habitat	Addressed by pasture timing and stocking and exclosure fencing
Davis East	1050	April - May, June - August, or September - October	30 days	200	Listed fish habitat	Addressed by pasture timing and stocking and exclosure fencing
Bennett	450	July - August	45 days	70	Listed fish habitat Riparian shrubs	Addressed by pasture timing and stocking
Dobbins	**1615**	**May - November**		**76 federal 302 private**		
Dobbins	1615	May - November		76 federal 302 private		
Elk Mountain	**562**	**May - September**		**36 federal 143 private**		
Homestead	166	May - September	75 days	36 federal 143 private		
Emmons	396	May -- September	75 days	90		
Fine	**1515**	**May - November**		**249 federal 4 private**		
Westside	279	May - June, June - September, or October - November	60 days	50	Big-game winter range	
Homeplace	207	May - June, June - September, or October – November	60 days	80	Big-game winter range	

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
Peavine 1	158	May - June, June - September, or October - November	60 days	40	Listed fish habitat	Addressed by pasture timing and stocking and inventory and protection
Peavine 2 & Peavine 3	108 110	May - June, June - September, or October - November	60 days	60		
Peavine 4	653	May - June, June - September, or October - November	60 days	80		
Hunting Camp and Table Mountain	**10228 15069**	**April - December**		**2884 federal 220 private**		
Tamarack (HC)	3329	June - August	30 days	212	Listed fish habitat Big-game winter range	Limited access to fish habitat due to steep terrain and dense vegetation
Kirkland & Holding Pasture (HC)	6899	June - August	45 days	580	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and steep terrain
Wilder (TM)	1680	April – May and November - December	45 days 60 days	135 spring 556 fall	Listed fish Habitat Big-game winter range Research Natural Area Wild and Scenic River	Addressed by pasture timing and stocking and high streamflow volume
Joseph Breaks (TM)	4319	April – May and November - December	45 days 60 days	282 spring 556 fall	Listed fish habitat Big-game winter range Wild and Scenic River	Addressed by pasture timing and stocking and high streamflow folume
Thorn Hollow (TM)	1902	April - May or June - August	45 days	417	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and limited access due to dense vegetation
Horse Pasture Ridge (TM)	1443	June - August	30 days	175	Listed fish habitat Big-game winter range Research Natural Area	Addressed by pasture timing and stocking and limited access due to dense vegetation
Corral Springs (TM)	2628	June - August	30 days	387	Listed fish habitat Big-game winter range	Limited access due to steep terrain and dense vegetation
Table Mountain (TM)	2763	June - August	45 days	580	Listed fish habitat	Limited access due to steep terrain and dense vegetation

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
Dog Fight (TM)	334	September - December	20 days	258		
Joseph Creek	**1571**	**April - December**		**75 federal 60 private**		
Joseph Creek	1571	April - May and November – December	45 days 45 days	75 60	Listed fish habitat Big-game winter range Wild and Scenic River	Addressed by pasture timing and stocking and high streamflow volume
Swamp Creek	**34490**	**April - October**		**4669 federal 232 private**		
Lower Swamp & Snake Canyon	1327 1130	April - May	60 days	400	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and exclosure fencing
Baker Gulch & Barney Flat	1199 1475	April - May	60 days	400	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and high streamflow volume
Red Fir	586	April - May	60 days	250	Listed fish Habitat Big-game winter range	Addressed by high streamflow volume and limited access
Lower Davis	2836	April - May	60 days	730	Listed fish Habitat Big-game winter range	Addressed by pasture timing and stocking and limited access due to dense vegetation
Miller Springs	2023	June – August or September – October	45 days	350	Big-game winter range	
Beef Pasture	2161	April- May, June - August, or September – October	45 days	400	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and exclosure fencing
Swamp Creek	183	July – August or September - October	60 days	50	Listed fish habitat	Addressed by pasture timing and stocking
Upper Davis	2733	June - August	45 days	250	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and exclosure fencing
Little Elk	8921	July – October	110 days	2500	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and some exclosure fencing
Elk	3478	September - October	30 days	165	Listed fish habitat	Addressed by pasture timing and stocking and exclosure fencing
Dorrance	1748	June - October	75 days	540	Listed fish habitat	Protected by temporary fencing

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
					Spalding's catchfly	See mitigation and monitoring section
Holding Pasture	45	September - October	30 days	150		
Horse Pasture	15	Incidental use	Incidental	25	Listed fish habitat Big-game winter range	Addressed by pasture stocking
Upper Swamp	1344	June – August or September - October	60 days	150	Listed fish habitat Riparian shrubs Big-game winter range	Addressed by pasture timing and stocking and exclosure fencing
Bennett	1210	June – August or September - October	60 days	150	Listed fish habitat Riparian shrubs	Addressed by pasture timing and stocking
Buck Creek	2076	April - May	60 days	400	Listed fish habitat Big-game winter range Wild and Scenic River	Addressed by pasture timing and stocking and high streamflow volume
Catchfly		September - October	30 days	75	Spalding's catchfly	See mitigation and monitoring section
TOTAL				**11,714 federal 1,152 private**		

Note that the stocking for each allotment is not the sum of each pasture stocking. Not all pastures are grazed each year due to rest and rotation schedules.

Alternative 3 Modified

Alternative 3 Modified is a variation of Alternative 3 presented in the Draft Environmental Impact Statement. Alternative 3 was developed with acknowledgement that changes will occur in resource conditions, issues, and agency direction throughout time. It incorporated adaptive management techniques to address those changes. Potential changes that Alternative 3 responded to included wildfire, drought, ranching operational changes, ecological conditions, Federal listing of additional species under the Endangered Species Act, Forest Plan revision, and possible assertion of Tribal treaty rights. Alternative 3 Modified adopts the components of Alternative 3, but was modified in response to public comments from the 45-day review period of the DEIS. Alternative 3 Modified is the 'preferred alternative'.

This alternative departs from the current management by identifying areas where specific resource objectives influence livestock grazing patterns. It acknowledges that grazing management systems are more responsive to the environment when dictated by resource condition rather than by fences or pasture/allotment boundaries. Pasture and allotment boundaries were developed over time for a variety of reasons. However, those reasons may not persist through time, and grazing boundaries may be adjusted to better meet desired resource conditions and/or grazing operational needs.

Overlaid on this base are the maximum duration and stocking that could occur within each allotment, which are the same as for Alternative 2. Alternative 3 Modified proposes the same level of overall livestock forage utilization across the 11 allotments as Alternative 2. The stocking level for Alternative 3 Modified is based on Alternative 2 because current management indicates that only 4 of the 65 pastures within this analysis area are indicating unsatisfactory range conditions. Of these 4 pastures, unsatisfactory condition in 3 pastures is a relic of historical grazing (shrub depletion in the Upper Swamp and Bennett Pastures of the Swamp Creek Allotment and the Bennett Pasture of the Davis Creek Allotment). Consequently, Alternative 3 Modified uses stocking levels associated with Alternative 2 as an indicator of adequate carrying capacity for these allotments.

Under Alternative 3 Modified, livestock permittees may or may not continue to operate solely on the allotment to which they are assigned under Alternative 2. Alternative 3 Modified allows a particular herd of livestock the flexibility to cross allotment boundaries within the JCRAA, if needed. As future analyses are completed for allotments outside of the JCRAA, the ability to move livestock use among those allotments could materialize as well. For this analysis, however, pasture rotations and boundaries could be altered within the JCRAA to address changes in climate, resource conditions, management direction, and grazing issues while still meeting the base resource objectives.

Alternative 3 Modified varies from Alternative 3 presented in the DEIS as follows:

- A ½-mile segment of Crow Creek in the Dorrance Pasture of the Swamp Creek Allotment would be fenced to exclude livestock grazing.

- Livestock trailing from the Swamp Creek Allotment to deeded ground to the east would be trailed via existing roads.

- Utilization in areas allocated Management Area 3 (elk winter range), would be complied with by ensuring that at the end of fall livestock grazing at least 50 to 60 percent of the available forage is retained. This checkpoint at the end of fall livestock grazing is intended to ensure that at least 45 percent of available forage is retained after elk wintering. Utilization monitoring at the appropriate time of year would ensure compliance with this standard.

- The Swamp Creek Allotment would undergo a utilization monitoring study to determine if permitted stocking levels should be reduced. If determined that voluntary reductions in stocking are the only means to avoid exceeding utilization standards for at least a 3-year period, then the permitted numbers of livestock would be reduced for these permits. Permittees would be given the opportunity to demonstrate methods for remaining within utilization standards under current stocking levels using methods such as increased herding and changes in rotation; however, if these efforts are unsuccessful for a 3-year period, the permitted livestock numbers would be reduced.

- If the Wallowa County Commissioners declare spring drought conditions for rangelands within the JCRAA, areas around known occurrences of Spalding's catchfly would not be grazed that spring.

Response to Key Issues

Alternative 3 Modified responds to the key issues described in Chapter 1 as follows.

Key Issue 1 - Alternative 3 Modified responds to Key Issue 1 (Joseph Creek Wild and Scenic River water quality) by incorporating forage and browse utilization standards specific to the Wild and Scenic River Corridor. Grazing within the corridor will be managed for late-seral plant communities, and riparian shrubs will be browsed by livestock and big game to no more than 20 percent.

Much of this area coincides with the Table Mountain/Joseph Breaks Big Game Winter Range Area mentioned in Key Issue 6. The Wild and Scenic River Corridor will follow the same standards for residual forage (50 to 60 percent of available forage is retained at end of fall livestock grazing).

Key Issue 2 – Alternative 3 Modified responds to Key Issue 2 (upstream effects on the Joseph Creek Wild and Scenic River) by incorporating forage and browse utilization standards specific to the Swamp Meadow portion of the Upper Swamp Pasture and the Bennett Pasture of the Swamp Creek Allotment and the Bennett Pasture of the Davis Creek Allotment.

To address riparian function (and consequently, water quality) within Swamp Creek, this alternative would implement a monitoring program for shrubs and streambank stability to ensure restoration is occurring at a natural rate. Rather than relying on riparian terrace stubble height to govern riparian conditions, the annual monitoring protocol would ensure

that objectives for shrubs and streambank stability were being met. Grazing seasons and stocking would be adjusted to meet these objectives.

Key Issue 3 – Alternative 3 Modified responds to Key Issue 3 (potential Research Natural Areas) by incorporating forage utilization standards specific to the Horse Pasture Ridge and Haystack Rock potential Research Natural Areas. Grazing within these areas will be managed to maintain late-seral plant communities. This will occur by implementing allowable utilization standards of no more than 10 percent.

Key Issue 4 - Alternative 3 Modified responds to Key Issue 4 (Spalding's catchfly) by incorporating into the alternative description the same protections for known occurrences as prescribed in Alternative 2. Alternative 3 Modified also sets priorities for inventorying areas where potential habitat for Spalding's catchfly has been identified and is at risk to impacts from livestock grazing. In the Draft EIS, Alternative 3 was designed to survey between 5,922 and 10,662 acres of at-risk potential catchfly habitat. Of these areas, 3,032 acres were inventoried for rare plants in Summer 2004, and no occurrences of Spalding's catchfly were found. Therefore, Alternative 3 Modified would complete future rare plant inventories on 2,890 to 7,630 acres. If Spalding's catchfly occurrences are found, they would be protected similar to the known occurrences in the Crow Creek and Swamp Creek Allotments. This alternative also limits livestock trailing patterns to existing roads in the vicinity of the Swamp Creek and Crow Creek Allotments to protect Spalding's catchfly occurrences from trampling. A mitigation measure regarding grazing of known occurrences of Spalding's catchfly during spring drought conditions is also incorporated into this alternative.

Key Issue 5 – Alternative 3 Modified responds to Key Issue 5 (adaptive management) by providing adaptive management tools such as changing allotment boundaries, changing pasture boundaries, providing larger grazing areas, or changing season or numbers to allow for more flexibility in grazing management in cooperation with permittee interests. These tools would address specific climatic, or resource conditions, ranching operational changes, wildfire, or changing agency management direction. The overall stocking and season of use would be the same for each allotment under Alternatives 2 and 3 Modified. However, Alternative 3 Modified does not prescribe specific stocking or duration of grazing for each pasture. Unless a resource objective or the range readiness of a pasture constrains the grazing time period, Alternative 3 Modified allows for a wider range of dates for scheduling that grazing period in specific pastures than does Alternative 2.

Examples of situations that would benefit from the adaptive approach of this alternative include the following hypothetical situations:

- A summer wildfire eliminates the opportunity to graze two pastures the following spring. Instead, the livestock are allowed to graze an adjoining pasture so long as utilization standards are not exceeded and resource objectives are met.

- A pasture fence was placed over 30 years ago to resolve a dispute between former permittees. The dispute no longer exists, and the current permittees want to move the fence to improve their ability to control livestock to access riparian areas.

- A pasture fence splits two pastures from north to south when the better configuration for protection of steelhead habitat would be to split the pastures from east to west.

- A new plant is added to the federal list of threatened and endangered species. To protect the plant, a riparian pasture fence boundary needs to include an additional area.

Alternative 3 Modified would authorize grazing of cattle or horses on these allotments. Appropriate conversions for animal type (such as cow-calf pairs, yearlings, steers, bulls, dry cows, horses) would be made to ensure that the maximum stocking (head-months) identified for each allotment was not exceeded. Requests to graze horses, such as those associated with assertion of tribal treaty rights, would be accommodated under this alternative without requiring further analysis under NEPA.

Key Issue 6 - Alternative 3 Modified responds to Key Issue 6 (big-game winter range) by incorporating forage utilization standards specific to big-game winter range areas that are more restrictive than Forest Plan utilization standards. While Oregon Department of Fish and Wildlife biologists identified no current grazing management strategies that conflict with big game wintering, Alternative 3 Modified establishes a more restrictive forage utilization standard for areas designated as big-game winter range. In areas designed by the Forest Plan as big-game winter range (Management Area 3), grazing systems will ensure that at least 50 to 60 percent of available forage is maintained at the end of the fall livestock grazing season so that wintering big game have adequate forage.

Key areas would be read, or established where needed, within elk winter range to measure residual plant height. If less than 50 to 60 percent of available forage in plants such as Idaho fescue or bluebunch wheatgrass are not available after fall livestock grazing, adjustments in grazing would occur.

Key Issue 7 – Alternative 3 Modified responds to Key Issue 7 by implementing a more adaptive set of grazing regimes for the 11 allotments. If monitoring indicates that a decline in range condition is developing, the period of time when pastures are grazed could be changed with greater flexibility than in Alternative 2.

Description by Allotment

The grazing systems for Alternative 3 Modified are described below. Additional components of Alternative 3 Modified are included in Mitigation and Monitoring on Pages 66-74. Refer to Figure 2 for a map of the allotments and pastures.

Al-Cunningham Allotment – The amount of forage production available from the Al-Cunningham Allotment would remain the same as Alternative 2 for the same overall grazing season. The allotment would provide up to 321 head-months of forage production between April and October. However, Alternative 3 Modified allows more flexibility to accommodate anticipated changes in land ownership in and around this allotment. The private land within and adjacent to this allotment is included in the proposed Blue

Mountain Land Exchange. These private lands contain farm fields that support hay production and would be acquired as National Forest System lands. The Al-Cunningham Allotment is grazed as part of this private land. Acquisition of the agricultural lands will create an opportunity to change management of this allotment. The allotment management plan will emphasize restoration of steelhead habitat and the adjoining riparian area along Joseph Creek and control of noxious weeds and other undesirable non-native species. Depending on the current permittee's interest in continuing the grazing permit, the area could be managed in a variety of ways: continue grazing under the current system, preserve as a grass-banking area to provide deferment or rest of spring pastures for other allotments in the area, or reallocate the area to adjoining allotments. Resource objectives and management considerations applicable to the Al-Cunningham Allotment are as follows:

- To promote riparian health for listed fish habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Prior to grazing during the steelhead spawning and incubation period (April 15 - July 1), monitor Sumac Creek for the presence of steelhead redds. If redds are found, protect them through fencing or changing the rotation.
- If Spalding's catchfly sites are identified, use the mitigation and monitoring measures prescribed below for known occurrences of this species.
- Maintain after fall livestock grazing at least 50 to 60 percent available forage in designated big-game winter range.

Cougar Creek Allotment - The amount of forage production available from the Cougar Creek Allotment would remain the same as Alternative 2 for the same overall grazing season. The allotment would provide up to 2702 head-months of forage production between April and October. The Cougar Creek Allotment includes several prescribed burning projects. The Haypen Vegetation Management Project is in the process of implementation and involves prescribed burning to reduce natural fuels accumulations in much of the western portion of the allotment. The Baldwin Vegetation Management Project is in the planning process, and will also reduce natural fuels accumulations through prescribed burning, but in the northern portion of the allotment. While these projects are scheduled for fuels reduction, they are accomplished using natural features and roads for control, and consequently burn some of the intervening grasslands. Flexibility in grazing schedules between pastures and adjacent allotments such as Hunting Camp and Table Mountain and Al-Cunningham Allotments will be needed to ensure prescribed burning and grazing activities allow for disturbance recovery. Resource objectives and management considerations applicable to the Cougar Creek Allotment are as follows:

- Address early to mid seral stage communities within the Sumac Pasture through rest or deferment and by applying allowable utilization standards from the Forest Plan for unsatisfactory range conditions until such time that mid to late seral plant communities dominate.
- To promote riparian health for listed fish habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.

- Prior to grazing during the steelhead spawning and incubation period (April 15 - July 1), monitor Sumac Creek for the presence of steelhead redds. If redds are found, protect them through fencing or changing the rotation.
- Defer grazing near Cougar Creek and Peavine Creek until after July 1 of each year to prevent livestock from entering these creeks when steelhead redds are present.
- If Spalding's catchfly sites are identified, use the mitigation and monitoring measures prescribed below for known occurrences of this species.
- Maintain after fall livestock grazing at least 50 to 60 percent available forage in designated big-game winter range.

Crow Creek Allotment - The amount of forage production available from the Crow Creek Allotment would initially remain the same as Alternative 2 for the same overall grazing season. The allotment would provide up to 262 head-months of forage production between April and October. Resource objectives and management considerations applicable to the Crow Creek Allotment are as follows:

- To promote riparian health for listed fish habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Defer grazing near Crow Creek until after July 1 of each year to prevent livestock from entering these creeks when listed fish redds are present.
- Refer to mitigation and monitoring measures for protection of Spalding's catchfly sites within this allotment.
- Maintain after fall livestock grazing at least 50 to 60 percent available forage in designated big-game winter range.

Davis Creek Allotment - The amount of forage production available from the Davis Creek Allotment would remain the same as Alternative 2 for the same overall grazing season. The allotment would provide up to 631 head-months of forage production between April and October. However, Alternative 3 Modified would allow more flexibility in grazing management from changes in resource conditions, issues, agency direction, or operations. Resource objectives and management considerations applicable to the Davis Creek Allotment are as follows:

- To promote riparian health for listed fish habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Prior to grazing during the steelhead spawning and incubation period (April 15 - July 1), monitor Elk Creek for the presence of steelhead redds. If redds are found, protect them through fencing or changing the rotation.
- Defer grazing near Swamp Creek and Davis Creek until after July 1 of each year to prevent livestock from entering these creeks when steelhead redds are present.
- If Spalding's catchfly sites are identified, use the mitigation and monitoring measures prescribed below for known occurrences of this species.

Dobbins Allotment - The amount of forage production available from the Dobbins Allotment would remain the same as Alternative 2 for the same overall grazing season. The allotment would provide up to 378 head-months of forage production between May and November. However, Alternative 3 Modified would allow more flexibility in grazing management from changes in resource conditions, issues, agency direction, or operations. Resource objectives and management considerations applicable to the Dobbins Allotment are as follows:

- Work cooperatively with the permittee to protect any steelhead redds in Crow Creek on the private land portion of the allotment by delaying livestock entry into the pasture or fencing surveyed redds.
- Maintain after fall livestock grazing at least 50 to 60 percent available forage in designated big-game winter range.

Elk Mountain Allotment - The amount of forage production available from the Elk Mountain Allotment would remain the same as Alternative 2 for the same overall grazing season. The allotment would provide up to 179 head-months of forage production between May and October. However, Alternative 3 Modified would allow more flexibility in grazing management from changes in resource conditions, issues, agency direction or operations. Resource objectives and management considerations applicable to the Elk Mountain Allotment are as follows:

- Work cooperatively with the permittee to protect any steelhead redds in Elk Creek on the private land portion of the allotment by delaying livestock entry into the pasture or fencing surveyed redds.

Fine Allotment - The amount of forage production available from the Fine Allotment would remain the same as Alternative 2 for the same overall grazing season. The allotment would provide up to 253 head-months of forage production between April and October. However, Alternative 3 Modified would allow more flexibility in grazing management from changes in resource conditions, issues, agency direction, or operations. The Fine Allotment has two pastures that do not adjoin the other four pastures. Where opportunities arise, this alternative would allow boundary adjustments between adjoining allotments to improve operations. Resource objectives and management considerations applicable to the Fine Allotment are as follows:

- To promote riparian health for listed fish habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Prior to grazing during the steelhead spawning and incubation period (April 15 - July 1), monitor Peavine Creek for the presence of steelhead redds. If redds are found, protect them through fencing or changing the rotation.
- Maintain after fall livestock grazing at least 50 to 60 percent available forage in designated big-game winter range.

Hunting Camp/Table Mountain Allotments - The amount of forage production available from the Hunting Camp/Table Mountain Allotments would remain the same as Alternative 2 for the same overall grazing season. The allotment would provide up to 3104 head-months of forage production between April and December. However, Alternative 3 Modified would allow more flexibility in grazing management from changes in resource conditions, issues, agency direction, or operations. Resource objectives and management considerations applicable to the Hunting Camp/Table Mountain Allotment are as follows:

- To promote riparian health for listed fish habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Monitor access of livestock to Cougar Creek during the steelhead spawning season. If livestock are able to reach the creek, protect the redds through fencing, herding, or changing the rotation.
- If Spalding's catchfly sites are identified, use the mitigation and monitoring measures prescribed below for known occurrences of this species.
- Maintain after fall livestock grazing at least 50 to 60 percent available forage in designated big-game winter range.
- Maintain range conditions within the Wilder and Joseph Breaks Pastures that are within the Joseph Creek Wild and Scenic River Corridor for late-seral plant communities. Allow no more than 20 percent shrub utilization, and allow no more than 50 percent utilization of grasses.
- Grazing within the Wild and Scenic River Corridor will be conducted so that livestock do not congregate on the Joseph Creek trail.
- Maintain the vegetative values of the potential Research Natural Areas for Haystack Rock and Horse Pasture Ridge by managing for late-seral plant communities and by allowing no more than 10 percent utilization of forage in these areas.

Joseph Creek Allotment - The amount of forage production available from the Joseph Creek Allotment would remain the same as Alternative 2 for the same overall grazing season. The allotment would provide up to 135 head-months of forage production between April and December. However, Alternative 3 Modified would allow more flexibility in grazing management from changes in resource conditions, issues, agency direction, or operations. Resource objectives and management considerations applicable to the Joseph Creek Allotment are as follows:

- If Spalding's catchfly sites are identified, use the mitigation and monitoring measures prescribed below for known occurrences of this species.
- Maintain after fall livestock grazing at least 50 to 60 percent available forage in designated big-game winter range.
- Maintain vegetative conditions within the Joseph Creek Pasture that are within the Joseph Creek Wild and Scenic River Corridor for late-seral plant communities. Allow no more than 20 percent shrub utilization, and allow nor more than 50 percent utilization of grasses.
- Grazing within the Wild and Scenic River Corridor will be conducted so that

livestock do not congregate on the Joseph Creek trail.

Swamp Creek Allotment - The amount of forage production available from the Swamp Creek Allotment would remain the same as Alternative 2 for the same overall grazing season. The allotment would provide up to 4901 head-months of forage production between April and October. The Swamp Creek Allotment is grazed by several permittees, one of which has recently elected 'non-use' of the permit for 3 of the last 4 years. If all of the permittees elect to stock the allotment in any given year, it possible that utilization standards could not be met without leaving the allotment early. At each annual allotment review meeting, the permittees would need to agree on management strategies needed to meet resource objectives. Alternative 3 Modified addresses riparian conditions along the Meadow Segment of Swamp Creek by establishing a monitoring protocol related to shrub utilization and streambank stability. Resource objectives and management considerations applicable to the Swamp Creek Allotment are as follows:

- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season to promote riparian health for listed fish habitat.
- Prior to grazing during the steelhead spawning and incubation period (April 15 - July 1), monitor Crow Creek for the presence of steelhead redds. If redds are found, protect them through fencing or changing the rotation.
- Within the Bennett Pasture and the Swamp Meadow portion of the Upper Swamp Pasture, establish a monitoring protocol for shrubs and streambank stability based upon recommendations from the National Riparian Service Team (Appendix C).
- Refer to mitigation and monitoring measures for protection of Spalding's catchfly sites within this allotment.
- Maintain after fall livestock grazing at least 50 to 60 percent available forage in designated big-game winter range.
- Maintain vegetative conditions within the Buck Pasture that are within the Joseph Creek Wild and Scenic River Corridor for late-seral plant communities. Allow no more than 20 percent shrub utilization, and allow no more than 50 percent utilization of grasses.
- Grazing within the Wild and Scenic River Corridor will be conducted so that livestock do not congregate on the Joseph Creek trail or lowest ½ mile of the Swamp Creek trail.

Table 5 – Land Ownership and Permit Types for Alternative 3 Modified

Allotment Name	Federal Acres	Private Acres	Total Acres	Permit Types
Al-Cunningham	1629	393	2022	For National Forest System lands - any combination of term permits that do not exceed the maximum stocking. For private land – any combination of term private land permits or on-off permits for private
Cougar Creek	17,583	0	17,583	
Crow Creek	1275	298	1573	

Allotment Name	Federal Acres	Private Acres	Total Acres	Permit Types
Davis Creek	5738	0	5738	lands in satisfactory range condition.
Dobbins	255	1360	1615	
Elk Mountain	207	355	562	
Fine	1515	0	1515	
Hunting Camp Table Mountain	10229 14581	0 488	10229 15069	
Joseph Creek	1002	569	1571	
Swamp Creek	33047	1444	34491	

Alternative 3 Modified would authorize grazing of cattle or horses on these allotments.

Table 6 displays the stocking and seasons of use for Alternative 3 Modified. Under Alternative 3 Modified, the overall stocking and season of use would be the same as Alternative 2 for each *allotment*. However, Alternative 3 Modified does not prescribe specific stocking or duration of grazing for each *pasture.* Unless a resource objective or the range readiness of a pasture constrains the grazing time period, Alternative 3 Modified allows for a wider range of dates for scheduling that grazing period in specific pastures than does Alternative 2.

Table 6 – Summary of Alternative 3 Modified

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
Al-Cunningham	**2022**	**April - October**		**161 federal 160 private**		
South Alford	603	April - October	Determined by range condition and resource objectives		Big-game winter range	Retain 50-60% available forage for wintering elk.
Sumac	243	April - October			Listed fish habitat Big-game winter range	Inventory for redds, protect if found Retain 50-60% available forage for wintering elk.
North Alford	542	April - October			Big-game winter range	Retain 50-60% available forage for wintering elk.
Chute Canyon	634	April - October			Big-game winter range	Retain 50-60% available forage for wintering elk.
Cougar Creek	**17,583**	**April - October**		**2702**		
Trap Canyon	724	April - October	Determined by range condition and resource objectives		Listed fish habitat Big-game winter range	No access to fish habitat due to rims Retain 50-60% available forage for wintering elk.
Breeding Pasture	693	April - October			Listed fish habitat Big-game winter range	Inventory for redds, protect if found Retain 50-60% available forage for wintering elk.
Sumac	1273	April - October			Listed fish habitat Range condition Big-game winter range	Inventory for redds, protect if found Apply unsatisfactory range condition utilization standards Retain 50-60% available forage for wintering elk.
Hinton Corner and Boner	383	April - October				
Cougar	5046	April - October			Listed fish habitat Big-game winter range	Graze after July 1 Retain 50-60% available forage for wintering elk.
Peavine	4602	April - October				Graze after July 1
Baldwin	2700	April - September				

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
Muddy	2162	April - October			Big-game winter range	Retain 50-60% available forage for wintering elk.
Crow Creek	**1968**	**April - December**		**231 federal 31 private**		
North Crow	386	April – late May September - December	Determined by range condition and resource objectives		Spalding's catchfly	Avoid grazing catchfly occurrences during critical growth period and in spring during drought. See mitigation and monitoring section.
South Crow	316	April - late May September - December			Spalding's catchfly	Avoid grazing catchfly occurrences during critical growth period and in spring during drought. See mitigation and monitoring section.
Crow Creek & Road	220	July - October			Listed fish habitat	Graze after July 1
Special Use	609	April - December				
Doe Gulch	437	September - December			Spalding's catchfly	Avoid grazing catchfly occurrences during critical growth period. See mitigation and monitoring section.
Davis Creek	**5738**	**April - October**		**631**		
Davis South	860	April - October	Determined by range condition and resource objectives		Listed fish habitat	Inventory for redds, protect if found
Hillside	393	April - October				
Elk Creek	850	April - October			Listed fish habitat	Addressed by riparian exclosures
Starvation	625	April - October				
Davis West	1510	April - October			Listed fish habitat	Addressed by exclosure fencing and inventory for redds, protect if found
Davis East	1050	April - October			Listed fish habitat	Addressed by exclosure fencing and inventory for redds, protect if found

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
Bennett	450	July - October			Listed fish habitat Riparian shrubs	Graze after July 1 Adopt NRST monitoring protocol
Dobbins	**1615**	**May - November**		**76 federal 302 private**		
Dobbins	1615	May - November	Determined by range condition and resource objectives			
Elk Mountain	**562**	**May - October**		**36 federal 143 private**		
Homestead	166	May - October	Determined by range condition and resource objectives			
Emmons	396	May -- October				
Fine	**1515**	**April - November**		**249 federal 4 private**		
Westside	279	April - November	Determined by range condition and resource objectives		Big-game winter range	Retain 50-60% available forage for wintering elk.
Homeplace	207	April - November			Big-game winter range	Retain 50-60% available forage for wintering elk.
Peavine 1	158	April - November			Listed fish habitat	Monitor for redds, protect if found
Peavine 2 & Peavine 3	108 110	April - November				
Peavine 4	653	April - November				
Hunting Camp and Table Mountain	**10228 15069**	**April - December**		**2884 federal 220 private**		
Tamarack (HC)	3329	June - October	Determined by range condition and resource objectives		Listed fish habitat Big-game winter range	Limited access to fish habitat due to sttep terrian and dense vegetation Retain 50-60% available forage for wintering elk.
Kirkland / Holding Pasture (HC)	6899	June – October			Listed fish habitat Big-game winter range	Limited access due to steep terrain Retain 50-60% available forage for wintering elk.
					Listed fish habitat Big-game winter range	Adhere to PacFish standards Retain 50-60% available

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
Wilder (TM)	1680	April - December			Research Natural Area Wild and Scenic River	forage for wintering elk. Allow no more than 10% utilziation of RNA Allow no more than 20% shrub and 50% forage utilization in WSR
Joseph Breaks (TM)	4319	April - December			Listed fish habitat Big-game winter range Wild and Scenic River	Adhere to PacFish standards Retain 50-60% available forage for wintering elk. Allow no more than 20% shrub and 50% forage utilization in WSR
Thorn Hollow (TM)	1902	April - December			Listed fish habitat Big-game winter range	Monitor for livestock access to Cougar Creek Retain 50-60% available forage for wintering elk.
Horse Pasture Ridge (TM)	1443	June - October			Listed fish habitat Big-game winter range Research Natural Area	Limited livetsock access to strem due to dense vegetation Retain 50-60% available forage for wintering elk. Allow no more than 10% utilization in RNA
Corral Springs (TM)	2628	June - October			Listed fish habitat Big-game winter range	Limited livestock access due to steep terrain and dense vegetation Retain 50-60% available forage for wintering elk.
Table Mountain (TM)	2763	June - October			Listed fish habitat	Limited livestock access due to steep terrain and dense vegetation
Dog Fight (TM)	334	September – December				
Joseph Creek	**1571**	**April - December**		**75 federal 60 private**		
Joseph Creek	1571	April - December	Determined by range condition and resource objectives		Listed fish habitat	Stream inaccessible to livestock

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
					Big-game winter range Wild and Scenic River	Retain 50-60% available forage for wintering elk. Allow no more than 20% shrub and 50-60% forage utilziation in WSR
Swamp Creek	**34490**	**April - October**		**4669 federal 232 private**		
Lower Swamp & Snake Canyon	1327 1130	April - October	Determined by range condition and resource objectives		Listed fish habitat Big-game winter range	Addressed by exclosure fencing Retain 50-60% available forage for wintering elk.
Baker Gulch & Barney Flat	1199 1475	April - October			Listed fish habitat Big-game winter range	Addressed by high streamflow volume Retain 50-60% available forage for wintering elk.
Red Fir	586	April - October			Listed fish habitat Big-game winter range	Addressed by high streamflow volume and limited access Retain 50-60% available forage for wintering elk.
Lower Davis	2836	April - October			Listed fish habitat Big-game winter range	Limited access due to dense vegetation Retain 50-60% available forage for wintering elk.
Miller Springs	2023	May - October			Big-game winter range	Retain 50-60% available forage for wintering elk.
Beef Pasture	2161	April – October			Listed fish habitat Big-game winter range	Fencing in place Retain 50-60% available forage for wintering elk.
Swamp Creek	183	July - October			Listed fish habitat	Graze after July 1
Upper Davis	2733	July - October			Listed fish habitat Big-game winter range	Addressed by exclosure Retain 50-60% available forage for wintering elk.
Little Elk	8921	July – October			Listed fish habitat Big-game winter range	Graze after July 1 Retain 50-60% available forage for wintering elk.
Elk	3478	July - October			Listed fish habitat	Graze after July 1
Dorrance	1748	June - October			Listed fish habitat	Install ½-mile fencing.

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
					Spalding's catchfly	Avoid grazing catchfly occurrences during critical growth period. See mitigation and monitoring section
Holding Pasture	45	September - October			Listed fish habitat Spalding's catchfly	Graze after July 1 See mitigation and monitoring section
Horse Pasture	15	July - October			Listed fish habitat	Graze after July 1
Upper Swamp	1344	April - October			Listed fish habitat Riparian shrubs Big-game winter range	Addressed by exclosure fencing Adopt NRST monitoring protocal Retain 50-60% available forage for wintering elk.
Bennett	1210	April - October			Listed fish habitat Riparian shrubs	Address through herding Adopt NRST monitoring protocal
Buck Creek	2076	April - October			Listed fish habitat Big-game winter range Wild and Scenic River	Monitopr for redds, protect if found Retain 50-60% available forage for wintering elk. Allow no more than 20% shrub and 50-60% forage utilization in WSR
Catchfly		March – May 15 September - October			Spalding's catchfly	Avoid grazing catchfly occurrences during critical growth period. See mitigation and monitoring section
TOTAL				**11,714 federal 1,152 private**		

Alternative 4

Alternative 4 was developed in response to comments received during the 45-day public review period of the DEIS. This alternative focuses on a different approach to riparian area management, Wild and Scenic River management, and botanical resources management as suggested by commenters on the DEIS. Alternative 4 is patterned after Alternative 2 in that it specifies stocking levels and grazing durations for each pasture of each allotment.

Under Alternative 4, a specific prescription was made to reduce the presence of livestock grazing on fish-bearing streams to an incidental level. This would be accomplished through fencing, herding, and changing the periods in which livestock are permitted to graze. Refer to Table 7 for a summary of the stream protections prescribed by Alternative 4.

Alternative 4 introduces the same monitoring steps as Alternative 3 Modified for the Swamp Creek Allotment. Based on the three-year monitoring information, appropriate changes would be made in permitted numbers if needed to adjust numbers to capacity of the allotment.

Alternative 4 also reduces the presence of livestock in the Joseph Creek Wild and Scenic River Corridor. The objective of Alternative 4 would be to allow only an incidental presence of commercial livestock in the Wild and Scenic River Corridor. This objective would be accomplished by eliminating November and December grazing in the Wilder and Joseph Breaks Pastures of the Table Mountain Allotment and the Joseph Creek Pasture of the Joseph Creek Allotment. These pastures would be grazed only in the spring, and herding and fencing would be required to ensure only incidental livestock presence in the Wild and Scenic River Corridor. Summer and fall use (June through December) would not be authorized within pastures containing the Wild and Scenic River Corridor, and the permittees would need to find alternative fall forage elsewhere. Use of the Buck Pasture of the Swamp Creek Allotment would also be modified by requiring that herding and/or fencing be used to allow only incidental spring use within the Wild and Scenic River Corridor.

Alternative 4 addresses comments related to Spalding's catchfly known populations by eliminating spring use of the North Crow, South Crow, and Doe Gulch Pastures.

Table 7 - Protections of Steelhead-Bearing Streams - Alternative 4

Stream	Sub watershed	Allotment(s)	Pasture (s)	Protections
Joseph Creek	02H, J, N, P	Table Mtn.	Joseph Breaks and Wilder	No Summer or Fall Grazing, Herding and fencing to allow incidental presence only in spring
		Joseph Creek	Joseph Creek	No summer or fall grazing, Herding and fencing to allow incidental presence only in spring
		Swamp Creek	Buck	No summer or fall grazing, Herding and fencing to allow incidental presence only in spring
		Al-Cunningham	North Alford	Upon completion of Blue Mountain Land Exchange, allotment would be vacated

Stream	Sub watershed	Allotment(s)	Pasture (s)	Protections
West Fork Broady	02D	Hunting Camp	Kirkland	Herding required weekly to remove livestock that reach the creek.
Rush Creek	02H	Hunting Camp	Tamarack	No change. Currently almost no access due to steep rugged terrain and dense vegetation along stream.
Peavine Creek	02I	Table Mountain	Horse Pasture Ridge, Corral Springs, Table Mountain	**All Pastures**: No change. Currently almost no access due to steep rugged terrain and dense vegetation along stream.
		Hunting Camp	Tamarack	No change. Currently almost no access due to steep rugged terrain and dense vegetation along stream.
Lupine Creek	02I	Table Mountain	Corral Springs, Table Mountain	**All Pastures**: No change. Currently almost no access due to steep rugged terrain and dense vegetation along stream.
Swamp Creek	02K	Swamp Creek	Buck, Lower Swamp, Snake Canyon, Lower Davis, Beef Pasture, Upper Davis, Horse Pasture, Upper Swamp, Bennett	**Buck**: No change. Limited access & high flows = no steelhead problems. **Lower Swamp**: Spring Grazing **Snake Canyon**: creek already fenced. **Lower Davis**: Develop upland water, ride, fence out ½ mile of stream through meadows. **Beef**: creek already fenced. **U. Davis**: Fence 1 mile of stream through meadows. **Horse**: ¼ mi of fence. **U. Swamp**: creek already fenced. **Bennett**: develop upland water, ride, fence off creek as last alternative.
		Davis Creek	Bennett	Develop upland water, ride, fence off stream as last alternative.
Davis Creek	02L	Swamp Creek	Red Fir Lower Davis Upper Davis	**Red Fir**: Nothing dense vegetation allows only incidental use. **Lower Davis**: Develop upland water, ride, fence off ½ mile of meadows **U. Davis**: fence another ¼ mile of meadows along stream.
		Davis Creek	West Davis	Spring grazing or additional ½ mile of fencing.
Cougar Creek	02O	Cougar	Cougar Trap Canyon	**Cougar**: Only incidental use currently. **Trap**: No access due to rims.
		Table Mountain	Thorn Hollow Horse Pasture	**Both Pastures**: Very little use currently due to dense vegetation.
Sumac Creek	02P	Al-Cunningham	Sumac	Not Listed fish habitat
		Cougar	Sumac, Breeding Pasture	Fence ½ mile of stream.
Crow Creek	26A, C	Crow Creek	Crow Creek, Road	Discontinue grazing
		Dobbins	Dobbins	On non-waived private land

Stream	Sub watershed	Allotment(s)	Pasture (s)	Protections
Elk Creek	26B	Swamp Creek	Little Elk, Elk Creek	**Both Pastures**: Close water gaps and develop upland water.
		Davis Creek	Elk Creek	Close water gaps and develop upland water. Private land not waived.
		Elk Mountain	Homestead, Emmons	**Both Pastures**: Private land not waived.
		Crow Creek	Special Use	Private land not waived.
Gould Gulch	26B	Swamp Creek	Elk Creek	Creek dry during time of use.
Little Elk Creek	26B	Swamp Creek	Little Elk Elk Creek	**L. Elk**: Fence ½ mile of stream **Elk**: Fence ¼ mile of stream
Peavine Creek	26M	Cougar	Peavine	Fence ¼ mile of W. Fork and close water gaps on Peavine Creek.

Response to Key Issues

Alternative 4 responds to the key issues described in Chapter 1 as follows.

Key Issue 1 **-** Alternative 4 responds to Key Issue 1 (Joseph Creek Wild and Scenic River water quality) by reducing the influence of livestock grazing to a level of incidental presence. This would be accomplished by eliminating summer and fall grazing (when livestock are more prone to seek water from perennial streams) and by requiring herding and/or fencing to maintain only an incidental presence of livestock within the Wild and Scenic River Corridor.

Key Issue 2 **–** Alternative 4 responds to Key Issue 2 (upstream effects on the Joseph Creek Wild and Scenic River) by incorporating shrub browse utilization standards and streambank stability standards specific to the Swamp Meadow portion of the Upper Swamp Pasture and the Bennett Pasture of the Swamp Creek Allotment and the Bennett Pasture of the Davis Creek Allotment.

To address riparian function (and consequently, water quality) within Swamp Creek, this alternative would implement a monitoring program for shrubs and streambank stability to ensure restoration is occurring at a natural rate. Rather than relying on riparian terrace stubble height to govern riparian conditions, the annual monitoring protocol would ensure that objectives for shrubs and streambank stability were being met. Grazing seasons and stocking would be adjusted to meet these objectives.

Key Issue 3 **–** Alternative 4 responds to Key Issue 3 (potential Research Natural Areas) by incorporating forage utilization standards specific to the Horse Pasture Ridge and Haystack Rock potential Research Natural Areas. Grazing within these areas will be managed to maintain a good or excellent range condition. This will occur by implementing allowable utilization standards of no more than 10 percent.

Key Issue 4 **-** Alternative 4 responds to Key Issue 4 (Spalding's catchfly) by incorporating elements of Alternatives 2 and 3 Modified for protecting known and potential habitat. Similar to Alternative 3 Modified, Alternative 4 sets priorities for inventorying areas where

potential habitat for Spalding's catchfly has been identified and is at risk to impacts from livestock grazing and would complete future rare plant inventories on 2,890 to 7,630 acres. If Spalding's catchfly occurrences are found, they would be protected similar to the known occurrences in the Crow Creek and Swamp Creek Allotments. This alternative also changes livestock herding patterns through the Doe Gulch and South Crow Pastures of the Crow Creek Allotment to protect Spalding's catchfly occurrences from trampling. Alternative 4 reduces risks to known occurrences in the South Crow, Doe Gulch, and North Crow Pastures of the Crow Creek allotment by eliminating spring or summer grazing altogether. Fall grazing would be permitted.

Key Issue 5 – Alternative 4 responds to Key Issue 5 (adaptive management) in the same manner as Alternative 2. Allotment and pasture stocking levels and grazing periods would be specified. Each proposed change in livestock management would be reviewed within the context of pre-specified animal months and seasons of use for each pasture.

Alternative 4 would authorize grazing of cattle or horses on these allotments. Tribal assertion of tribal rights for pasturing of cattle or horses would be accommodated according to Wallowa-Whitman National Forest policy. If the best location for tribal grazing was determined by the Forest Service to be within the JCRAA, this use could continue without further NEPA analysis because the use of either cattle or horses would already be addressed by the current analysis. Appropriate conversions for animal type (such as cow-calf pairs, yearlings, steers, bulls, dry cows, horses) would be made to ensure that the maximum stocking (head-months) identified for each allotment was not exceeded.

Key Issue 6 - Alternative 4 responds to Key Issue 6 (big-game winter range) by providing for more fall forage within pastures containing the Joseph Creek Wild and Scenic River Corridor. These pastures would only be grazed in the spring, and use of the corridor itself would be incidental. Like Alternative 3 Modified, Alternative 4 would establish a more restrictive forage utilization standard for areas designated as big-game winter range. In areas designed by the Forest Plan as big-game winter range (Management Area 3), grazing systems would ensure that at least 50 to 60 percent of the plant material is maintained at the end of the grazing season so that wintering big game have adequate forage. Key areas would be read, or established where needed, within elk winter range to ensure that the combination of all forage users would not exceed utilization standards.

Key Issue 7 – Alternative 4 responds to Key Issue 7 by designing systems to strictly limit livestock access to steelhead fisheries. Since virtually all perennial streams within the JCRAA carry steelhead, these protections would ensure that riparian utilization standards are met. The Swamp Creek Restoration project would continue to be implemented, and the Upper Swamp Pasture and the two Bennett Pastures would be grazed under a monitoring regime for shrub utilization and streambank stability. The Sumac Pasture of the Cougar Allotment would be managed by adopting Forest Plan utilization standards for unsatisfactory range condition.

Description by Allotment

The grazing systems for Alternative 4 are described below. Additional components of

Alternative 4 are included in Mitigation and Monitoring on Pages 66-74. Refer to Figure 2 for a map of the allotments and pastures and to Table 9 for the seasons of use that would be applied to the pastures within these allotments.

Al-Cunningham Allotment – Upon completion of the Blue Mountain Land Exchange, this allotment would be vacated. Until that time, the allotment would be managed as described for Alternative 2.

Cougar Creek Allotment - In the Cougar Creek Allotment, up to 2702 head-months would be authorized for grazing this nine-pasture allotment from April through October. Resource objectives and management considerations associated with this allotment would be the same as Alternative 2.

- Rest spring pastures every third year.
- Defer use of summer pastures until fall at least every third year.
- Address early to mid seral stage communities within the Sumac Pasture through rest or deferment and by applying allowable utilization standards from the Forest Plan for unsatisfactory range conditions until such time that mid to late seral plant communities dominate.
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Prior to grazing during the spawning and incubation period for listed fish species (April 15 - July 1), monitor Sumac Creek for the presence of redds. If redds are found, protect them through fencing or changing the rotation.
- Defer grazing near Cougar Creek and Peavine Creek until after July 1 of each year to prevent livestock from entering these creeks when redds for listed fish species are present.
- Maintain in the fall at least 50 to 60 percent plant material of grasses in designated big-game winter range.

Crow Creek Allotment - Up to 232 head-months would be authorized for grazing the six-pasture Crow Creek Allotment from April through December, with 31 associated with private land and 201 associated with federal land. Private lands within these six pastures would be administered under a term private land grazing permit. Additional private lands adjoin the allotment, but are fenced from the six pastures. These private lands would be used to complete the permittee's livestock operation, but would not be administered under a Forest Service permit. Resource objectives and management considerations associated with this allotment would include:

- Provide deferment for all pastures at least every third year.
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Defer grazing near Crow Creek until after July 1 of each year to prevent livestock from entering these creeks when redds for listed fish species are present.
- To protect Spalding's catchfly sites, avoid grazing in the spring or summer those

pastures containing known sites. Refer also to the mitigation and monitoring measures for protection of Spalding's catchfly sites within this allotment.
- Maintain in the fall at least 50 to 60 percent plant material of grasses in designated big-game winter range.

Davis Creek Allotment - Up to 631 head-months would be authorized to graze the seven-pasture Davis Creek Allotment from April through October. Resource objectives and management considerations associated with this allotment would include:

- Provide rest or deferment for all pastures at least every third year.
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Prior to grazing during the listed fish spawning and incubation period (April 15 - July 1), monitor Elk Creek for the presence of redds for listed fish species. If redds are found, protect them through fencing or changing the rotation.
- Defer grazing near Swamp Creek and Davis Creek until after July 1 of each year to prevent livestock from entering these creeks when redds for listed fish species are present.

Dobbins Allotment - Up to 378 head-months would be authorized for grazing the one-pasture Dobbins Allotment from May through November with 302 head-months associated with private land and 76 head-months associated with federal land. Private lands within this pasture would be administered under a term grazing permit with on/off provisions. Resource objectives and management considerations associated with this allotment would include:

- Work cooperatively with the permittee to protect any redds for listed fish species in Crow Creek on the private land portion of the allotment by delaying livestock entry into the pasture or fencing surveyed redds.
- Maintain in the fall at least 50 to 60 percent plant material of grasses in designated big-game winter range.

Elk Mountain Allotment - Up to 179 head-months would be authorized to graze the two-pasture Elk Mountain Allotment from May through September with 143 head-months associated with private land and 36 head-months associated with federal land. Private lands within these two pastures would be administered under a term grazing permit with on/off provisions. Resource objectives and management considerations associated with this allotment would include:

- Work cooperatively with the permittee to protect any redds for listed fish species in Elk Creek on the private land portion of the allotment by delaying livestock entry into the pasture or fencing surveyed redds.

Fine Allotment - Up to 253 head-months would be authorized for grazing the six-pasture Fine Allotment from May through November, with 4 head-months associated with private land and 249 head-months associated with federal land. Resource objectives and management considerations associated with this allotment would include:

- Provide rest or deferment for all pastures at least every third year.
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Prior to grazing during the listed fish spawning and incubation period (April 15 - July 1), monitor Peavine Creek for the presence of redds for listed fish species. If redds are found, protect them through fencing or changing the rotation.
- Maintain in the fall at least 50 to 60 percent plant material of grasses in designated big-game winter range.

Hunting Camp/Table Mountain Allotments - Up to 2548 head-months would be authorized to graze the three pasture Hunting Camp Allotment and the seven-pasture Table Mountain Allotment from April through December with 172 head-months associated with private land and 2376 head-months associated with federal land. These two allotments have been managed together for the past four years and are therefore addressed together. Private lands within the Table Mountain Pastures would be administered under a term private land grazing permit. Resource objectives and management considerations associated with these allotments would include:

- Provide rest or deferment for all pastures at least every third year.
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Monitor access of livestock to Cougar Creek during the listed fish spawning season. If livestock are able to reach the creek, protect the redds through fencing, herding, or changing the rotation.
- Maintain in the fall at least 50 to 60 percent plant material of grasses in designated big-game winter range.
- Maintain range conditions within the Wilder and Joseph Breaks Pastures that are within the Joseph Creek Wild and Scenic River Corridor for late-seral plant communities. Allow no more than 20 percent shrub utilization, and allow no more than 50 percent utilization of grasses.
- Grazing within the Wild and Scenic River Corridor will be conducted so that livestock do not congregate on the Joseph Creek trail.
- Maintain the vegetative values of the potential Research Natural Areas for Haystack Rock and Horse Pasture Ridge by managing for late-seral plant communities and by allowing no more than 10 percent utilization of forage in these areas.

Joseph Creek Allotment - Up to 75 head-months would be authorized for grazing the one-pasture Joseph Creek Allotment from April through December with 30 head-months

associated with private land and 45 associated with federal land. Livestock would graze this allotment in the spring and/or in the fall. Private lands within Joseph Creek Allotment would be administered under a term private land grazing permit. Resource objectives and management considerations associated with this allotment would include:

- Provide rest or deferment for the pasture at least every third year by use of another allotment or private land.
- Maintain in the fall at least 50 to 60 percent plant material of grasses in designated big-game winter range.
- Grazing within the Wild and Scenic River Corridor will be conducted so that livestock do not congregate on the Joseph Creek trail.
- Maintain range conditions within the Joseph Creek Wild and Scenic River Corridor for late-seral plant communities. Allow no more than 20 percent shrub utilization, and allow no more than 50 percent utilization of grasses.

Swamp Creek Allotment - Up to 4901 head-months would be authorized to graze the nineteen-pasture Swamp Creek Allotment from April through October, with 232 head-months associated with private land and 4669 head-months associated with federal lands. Private lands within these nineteen pastures would be administered under a term private land grazing permit. The Swamp Creek Allotment is grazed by several permittees, one of which has recently elected 'non-use' of the permit for 3 of the last 4 years. If all of the permittees elect to stock the allotment in any given year, it is possible that utilization standards would not be met without leaving the allotment early. At each annual allotment review meeting, the permittees would need to agree on management strategies needed to meet resource objectives. Resource objectives and management considerations associated with this allotment include:

- Provide rest-rotation in the Buck, Lower Swamp, Red Fir, Baker, Barney, and Snake Pastures in order to promote improvement of upland vegetative condition.
- Defer grazing for all pastures at least every third year.
- Within the Bennett Pasture and the Swamp Meadow portion of the Upper Swamp Pasture, establish a monitoring protocol for shrubs and streambank stability based upon recommendations from the National Riparian Service Team (Appendix C).
- To promote riparian health for listed species habitat, require that at least a 4-inch stubble height at the greenline and a 3-inch stubble height on riparian terraces remain at the end of the season.
- Prior to grazing during the listed fish spawning and incubation period (April 15 - July 1), monitor Crow Creek for the presence of redds for listed fish species. If redds are found, protect them through fencing or changing the rotation.
- To protect Spalding's catchfly sites, avoid grazing in the spring or summer those pastures containing known sites. Refer also to the mitigation and monitoring measures for protection of Spalding's catchfly sites within this allotment.
- Maintain in the fall at least 50 to 60 percent plant material of grasses in designated big-game winter range.
- Maintain vegetative conditions within the Buck Pasture that are within the Joseph Creek Wild and Scenic River Corridor for late-seral plant communities. Allow no more than 20 percent shrub utilization, and allow no more than 50 percent

utilization of grasses.

- Grazing within the Wild and Scenic River Corridor will be conducted so that livestock do not congregate on the Joseph Creek trail or lowest ½ mile of the Swamp Creek trail.

Table 8 summarizes land ownership within the allotment boundaries and lists the permit types associated with administering the allotments.

Table 8 – Land Ownership and Permit Types for Alternative 4

Allotment Name	Federal Acres	Private Acres	Total Acres	Permit Types
Al-Cunningham	1629	393	2022	Vacate allotment upon completion of Blue Mountain Land Exchange
Cougar Creek	17,583	0	17,583	3 term grazing permits
Crow Creek	1275	298	1573	1 term grazing permit 1 term private land grazing permit
Davis Creek	5738	0	5738	1 term grazing permit
Dobbins	255	1360	1615	1 term grazing permit with on/off provisions
Elk Mountain	207	355	562	1 term grazing permit with on/off provisions
Fine	1515	0	1515	1 term grazing permit 1 term private land grazing permit
Hunting Camp Table Mountain	10229 14581	0 488	10229 15069	1 term grazing permit 1 term private land grazing permit
Joseph Creek	1002	569	1571	1 term private land grazing permit
Swamp Creek	33047	1444	34491	4 term grazing permits 1 term private land grazing permit

Alternative 4 would authorize grazing of cattle or horses on these allotments.

Table 9 displays the stocking and seasons of use for each of the eleven allotments and pastures, as well as management considerations that need to be addressed by the grazing schedule.

Table 9 – Summary of Alternative 4

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
Al-Cunningham	**2022**			**0**		
South Alford	603			0	Big-game winter range	Vacated upon completion of the Blue Mountain Land Exchange.
Sumac	243			0	Listed fish habitat Big-game winter range	
North Alford	542			0	Big-game winter range	
Chute Canyon	634			0	Big-game winter range	
Cougar Creek	**17,583**	**April - October**		**2702**		
Trap Canyon	724	April - May	45 days	150	Listed fish habitat Big-game winter range	No access to fish habitat due to rims. Retain 50-60% available forage for wintering elk.
Breeding Pasture	693	April - May	45 days	150	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and fencing ½ mile of stream. Retain 50-60% available forage for wintering elk.
Sumac	1273	April - May or June - August	45 days	270	Listed fish habitat Range condition Big-game winter range	Addressed by pasture timing and stocking and fencing ½ mile of stream. Apply unsatisfactory range condition utilization standards. Retain 50-60% available forage for wintering elk.
Hinton Corner and Boner	383	June	30 days	100		
Cougar	5046	July - August or September - October	50 days	785	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and limited access. Retain 50-60% available forage for wintering elk.
Peavine	4602	July - August or September - October	50 days	785	Listed fish habitat	Addressed by closing water gaps and fencing

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
						¼ mile of stream.
Baldwin	2700	August - September	30 days	475		
Muddy	2162	June	30 days	250	Big-game winter range	Retain 50-60% available forage for wintering elk.
Crow Creek	**1968**	**April - December**		**201 federal 31 private**		
North Crow	386	September - December	90 days	105	Spalding's catchfly	Eliminate spring and summer grazing. Refer to mitigation and monitoring section
South Crow	316	September - December	90 days	40	Spalding's catchfly	Eliminate spring and summer grazing.
Crow Creek & Road	220			0	Listed fish habitat	Grazing eliminated.
Special Use	609	April - May September - December	60 days 90 days	90		
Doe Gulch	437	September - December	30 days	90	Spalding's catchfly	Eliminate spring and summer grazing.
Davis Creek	**5738**	**April - October**		**631**		
Davis South	860	July - August and September -October	60 days	325	Listed fish habitat	Addressed by pasture timing and stocking.
Hillside	393	June - August	15 days	120		
Elk Creek	850	April - May or June - August	20 days	155	Listed fish habitat	Addressed by riparain exclosure, closing water gaps, and delveloping upland water sources.
Starvation	625	June - August	10 days	80		
Davis West	1510	April - May, June - August, or September - October	60 days	325	Listed fish habitat	Addressed by pasture timing and stocking, existing exclosure, and by additional ½ mile of stream fencing.
Davis East	1050	April - May, June - August, or September - October	30 days	200	Listed fish habitat	Addressed by pasture timing and stocking, existing exclosure, and by additional ½ mile of

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
						stream fencing.
Bennett	450	July - August	45 days	70	Listed fish habitat Riparian shrubs	Addressed by pasture timing and stocking, herding, developing upland water, and then fencing, if needed. Adopt NRST monitoring protocol.
Dobbins	**1615**	**May - November**		**76 federal 302 private**		
Dobbins	1615	May - November		73 federal 305 private		
Elk Mountain	**562**	**May - September**		**36 federal 143 private**		
Homestead	166	May - September	75 days	36 federal 143 private		
Emmons	396	May -- September	75 days	90		
Fine	**1515**	**May - November**		**249 federal 4 private**		
Westside	279	May - June, June - September, or October - November	60 days	50	Big-game winter range	Retain 50-60% available forage for wintering elk..
Homeplace	207	May - June, June - September, or October - November	60 days	80	Big-game winter range	Retain 50-60% available forage for wintering elk.
Peavine 1	158	May - June, June - September, or October - November	60 days	40	Listed fish habitat	Addressed by pasture timing and stocking and invntory and protection.
Peavine 2 & Peavine 3	108 110	May - June, June - September, or October - November	60 days	60		
Peavine 4	653	May - June, June - September, or October - November	60 days	80		
Hunting Camp and Table Mountain	**10228 15069**	**April - December**		**2376 federal 172 private**		
Tamarack (HC)	3329	June - August	30 days	212	Listed fish habitat Big-game winter range	Limited access to fish habitat due to steep terrain and dense

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
						vegetation. Retain 50-60% available forage for wintering elk.
Kirkland / Holding Pasture (HC)	6899	June - August	45 days	580	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and steep terrain, also weekly herding. Retain 50-60% available forage for wintering elk.
Wilder (TM)	1680	April – May	45 days	135	Listed fish habitat Big-game winter range Research Natural Area Wild and Scenic River	Allow spring grazing only, herding and fencing to reduce livestock presence. Retain 50-60% available forage for wintering elk. Allow no more than 10% utilziation of RNA. Allow no more than 20% shrub and 50% forage utilization in WSR.
Joseph Breaks (TM)	4319	April – May	45 days	282	Listed fish habitat Big-game winter range Wild and Scenic River	Allow spring grazing only, herding and fencing to reduce livestock presence. Retain 50-60% available forage for wintering elk. Allow no more than 20% shrub and 50% forage utilization in WSR.
Thorn Hollow (TM)	1902	April - May or June - August	45 days	417	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and limited access due to dense vegetation. Retain 50-60% available forage for wintering elk.
Horse Pasture Ridge (TM)	1443	June - August	30 days	175	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and limited access due to steep terrain and dense vegetation. Retain 50-60% available

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
					Research Natural Area	forage for wintering elk. Allow no more than 10% utilziation of RNA.
Corral Springs (TM)	2628	June - August	30 days	387	Listed fish habitat Big-game winter range	Limited access due to steep terrain and dense vegetation. Retain 50-60% available forage for wintering elk.
Table Mountain (TM)	2763	June - August	45 days	580	Listed fish habitat	Limited access due to steep terrain and dense vegetation.
Dog Fight (TM)	334	September - December	20 days	258		
Joseph Creek	**1571**	**April - December**		**45 federal 30 private**		
Joseph Creek	1571	April - May	45 days	45 30	Listed fish habitat Big-game winter range Wild and Scenic River	Allow spring grazing only, herding and fencing to reduce livestock presence. Retain 50-60% available forage for wintering elk. Allow no more than 20% shrub and 50% forage utilization in WSR.
Swamp Creek	**34490**	**April - October**		**4669 federal 232 private**		
Lower Swamp & Snake Canyon	1327 1130	April - May	60 days	400	Listed fish habitat Big-game winter range	Addressed by allowing only spring grazing and by exclosure fencing.
Baker Gulch & Barney Flat	1199 1475	April - May	60 days	400	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and high streamflow volume. Retain 50-60% available forage for wintering elk.
Red Fir	586	April - May	60 days	250	Listed fish habitat Big-game winter range	Addressed by high streamflow volume and limited access. Retain 50-60% available forage for wintering elk.
Lower Davis	2836	April - May	60 days	730		Addressed by pasture timing and stocking and

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
					Listed fish habitat Big-game winter range	herding, developing upland water and 1 mile of stream fencing. Retain 50-60% available forage for wintering elk.
Miller Springs	2023	June – August or September – October	45 days	350	Big-game winter range	Retain 50-60% plant material in fall.
Beef Pasture	2161	April- May, June - August, or September – October	45 days	400	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking and exclosure fencing. Retain 50-60% available forage for wintering elk.
Swamp Creek	183	July – August or September - October	60 days	50	Listed fish habitat	Addressed by pasture timing and stocking.
Upper Davis	2733	June - August	45 days	250	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking existing exclosure fencing and 1.25 miles of additional fencing through meadows. Retain 50-60% available forage for wintering elk.
Little Elk	8921	June – October	110 days	2500	Listed fish habitat Big-game winter range	Addressed by pasture timing and stocking, existing exclosure fencing and fencing ½ mile of stream. Retain 50-60% available forage for wintering elk.
Elk	3478	September - October	30 days	165	Listed fish habitat	Addressed by pasture timing and stocking, existing exclsoure fencing, water gap closing, developing upland water sources, and fencing ¼ mile of stream.
Dorrance	1748	June - October	75 days	540	Listed fish habitat Spalding's catchfly	Install ½-mile fencing. Eliminate spring and summer grazing. Refer to mitigation and

Allotment and Pasture	Acres	Timing *	Duration	Maximum Stocking (head-months)	Resource Objectives	Management Considerations
						monitoring section
Holding Pasture	45	September - October	30 days	150		
Horse Pasture	15	Incidental use	Incidental	25	Listed fish habitat Big-game winter range	Addressed by pasture stocking and ¼ mile of stream fencing. Retain 50-60% available forage for wintering elk.
Upper Swamp	1344	June – August or September - October	60 days	150	Listed fish habitat Riparian shrubs Big-game winter range	Addressed by pasture timing and stocking and exiisting exclosure fencing. Adopt NRST monitoring protocol. Retain 50-60% available forage for wintering elk.
Bennett	1210	June – August or September - October	60 days	150	Listed fish habitat Riparian shrubs	Addressed by pasture timing and stocking, herding, developing upland water, and fencing, if needed. Adopt NRST monitoring protocol.
Buck Creek	2076	April - May	60 days	400	Listed fish habitat Big-game winter range Wild and Scenic River	Addressed by pasture timing and stocking and high streamflow volumes. Retain 50-60% available forage for wintering elk. Allow no more than 20% shrub and 50% forage utilization in WSR.
Catchfly		September - October	30 days	75	Spalding's catchfly	Eliminate spring and summer grazing. Refer to mitigation and monitoring section
TOTAL				**10,959 federal 781 private**		

Activities Common to Alternatives 2, 3 Modified, and 4

Range Improvements - Permittees are responsible for maintaining fences and water developments as described in each permit. Approximately 205 miles of fence and 265 water improvements occur within the JCRAA and require maintenance. Maintenance and installation of range improvements is an activity that is categorically excluded from analysis in an Environmental Impact Statement or Environmental Assessment. As timely and necessary, these proposals will be addressed through environmental analysis commensurate with categorically excluded activities.

Range Management Strategies – Range management strategies that are based on range science are incorporated into the Allotment Management Plans and Annual Operating Instructions specific to each allotment/pasture and specific to resource needs of a given year. The objective behind these strategies is to manage a healthy ecosystem in mid seral stage with upward trend. These objectives are met through an ongoing monitoring and adjustment process. Monitoring is completed through identification of key areas and establishment of utilization standards.

Management strategies are subject to change in response to resource conditions, dimate, listed species, or Forest Plan guidance. Range management strategies applicable to Alternatives 2 and 3 Modified, and 4 include the following:

- Rest or defer use of pastures at least every third year through use of pasture rotations or private land.

- Use salt placement and herding to improve distribution of livestock throughout pastures.

- When water resources are low, consider hauling water or moving cattle to other pastures or off forest.

- Incorporate the following utilization standards from the Forest Plan (Pages 4- 52 and 53) into the Allotment Management Plans and Annual Operating Instructions. The numbers in this table indicate what percentage of the available forage may be used by the end of the season and are used for allotments where a moderate level of fencing and water developments are present. Livestock are removed from the pasture before these standards are exceeded.

Table 10 – Forest Plan Allowable Utilization Standards

Range condition	Riparian		Upland		
	Grass and grass-like species	Shrubs	Grass and grass-like species		Shrubs
			Forested	Grasslands	
Satisfactory	45%	40%	45%	55%	45%
Unsatisfactory	0-35%	0-30%	0-35%	0-35%	0-30%

- To assist permittees and range administrators in implementing the utilization standards above, forage weight-height curves were developed for use at the Wallowa Mountains Office of the Wallowa-Whitman National Forest (refer to the analysis file).

- PacFish standards were incorporated into the Forest Plan which state that grazing will be managed in a manner that does not prevent the attainment of Riparian Management Objectives. This standard was interpreted in the Region 6 PacFish Grazing Guideline Revision memo dated August 14, 1995 and the PacFish/InFish Monitoring Guidelines for the Wallowa-Whitman Grazing Program dated May 6, 1996. Allowable utilization of riparian vegetation was established by these memos as shown in Table 11. Additional stubble height is required to be left ungrazed where riparian conditions are unsatisfactory.

Table 11 – PacFish / InFish Allowable Utilization Standards

Range condition - Riparian condition	Riparian		
	Grass and Grass-like Greenline	Sedge and Rush Sinks	Kentucky Bluegrass / Mixed Species
Satisfactory – Proper Functioning Condition	4 inches	3 inches	2 inches
Unsatisfactory – Functioning at Risk or Nonfunctioning	6 inches	4 inches	4 inches

Timing – The timing of livestock placement or movement is estimated in the description of alternatives. However, timing varies each year based on factors such as range readiness, climatic fluctuations, utilization standards, and resource conditions. Use would not begin earlier than two weeks before the established season nor end more than two weeks after the established season. Utilization standards and resource conditions then determine livestock placement or movement within the grazing season.

Alternative Comparison and Summary

The following Tables 12 and 13 compare the alternatives.

Table 12 – Comparison of Alternatives

Features	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Need for Action Elements – Range Condition in 10 to 20 years				
Sumac Pasture of the Cougar Creek Allotment	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Bennett Pasture of the Swamp Creek Allotment	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Upper Swamp Pasture of the Swamp Creek Allotment	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Bennett Pasture of the Davis Creek Allotment	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Authorization				
Livestock Type	None	Cattle and Incidental Horse	Cattle and/or Horse	Cattle and/or Horse
Maximum Stocking (Animal Months)				
Al-Cunningham	0	321	321	0
Cougar	0	2,702	2,702	2,702
Crow Creek	0	262	262	232
Davis Creek	0	631	631	631
Dobbins	0	378	378	378
Elk Mountain	0	179	179	179
Fine	0	253	253	253
Hunting Camp / Table Mountain	0	3,104	3,104	2,548
Joseph Creek	0	135	135	95
Swamp Creek	0	4,901	4,901	4,901
Total	0	12,866	12,866	11,919

Table 13 – Key Indicators by Alternative

Issue and Indicators	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Issue 1: Wild and Scenic River				
• Percent streambank stability in 10 years	95	95	95	95
• Increases In average summer water temperature in 10 years	0	0	0	0
• Increases in % cobble embeddedness in 10 years	0	0	0	0
• Decreases in % stream shade in 10 years	0	0	0	0
• Allowable shrub utilization in WSR Corridor	wildlife only	30	20	incidental
• Allowable forage utiliziation in WSR Corridor	wildlife only	55	50	incidental
Issue 2: Wild and Scenic River				
• Allowable utilization of shrubs in the Meadow Segment of Swamp Creek (%)	0	Up to 30	Determined by monitoring	Determined by monitoring
• Strambank stability along the Meadow segment of Swamp Creek in five to ten years (%)	95	75 to 85	85 to 95	85 to 95
Issue 3 - Potential Research Natural Areas				
• Area within the Horse Pasture Ridge potential RNA where late-seral plant communities are	250 acres	250 acres	250 acres	250 acres

Issue and Indicators	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
maintained • Area within the Haystack Rock potential RNA where late-seral plant communities are maintained	400 acres	400 acres	400 acres	400 acres
Issue 4 – Spalding's Catchfly				
• Acres of uninventoried Spalding's catchfly risk areas subjected to livestock grazing impacts after 3 years	0	7630	0 to 4740	0 to 4740
• Acres of additional risk areas that would be inventoried for the presence of Spalding's catchfly within 3 years	0	0	2890 to 7630	2890 to 7630
Issue 5 – Adaptive Management				
• Minimum area for which season of use is defined	Not Applicable	Pasture	Allotment	Pasture
• Can tribal treaty rights for pasturing of cattle be asserted without initiating a new NEPA analysis?	Not Applicable	Yes	Yes	Yes
• Can tribal treaty rights for pasturing of horses be asserted without initiating a new NEPA analysis?	Not Applicable	No	Yes	Yes
Issue 6 – Big Game Winter Range				
• Percent plant material retained at the end of fall grazing in designed big-game winter range	Wildlife use only	45	50 to 60	50 to 60
Issue 7 – Range Condition				
• Predominant seral stage of plant communities within 10 to 20 years in the Sumac Pasture of the Cougar Allotment	Mid to Late	Mid to Late	Mid to Late	Mid to Late
• Allowable shrub utilization in the Meadow Segment of Swamp Creek (%)	Wildlife use	Less than 30	Determined by monitoring	Determined by monitoring

Mitigation Measures

Mitigation measures pertinent to the action alternatives are listed below. Mitigation measures address potential impacts by avoiding adverse impacts, minimizing adverse impacts by limiting activities, or rectifying adverse impacts through rehabilitation. In addition to the mitigation measures listed below, measures are included from the Forest Plan (including PacFish/InFish) and agreements reached during the ESA consultation process for this proposal.

Mitigation Measures Common to Alternatives 2, 3 Modified, and 4

- Riparian/upland utilization standards will be met through season of use, riding, placing salt, and maintaining upland water sources.

- Allotments identified with unsatisfactory range conditions will be managed to promote upward trends. Specific direction will be identified in the subsequent Allotment Management Plans and the Annual Operating Instructions for each allotment.

- Permittees will be provided with a current list of noxious weeds and Threatened, Endangered, and Sensitive plant identification material. A map showing known noxious weed infestations and Threatened, Endangered, or Sensitive plant sites within each allotment will be reviewed at each annual operating meeting. Permittes will be asked to add known noxious weed locations not shown on the map.

- To reduce the risk of introducing noxious weeds, all heavy equipment used to maintain range improvements will be cleaned in a manner sufficient to prevent noxious weeds from being carried onto the analysis area. This requirement does not apply to passenger vehicles or other equipment used exclusively on roads. Cleaning will occur off of National Forest System lands. Cleaning will be inspected and approved by the Forest Officer in charge of administering the project, although permittees may complete the inspection.

- To reduce the risk of introducing noxious weeds, annual instructions include quarantining livestock that come from known weed infested areas before turning out on the National Forest and also inspection and treatment for allotment entry units if livestock have come from weed infested areas.

- To reduce the risk of introducing noxious weeds, any seed used in the maintenance of water developments or in restoration projects will be certified weed free.

- To reduce cattle impacts on riparian vegetation and stream channels, permittees will herd cattle during the grazing season at a frequency needed to reduce livestock concentration in riparian areas.

- To reduce cattle impacts on riparian vegetation and stream channels, permittees will select stock driveway locations that are on existing roads or avoid riparian areas.

- To reduce cattle impacts on riparian vegetation and stream channels, permittees will not place salt for livestock within ¼- mile of riparian areas.

- In the Catchfly, Holding, North Crow, South Crow, and Doe Gulch Pastures, protect Spalding's catchfly sites between approximately mid-May and late-August by not grazing in those pastures during that critical growth time period. Alternatively, avoid grazing management impacts to Spalding's catchfly sites in those pastures at that time by utilizing various fencing techniques to eliminate livestock around the Spalding's catchfly sites.

- In the North Crow, South Crow, Doe Gulch, Holding, Catchfly, and Dorrance Pastures, place salt so that livestock will not be encouraged to move toward the known populations of Spalding's catchfly. Keep salting locations greater than 1/4th mile from known occurrences unless site specific conditions dictate otherwise and the Forest Service concurs.

- Manage the South Crow and Doe Gulch Pastures in a manner that continues their recovery and transition past a mid-seral stage.

- To reduce the risk of mortality to Sensitive bat species, watering troughs will be installed with escapement ramps, and troughs will be checked each year.

Mitigation Measures Specific to Alternatives 3 Modified and 4

- Strategize and set inventory priorities for areas where potential habitat for Spalding's catchfly has been identified and is at risk to impacts from livestock grazing as provided by this analysis. A range of 2,890 to 7,630 acres of risk areas would be inventoried. If sites are found, they would be protected utilizing the suite of actions being employed at the currently known sites in the Crow Creek and Swamp Creek Allotments.

- Herding activities that move livestock (not part of the Crow Creek allotment permit) through the Doe Gulch pastures in the fall, enroute from the Swamp Creek Allotment to deeded ground will be contained to the Doe Gulch roadway.

- Through project design, summer grazing of pastures containing Spalding's catchfly will be avoided under foreseeable circumstances, with the exception of the Dorrance pasture. In the Dorrance pasture, summer grazing will occur every other season and the Spalding's catchfly sites will be protected with herding or similar active management techniques, alternative fencing, during this use period.

- Permittees will be provided with a current list of noxious weeds and Threatened, Endangered, and Sensitive plant identification material. A map showing known noxious weed infestations and Threatened, Endangered, or Sensitive plant sites within each allotment will be reviewed at each annual operating meeting. Permittes will be asked to add known noxious weed locations not shown on the map.

- If a severe spring drought situation is declared for the range land in the northern part of Wallowa County as a result of recommendations from agencies within the Department of Agriculture, avoid spring grazing around the Spalding's catchfly sites in the South Crow, Doe Gulch and Catcfhly pastures. As an alternative to this pasture use, consider utilizing portions of the Dorrance, or Holding pastures (with permittee concurrence). Do not spring graze these pastures more than 3 seasons in a row.

- To Sensitive plant populations, salt placement to improve distribution during the grazing season would not occur within 1/4 mile of known Sensitive plant populations unless site-specific conditions dictate otherwise and the Forest Service concurs.

- To limit physical damage to known occurrences of Wallowa Mountain Ricegrass, Engelmann's daisy, and Hazel's prickly phlox, work with permittees on identification of these plants and their locations. Instruct permittees to photograph selected occurrences of Wallowa Mountain Ricegrass and Engelmann's daisy at the end of each grazing season and submit the photos to the Forest Service at the annual operating meeting.

- To reduce the potential for physical impacts from livestock management to Engelmann's daisy and Hazel's prickly phlox, instruct permittees not to establish any new stock drive-ways in steep canyon terrain without first surveying for this species, and routing the driveway to avoid any found occurrences.

- To reduce the risk to sensitive riparian areas, the following steps will be taken or projects identified. Where site-specific ground-disturbing projects are identified, a separate environmental analysis will be completed to address potential impacts associated with the ground-disturbing activities:

  Use adaptive techniques such as herding, salting, adjusting season of use, developing upland water sources, and fencing to draw livestock away from sensitive areas.

  Relocate water gaps to appropriate sites, harden gaps with rock and wood placement, and develop offsite water sources.

  When livestock trailing causes premature channelization or headcutting of intermittent streams and ephemeral draws, place woody material, fence, or change the timing of grazing to address these problems as they occur.

  Continue to re-locate troughs from in-channel locations.

Monitoring

The following items are needed to keep impacts at acceptable levels while moving range conditions toward desired conditions. These items would be applied to the project as it is implemented on the ground. These monitoring items address Forest Plan direction, Section 7 conclusions by the Level 1 ESA Consultation Team, commitments within the Lower Grande Ronde Subbasin Biological Assessment (USDA 2001), terms and conditions within the Biological Opinion for Effects on Steelhead from Implementing the Forest Plan (DOC 1999), Interagency Implementation Team's implementation and effectiveness monitoring (IIT), and additional elements determined necessary by the Interdisciplinary Team for the JCRAA.

Monitoring Common to Alternatives 2, 3 Modified, and 4

- Complete trigger monitoring as needed during the grazing season to ensure end of season standards can be met.

- Complete end of season utilization monitoring annually at selected key areas. Priority key areas may include where resource concerns emerge or where previous years' utilization standards were exceeded.

- Carry out compliance monitoring as needed to ensure livestock are in appropriate pastures.

- Collect streambbank disturbance data where needed.

- Complete Interagency Implementation Team implementation monitoring on key areas within the JCRAA.

- Participate in the Interagency Implementation Team Effectiveness monitoring when watersheds within the planning area are selected for review.

- Complete Condition and Trend monitoring using the appropriate methodology needed to identify trends for particular attributes (Parker 3-step, ecoplot, photo trend etc.).

Range Monitoring Terminology

IIT Implementation Monitoring – An implementation monitoring module was established by the Interagency Implementation Team (IIT) for determining compliance with Pacfish/Infish, and the 1998 Biological Opinions prepared by NOAA-Fisheries for Steelhead consultation on the Forest Plan. The module identifies pastures containing ESA listed fish or critical habitat and monitors specific conditions at identified key areas within each pasture. The location of key areas is determined for each allotment/pasture based primarily on the presence or absence of perennial streams that can be accessed by livestock. If key area end-of-season standards are not met, measures such as changing season or numbers, fencing, changing utilization standards, or increasing on-the-ground management are developed with permittees and included in the following year's AOI.

Key areas or Designated Monitoring Areas (DMA's) for the purpose of IIT monitoring are located in those pastures that contain ESA listed fish or critical habitat (Category I), and monitors specific conditions at these areas. Random watersheds are chosen to be monitored each year and are on a 5 year cycle. Each unit is expected to monitor at least 20% of their category I pastures annually which includes those chosen by the Effectiveness team, DMAs that didn't pass the former year, and others as needed. They are to be areas where grazing is occurring but not at high impact areas such as water gaps. IIT monitoring is conducted at the end of the growing season or grazing season and can be in the form of monitoring utilization on terraces, greenlines, streambanks or shrub use or a combination thereof. Range and fisheries personnel, along with permittees assess the situation (ie. why/how/where/effects) and plan a different strategy as needed for the upcoming grazing season. This is then reported to the level I team.

IIT Effectiveness Monitoring - A protocol for effectiveness monitoring of riparian areas/subwatersheds has also been developed by the IIT. This monitoring provides direction for a centralized team to conduct effectiveness monitoring throughout the 26 Pacfish/Infish National Forests. The watersheds are randomly selected. The Upper and Lower Joseph Creek watersheds were last monitored in 2003. The primary objective of effectiveness monitoring is to answer the question: "Are key area biological and physical components of aquatic and riparian communities improved, degraded, or restored in the range of steelhead and bull trout?" The data collected by this team are analyzed and put into annual reports by the Fish and Aquatic Ecology Unit (USFS) out of Logan, Utah. This monitoring is done at integrator reaches in watersheds which contain listed fish and critical habitat, as well as at some district DMA's.

Range Monitoring Terminology (continued)

Condition and Trend Monitoring – Long term trend in upland vegetation condition is monitored at established benchmark sites or at newly established sites if needed, as funding permits. Data is generally collected using the Parker 3-Step method or the ecoplot method, which uses a type of Daubenmire protocol. Summarizing data collected to determine long term trend includes looking at statistical data (which takes into account attributes such as plant composition, frequency, cover, soils, erosion potential, historic photos, history of use and past activities, rainfall, wildlife patterns, past livestock grazing patterns and utilization, overall reconnaissance of pastures and improvements or disturbances since establishment of trend plots. A team of professionals then determine a condition/trend, and related probable causes. The district is also establishing permanent riparian trend plots within the analysis area.

Compliance Monitoring – Compliance monitoring is that which occurs throughout the grazing season. This monitoring is to ensure the livestock operators are correctly following the annual operating instructions and the terms and conditions of the permit. Depending on the severity of the non-compliance, action taken may vary from a phone call to permittees, to a formal letter of non-compliance and possible permit action, such as suspension or reduction (FSH 2209.13 Chapter 10). It can also mean a change in the grazing system or numbers in the following grazing season.

Monitoring Specific to Alternatives 3 Modified and 4

- Follow the National Riparian Service Team's recommendations (refer to Appendix C) for annual monitoring of shrub utilization and streambank stability in the meadow segment of Swamp Creek in the Upper Swamp and Bennett Pastures of Swamp Creek Allotment and the Bennett Pasture of Davis Creek Allotment.

- Establish and monitor several key areas in elk winter range areas to ensure that 50 to 60 percent of the available forage is retained after fall livestock grazing on key species such as bluebunch wheatgrass and Idaho fescue.

- Monitor key areas in the Sumac Pasture of the Cougar Allotment for compliance with "unsatisfactory" range condition utilization standards until the pasture indicates mid to late seral stage plant communities. At this time, utilization standards for "satisfactory" range condition would be applied and compliance monitoring will continue for the revised standard.

- Shrub utilization monitoring on identified riparian areas will be documented using the riparian ocular utilization estimate form.

- Monitor and evaluate patterns of use of the Swamp Creek Allotment for three years to determine if stocking exceeds the allotment's capacity.

- Coordinate the development and implementation of population trend monitoring for the Spalding's catchfly found along Crow Creek. Trend monitoring implementation will be dependent upon budgets, available methodologies and recommendations within the Spalding's Catchfly Recovery Plan. Seek partnerships and academic assistance with monitoring plan establishment, re-reading and reporting. Utilize site visits and census techniques (where applicable) to look at site persistence until other monitoring techniques can be employed.

- To monitor forage utilization near Spalding's catchfly, ensure that adequate numbers of "key areas" are established in terrain that represents grassland conditions in the vicinity of the known Spalding's catchfly sites. Make these a priority for reading.

- Establish and conduct vegetation trend monitoring (using an appropriate methodology) in representative pastures where populations of Spalding's catchfly occur, to ensure that range condition is stable or on an upward trend.

- During grazing seasons, monitor conditions around representative Spalding's catchfly sites in the Crow Creek and Swamp Creek allotment for livestock impacts each year for 5 years. If no impacts are observed after 5 years, document and review again every 3rd year, or when there is a change in a permitee or a change in livestock class. Seasonally document monitoring results with photos and or short reports (memos). If signs of detrimental impacts, specifically new cattle trails, bedding/dusting areas, or more than incidental hoof impacts are identified within the sites, implement one or more of the following actions:

    i. Change the grazing season, numbers or duration, to protect the occurrences from impacts.

    ii. Fence or cage all or significant portions of the Spalding's catchfly sites.

    iii. Herd, salt, or use other active management techniques to draw livestock away from the Spalding's catchfly sites.

    iv. Move gates or alter cross pasture fences to better facilitate cattle movement away from Spalding's catchfly.

    v. Avoid grazing during the critical growth period (approximately mid-May through late-August).

- In the Dorrance pasture, monitor as stated above and avoid summer grazing more than 3 years in a row. In the Catchfly pasture, monitor as stated above and avoid

spring grazing more than 3 years in a row.

- Engelmann's daisy - While conducting utilization monitoring, observe the representative Engelmann's daisy patches in the Holding and Tamarack Pastures of the Hunting Camp Allotment. If needed, move key areas to better represent range conditions and Engelmann's daisy populations. If more than incidental livestock use (trailing or herbivory) of Engelmann's daisy is observed, actively manage cattle to minimize the impacts.

- Wallowa Mountain Ricegrass - Revisit representative Wallowa Mountain Ricegrass occurrences in pastures being grazed in the spring at least once every 5 years.

Preferred Alternative

Alternative 3 Modified is the agency preferred alternative.

Reserve this page for Figure 2 – Alternatives 2, 3 Modified, and 4 Map

Chapter 3 - Affected Environment and Environmental Consequences

Chapter 3 describes the environment and environmental consequences relevant to this analysis. It focuses on the resources that are relevant to or affected by the scope of the analysis: range, botanical, aquatic, wildlife, recreation, scenery, and specially designated areas. The chapter concludes with a discussion of specifically required disclosures. The analysis in this chapter is derived from specialist reports, biological assessments, and biological evaluations contained in the analysis file.

Cumulative effects are analyzed in this chapter. Each resource area identifies the specific actions and activities that were considered to overlap with the direct and indirect effects of the proposal and alternatives. For Alternative 1, evolution of the baseline condition is described, but because no action would be taken, this change is not referred to as "cumulative effects. A full cumulative effects analysis was then prepared for the proposed action and alternatives, specifically Alternatives 2, 3-Modified and 4. The actions and activities considered for cumulative effects are shown in the following table.

Table 14 – Cumulative Actions Within the JCRAA

Project or Activity Name	Project Description	First Year of Implementation
Baldwin Vegetation and Road Management	Commercial thinning, prescribed burning, and road closures and decommissioniongs	2006
Bugcheck Salvage	Commercial thinning and prescribed burning	1997
Fire Ridge Fuels Reduction	Commercial thinning and prescribed burning	2005
Hungry Bob Vegetation Management Project	Commercial thining, prescribed burning, and road closures	1999
Lone Dog Vegetation Management Project	Commercial thining, group selections, prescribed burning, and road closures	2002
Wapiti Ecosystem Management Project	Commercial thinning, prescribed burning, and road closures	1997
Swamp Creek Restoration Project	Streamside fencing, off-site water development, riparian plantings, and monitoring	2003
Starvation Springs Fencing	Fencing area containing culturally important plants	2005
Culvert Replacements	Replacing existing culverts that block fish passage	2005
Precommercial Thinning of Plantations	Thinning seedlings in existing plantations	2004
Blue Mountain Land Exchange	Acquiring and conveying lands	2006
ATV Use	Recreational use of ATVs	Ongoing
Road Maintenance	Blading gravel roads and cleaning culverts	Ongoing
Dispersed Recration Use	Camping, gathering firewood and forest products	Ongoing
Developed Recreation Site Use	Camping at Coyote Campground and picnicking at Red Hill Lookout	Ongoing
Noxious Weed Treatment	Treating known noxious weed patches by hand pulling, biological agents, or spraying by hand	Ongoing
Private Land Grazing	Grazing private land not within JCRAA allotments	Ongoing
Private Land Agricultural Practices	Cultivating grain crops or hay on private land not within the allotments for the JCRAA	Ongoing
Big-Game Population Management	Managing objectives for big-game populations	Ongoing

Range Resources

Range resources are described below with respect to range condition and noxious weeds.

Existing Conditions – Range Condition

The JCRAA is comprised of a mix of forestland and rangeland. Forestlands are those areas with at least 10 percent canopy cover and comprise approximately 69 percent of the analysis area and tend to be located on the upper elevation plateaus and in stringers along drainages. Rangeland vegetation exists within these forested areas, and the amount and species depends on the canopy cover. In ponderosa pine stands, the range understory may be Idaho fescue while low quantities of forage will exist in the denser canopies, often intermixed with non-native grass species that were introduced by seeding after timber harvest. Where limited or no tree canopy exists, rangeland types are predominately shrub-steppe plant communities identified as bluebunch wheatgrass/Idaho fescue plant associations that are associated with species such as prairie junegrass, Sandberg's bluegrass, and arrow leaf balsam root.

Rangeland capability is defined in 36 CFR 219.3 as the potential of an area to produce resources under an assumed set of management practices at a given intensity. The Wallowa-Whitman National Forest refined this definition for capable rangeland by establishing criteria for capable lands based on land type, inherent native forage production, conifer or shrub canopy cover, soil depth, slope and elevation, and available water (USDA 1999). A computer model that distinguishes capable lands based on these criteria was run for the JCRAA. A total of 17,860 acres of capable lands were identified. Refer to Figure 3 for a map of capable lands within the JCRAA.

Rangeland suitability is defined in 36 CFR 219.3 as the appropriateness of applying certain management practices to an area of land. On the Wallowa-Whitman National Forest, rangelands are termed suitable unless they are developed campgrounds, administrative sites, exclusive use special use areas, fenced road rights-of-way, Research Natural Areas where the establishment report excludes grazing as a use, Wilderness where grazing was not permitted at the time of wilderness designation, long-term exclosures, municipal watersheds, townsites, areas administratively closed to livestock grazing, and lands which have been shown to be uneconomical to manage under any reasonable management system (USDA 1999). The JCRAA is allocated to Management Areas 1, 1W, 3, 7, and 12 by the Forest Plan. The Coyote Campground, Joseph Canyon Overlook, and Red Hill Lookout are small areas within the analysis area that would qualify as campgrounds or administrative sites (Management Area 16). The Red Hill site comprises about 2 acres and Coyote Campground includes about 12 acres. All other areas within the analysis area would meet the definition of suitable lands.

The following range condition assessment focuses on the non-forested portions of the JCRAA. Approximately 45 percent of the JCRAA is grassland or forestland with less than 40 percent canopy closure. Although range condition is not normally assessed for forested areas, professional judgment indicates that the forested portions of the pastures are

vigorous stands of native and non-native species. The non-native species were seeded after previous timber sale activities, and they persist to provide palatable forage and full ground cover. Despite this available forage in forested areas, livestock spend most of their foraging time in rangeland areas; therefore, range condition analysis focuses on the non-forested areas.

Range conditions for the rangeland areas are described in the Forest Plan as satisfactory or unsatisfactory. Satisfactory range conditions exist when the forage condition is at least 'fair' with a stable or improving trend. Unsatisfactory range conditions exist when the forage condition is 'fair' and in a downward trend or if the forage condition is 'poor', regardless of the trend. The Forest Plan provides direction (Page 4-54) to identify areas in unsatisfactory range condition and to develop allotment plans that define desired future conditions for these areas. In ecological terms, Satisfactory range conditions are those in a mid to late-seral stage and unsatisfactory range conditions are those in a mid (with downward trend), early, or very early seral stage. Refer to the following table for the relationship between each of these methods for characterizing grassland conditions.

Table 15 - Comparison of Grassland Condition Terminology

Range Condition	Forage Condition and Trend		Seral Stage
Satisfactory	Excellent	Static	Climax
		Downward	
	Good	Upward	Late Seral
		Static	
		Downward	
	Fair	Upward	Mid Seral
		Static	
Unsatisfactory		Downward	
	Poor	Upward	Early Seral
		Static	
		Downward	
	Very Poor	Upward	Very Early Seral
		Static	

Insert Figure 3 – Capable Lands

Assessment of range condition is derived using a combination of assessment techniques. These include re-reading condition and trend plots established in the early 1950s, photo trend, historic records, and using professional judgment by reviewing all available data, historic accounts, utilization records, past pasture moves and grazing management and field reconnaissance. The information is used collectively to determine resource conditions and probable causes. C&T (condition and trend) studies are a "part" of the assessment needed to address trend, or change over time. We consider the C&T data as part of the overall range condition assessment process, and not to base decisions solely on this data. It is only a portion of the whole existing on a very massive and variable landscape. These studies were never intended to be the basis for a sole grazing management tool.

The assessment process also includes the finding of the cause of the expressed range condition. Forest Service personnel, including range specialists at the field and staff level, attempt to determine the cause of the conditions of concern, say a C&T site with a poor condition and static trend, or a fair condition with downward trend. For this analysis, if livestock grazing management could be a cause of the decline in range trend, further assessment was then warranted concerning livestock management, along with the necessary management changes to improve resource conditions.

Condition and Trend plots were originally established in the 1950s. In 2003, 32 of these plots were revisited within the JCRAA. The remaining pastures did not contain historic plots, and their condition was determined from professional judgment based on over 10 years of notes from field reviews of species composition, plant vigor, and ground cover. Based on professional judgment, 4 pastures were identified as being in an early seral stage. From C&T plots, 14 pastures were identified as potentially being in an early seral stage. Because of the length of time between readings, management activities other than livestock grazing can easily influence the results of C&T monitoring. The construction of a road, installation of a pond, building of a fence, or logging of a nearby stand can all cause disturbances to these plots that might change livestock use or seral stage in a small area, but may not represent conditions throughout the pasture. Consequently, field visits and professional judgment were used to sort out which plot results truly represented range condition and trend related to livestock management. Some pastures contain isolated areas within an early seral stage, but the majority of the pastures within the JCRAA are in a mid or late seral stage. When the predominant stage is mid or late, the pastures were then rated as having satisfactory range condition.

Based on C&T plots and professional judgment, rangeland throughout the JCRAA is generally in mid or late seral stages. Out of 65 pastures it was found that 4 pastures are within an early seral stage related to current livestock grazing systems. Three additional pastures in the Davis Creek Allotment indicated early seral stage conditions, but the grazing system has changed greatly in the last few years, and an improvement in seral stage is anticipated from those changes. Therefore, the four pastures currently of concern with respect to seral stage and current grazing systems are the Sumac Pasture of the Cougar Allotment, the Upper Swamp and Bennett Pastures of the Swamp Creek Allotment, and the Bennett Pasture of the Davis Creek Allotment.

Another indicator of range condition can be inferred from compliance with allowable utilization standards. Allowable utilization standards are established by the Forest Plan (Pages 4-52 and 4-53). These standards use annual measurements (short term) to assure

that vegetative and habitat standards are met annually in order to maintain or move toward desired conditions (long term upward trend).

Monitoring for compliance with these standards occurs at upland and riparian key areas. The following table exhibits end of season monitoring only, and at one key area per pasture. Many pastures have more than one key area, and are monitored more often than shown by the table. For instance, in 2002 the North Alford pasture of the Al Cunningham allotment is shown as one entry and met standards. In reality, this pasture was monitored and documented for two different key areas: an upland site and a riparian site. Both met standards. The Kirkland pasture of the Hunting Camp allotment was actually monitored 2 different times during the season at 4 different key areas, both upland and riparian. The table illustrates only one reading, and if a key area was non-compliant at any key area, it is reflected in the table. Many times pastures are monitored for compliance and not documented as a formal inspection. A complete list of pasture monitoring by year and results of the monitoring is available on file at the USFS Wallowa Mountains Office in Enterprise, Oregon.

Table 16 - Annual Compliance with Allowable Utilization Standards

Allotment Pasture	Compliance with Allowable Utilization Standard								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
Al Cunningham									
South Alford	Y	Y	NR	Y	Y	Y	NR	NR	NR
Sumac	Y	Y	NR	Y	Y	Y	Y	NR	NR
North Alford	Y	NR	NR	Y	Y	NR	NR	Y	NR
Shoot Canyon	Y	NR	NR	Y	Y	NR	NR	NR	NR
Cougar Creek									
Trap Canyon	NR	NR	NR	Y	Y	NR	NR	NR	NR
Breeding Pasture	Y	NR	NR	NR	Y	NR	NR	Y	Y
Sumac	Y	Y	NR	Y	Y	NR	Y	NR	Y
Hinton Corner	Y	NR	Y	Y	Y	NR	NR	NR	NR
Boner	Y	Y	Y	NR	Y	NR	NR	NR	NR
Cougar	Y	Y	Y	Y	Y	Y	Y	Y	Y
Peavine	Y	NR	Y	Y	Y	Y	Y	Y	Y
Baldwin	NR	Y	**N**	Y	Y	Y	NR	NR	Y
Muddy	Y	Y	Y	NR	NR	Y	Y	NR	Y
Crow Creek									
North Crow	NR	NR	NR	Y	Y	Y	NR	NR	NR
South Crow	Y	NR	NR	NR	Y	Y	NR	NR	NR
Crow Creek	Y	Y	Y	Y	Y	Y	Y	NR	NR
Special Use	NR	NR	NR	Y	NR	NR	Y	NR	NR
Doe Gulch	NR	NR	NR	NR	NR	Y	Y	NR	NR
Road	NR	NR	NR	NR	NR	NR	NR	NR	NR
Davis Creek									
Davis South	NA	NA	NA	NA	NA	NA	Y	Y	Y
Hillside	Y	Y	NR	Y	Y	NR	NR	NR	Y
Elk Creek	NR	NR	NR	Y	Y	NR	Y	Y	Y
Starvation	Y	Y	NR	Y	NR	NR	NR	NR	Y
Davis West	NA	NA	NA	NA	NA	NA	NA	NA	NA
Davis East	NA	NA	NA	NA	NA	NA	NA	NA	Y
Bennett	NA	NA	NR	Y	Y	Y	Y	Y	Y
Davis Creek	Y	Y	Y	NR	Y	Y	Split into 3 pastures		
West Swamp	Y	NR	NR	Y	**N**	NR	No longer in allotment		
Elk Mountain	Y	Y	NR	NR	Y	NR	No longer in allotment		

Allotment Pasture	Compliance with Allowable Utilization Standard								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
Davis Cr Sheep	NR	NR	NR	NR	No longer in allotment				
Dobbins									
Dobbins	NR	NR	NR	NR	NR	NR	NR	NR	NR
Elk Mountain									
Homestead	Y	NR	NR	Y	Y	NR	NR	NR	NR
Fine									
West	NR	NR	NR	Y	Y	NR	NR	NR	NR
Homeplace	Y	Y	NR	Y	NR	Y	NR	NR	Y
Peavine 1	Y	Y	Y	NR	**N**	Y	Y	NR	NR
Peavine 2	Y	Y	NR	Y	Y	NR	NR	NR	Y
Peavine 3	Y	Y	NR	Y	NR	NR	NR	NR	Y
Peavine 4	Y	NR	Y	Y	Y	Y	Y	NR	Y
Hunting Camp / Table Mountain									
Tamarack	Y	Y	Y	Y	Y	NR	NR	NR	Y
Kirkland	Y	Y	Y	Y	Y	NR	**N ****	Y	NR
Holding Pasture	Y	Y	NR	Y	Y	NR	NR	Y	Y
Wilder	NR	NR	NR	Y	Y	NR	NR	Y	NR
Joseph Breaks	NR	NR	NR	Y	Y	NR	NR	Y	NR
Horse Pasture	NR	NR	NR	Y	NR	NR	NR	NR	NR
Thorn Hollow	NR	Y	Y	NR	NR	Y	NR	NR	Y
Horse Pas Ridge	Y	Y	Y	NR	NR	NR	NR	NR	NR
Corral Springs	NR	Y	NR	Y	Y	NR	NR	NR	NR
Table Mountain	NR	Y	NR	Y	Y	NR	NR	NR	Y
Dog Fight	Y	Y	NR	Y	Y	NR	NR	NR	Y
Joseph Creek									
Joseph Creek	NR	Y	NR	Y	Y	NR	NR	Y	NR
Swamp Creek									
Lower Swamp	NR	NR	Y	NR	NR	Y	**N**	NR	Y
Baker Gulch	NR	Y	NR	NR	NR	NR	NR	NR	NR
Red Fir	Y	NR	Y	NR	NR	NR	**N**	NR	Y
Lower Davis	Y	NR	Y	Y	Y	**N**	Y	Y	NR
Barney Flat	NR	Y	NR	Y	**N**	Y	NR	NR	NR
Miller Springs	Y	NR	NR	**N**	NR	Y	Y	NR	Y
Beef Pasture	Y	NR	NR	NR	**N**	NR	NR	NR	NR
Swamp Riparian	Y	Y	Y	Y	Y	Y	Y	Y	Y
Upper Davis	NR	Y	Y	Y	NR	NR	Y	Y	Y
Little Elk	NR	Y	Y	Y	Y	**N**	Y	Y	Y
Elk Creek	NR	Y	NR	Y	Y	Y	Y	NR	Y
Dorrance	Y	Y	Y	NR	NR	Y	NR	NR	NR
Holding Pasture	NR	Y	NR	Y	Y	NR	NR	NR	NR
Horse Pasture	NR	NR	NR	NR	Y	Y	NR	NR	NR
Upper Swamp	NR	NR	Y	NR	NR	NR	Y	Y	Y
Snake Canyon	NA	NA	NA	NR	NR	Y	**N**	NR	Y
Bennett	NA	NA	NR	NR	Y	Y	Y	NR	NR
Buck Creek	NA	NA	NR	Y	NR	NR	NR	NR	NR
Catchfly	NA	NA	NA	NA	Y *	Y *	Y *	Y *	Y *

Legend

Y = In compliance with allowable utilization standards

N = Not in compliance with allowable utilization standards

NR = No record of monitoring available, either the pasture was rested or monitoring results were not recorded

NA = Pasture did not exist prior to this date

* = Based on ocular estimates rather than key area information

** = Inappropriate sampling area (riparian data was taken in non-riparian area)

The previous table reflects conditions that have evolved through a set of Annual Operating Instructions for the permittees that operate on the eleven allotments. For the past nine years, compliance with allowable utilization standards was 95 percent. For the 5 percent where utilization standards were exceeded, several circumstances influenced the situation. The listing of summer steelhead as threatened in 1998 resulted in several changes in grazing rotations to ensure that livestock did not access steelhead fisheries during the period that spawning occurs and the frye emerge from the gravels (April 15 to July 1) These changes required permittees to graze alternate pastures. Using a trial and error approach, the adjustments have eventually been equalized throughout the pastures. Until the new system was ground-truthed, utilization standards in some pastures were exceeded. In no cases, were utilization standards found to exceed more than once in nine years for a particular pasture. Other reasons for not meeting utilization standards include inadequate sampling areas, allowing livestock to retread without first checking vegetation, or delays in removing livestock in a timely manner from a particular pasture.

A discussion of range conditions by allotment follows:

Al-Cunningham Allotment – Grasslands within this allotment are in mid or late seral stages. A single C&T plot indicated the presence of early seral stage, but further investigation showed the site as being mistyped and the site is in a mid seral stage. Remnants from historic homesteading along Joseph Creek show early seral stage grasslands at the old home sites and adjoining benches, but these areas comprise a small portion of the allotment.

Cougar Creek Allotment – Trend monitoring summaries from 2003 within the Cougar Allotment indicated 3 pastures with early seral stage grasslands – Sumac, Peavine, and Cougar pastures. The remaining pastures are in mid or late seral stages. Field verification of the condition and trend plots showed that the Peavine and Cougar Pastures were in mid or late seral stages, indicating that the pasture as a whole was not in an early seral stage.

In the Sumac Pasture, several condition and trend plots were monitored and summarized in 2003 one of which indicated an early seral stage. To determine the nature and extent of this assessment, and if it was representative of the pasture as a whole, a field reconnaissance was completed in 2004. This C&T is located approximately 100 feet below a road and 200 feet below a pond, and is in the southwest corner of the pasture. When established in 1958, this range site was considered to be in a mid seral stage; however, the pond and fenceline did not exist at this time. Due to close proximity of water, and the constriction caused by the fence, range condition on this site is not expected to improve over time. In cases such as this, the C&T plot location is no longer representative of the pasture condition, and the plot is moved to a more representative location. Field observations in other open range sites within the Sumac Pasture revealed a mixture of seral stages ranging from mid to early. Although utilization standards are usually met in this pasture, they are close to the maximum established by the Forest Plan (55% allowable use on satisfactory range in upland grassland locations). Much of the condition of the open range sites is due to historic grazing practices which included annual season-long grazing. For the past 8 years, this pasture has been grazed in the spring only and has been rested every other year.

In the Cougar Pasture, two condition and trend plots indicate conditionss in an early seral

stage. In one case, range condition has not changed much since the time of establishment, and is associated with a shallow-soiled scabland site within a small forest opening. Field notes and photos describe a basically healthy scabland plant community minimally impacted by livestock with an upward trend. This upward trend is expected to continue. The other area of early seral stage is within a south facing slope associated with shallow soil and past grazing practices as mentioned above. Livestock impacts are moderate in this immediate area due to water location and easy accessibility from a road. In addition, elk use of this immediate area is high. This open rangeland site represents a very small portion of this pasture, as other areas checked were in satisfactory condition (field review 2004). Utilization standards at key areas in the Cougar Pasture have been met for the past nine years. As the pasture is grazed in late summer and fall, grazing impacts to these hot dry sites are light unless they are in close proximity to watering facilities. Grazing management in this pasture includes a late summer-fall rotation with the Peavine Pasture.

In the Peavine Pasture, two plots indicate conditions in an early seral stage. One plot is located in a low potential shallow soil site that was in this condition at the time of establishment in the 1950's. This site is not influenced by livestock grazing and is actually considered a non-capable range site due to site characteristics. Another plot is located in a small opening of ponderosa pine. Field observations (2004) indicate that these sites are not representative of the pasture as a whole. Much of this pasture is timbered types with grass/shrub understory. Grazing management in this pasture includes a late summer-fall rotation with the Cougar Pasture.

The remaining pastures in the allotment are in a mid seral stage with static to upward trend. While the Muddy Pasture of this allotment showed a single early seral stage condition plot, the plot was clearly not representative of the remainder of the pasture. Conditions from this plot are associated with isolated shallow soil sites that were in an early seral stage when established back in the 1950's and is not attributed to livestock grazing pressure.

Crow Creek Allotment – While no C&T plots were established in this allotment, field observations recorded early to mid seral stage conditions within two pastures – South Crow and Doe Gulch. These conditions are a remnant of historical management practices that included over stocking and season-long grazing pressure. The DEIS revealed that the predominant condition would place these pastures within the classification of unsatisfactory condition. Based on comments received on the DEIS, conditions in these two pastures were reviewed in late September 2004. The project botanist and range managers reviewed the pasture conditions over a greater expanse than the original assessment. They concluded that although there are areas of early seral stage communities, the majority of the two pastures were in mid-seral condition with an upward trend. This seral stage would be considered satisfactory range condition as defined by the Forest Plan. Current management consists of a short early spring season, and a short winter season for these pastures. In addition, approximately 200 head of livestock are trailed through the pasture in the fall. Due to the occurrence of Spalding's catchfly in these pastures, maintenance or improvement of seral stage is of concern. Refer to the botanical resources discussion in this chapter.

During the 1960's season of use for the Crow Creek Allotment was March through May, and

back in December, although turnout was generally in April. The Crow Creek Allotment AMP of 1985 scheduled the North Crow Pasture to be used every fall and every other spring. South Crow schedule was for spring use every other year. In the past ten years, fall and spring use of North and South Crow (Doe Gulch included) has alternated between pastures. Since about the mid-1930's, it has been common practice to trail about 200 head through the South Crow and Doe Gulch pastures in the fall returning from summer range to wintering areas.

Davis Creek Allotment – Several C&T plots were rated as unsatisfactory within this allotment due to a past grazing system that has since been changed. While some of the plots were disturbed or influenced by past road construction, logging, or fence building, some of the plots correctly represented disturbance by livestock grazing. Livestock grazing within this allotment was modified two years ago by splitting the former Davis Pasture into three pastures, allowing for a rest rotational schedule. In addition, livestock numbers changed from 224 to 112 cow-calf pairs. The Bennett Pasture of this allotment includes the meadow section of Swamp Creek. Refer to the description of riparian vegetation conditions for this section in the Swamp Creek Allotment.

Dobbins Allotment **–** This allotment contains 80% private land which is non-waived. Based on professional judgment, the National Forest portion of the allotment has mid to late seral stage communities with a static trend, and it receives very little grazing pressure.

Elk Mountain Allotment - This allotment contains 65% private land which is non-waived. Professional judgment and photos reflect mid to late seral stage communities with a static trend on the National Forest portion of the allotment.

Fine Allotment – This allotment contains no C&T plots, but based on professional judgment, the range conditions display mid to late seral stage communities with isolated areas of early seral stage communities due to historical grazing practices.

Hunting Camp / Table Mountain Allotments – Condition and Trend plot results and professional judgment conclude these allotments have mid to late seral stage conditions with static or improving trends. One plot in the Joseph Breaks Pasture indicated early seral communities, but the plot is in a transition area from rangeland to forestland, and the tree cover has increased and diminished the range condition potential. This plot is not representative of the remainder of the pasture or an indicator of livestock pressure. Remnants from historical homesteading along Joseph Creek show early seral stage communities at the old home sites and adjoining benches, but these areas comprise a small portion of the Table Mountain Allotment.

The Joseph Breaks and Wilder Pastures include the potential Haystack Rock RNA and portions of the Joseph Creek Wild & Scenic River. Field observations, C&T plot results, and riparian area monitoring indicate that the Joseph Creek Wild and Scenic River corridor is lightly used by livestock as evidenced by less than 10 percent shrub utilization and the presence of a wide variety of shrub species such as common snowberry, black hawthorne, choke cherry, mock orange, clump birch, alder, red osier, dogwood, and willow.

The potential RNA receives light grazing. What little grazing that occurs is located along

the old farm fields along the western portion of the potential RNA. Because these farm fields do not contain the species for which the potential RNA was identified, final establishment of the RNA boundary would exclude the farm fields and expand the boundary to the best replacement areas for representing the target plant communities. Refer to the section for Specially Designated Areas later in this chapter for further information.

Managing these allotments together started in 1994, upon which the grazing season was shortened by 15 days, and numbers were reduced from 100 to 90 for Hunting Camp Allotment. The numbers permitted for the Table Mountain Allotment remained at 278.

Joseph Creek Allotment - This allotment is in satisfactory condition with static to upward trends. The C&T plot reviewed in 2003 identifies early seral communities due to introduced species. Grazing pressure did not induce these conditions. The plot is on private land that was seeded with non-native grasses approximately 30 years ago after a logging operation and is consequently considered as a non-range site that is not suitable for range study areas.

Swamp Creek Allotment – Range conditions in most of this allotment display mid to late seral stage communities with static to upward trends with the exceptions of isolated areas of early seral stage communities associated with past management or perhaps stock watering facilities. In the Little Elk Pasture, early seral stage communities were indicated for one C&T plot because of a decrease in palatable perennial grasses. Further review of this plot in the summer of 2004 indicated that one reading was taken in an area that is naturally a low potential site, and two readings occurred in areas with mid to late seral plant communities. Ocular observations throughout the pasture correlated with the two mid to late seral stage community readings. Range conditions in the riparian areas of two pastures, Upper Swamp and Bennett Pastures, remain a concern.

The Upper Swamp and Bennett Pastures include the meadow section of Swamp Creek. This segment has been altered through a history of railroad logging, homesteading, road construction, and grazing. Until the late 1990s, most of this segment and its adjoining floodplain was in private ownership, and grazing of the lands was not waived. As a result, in the portion of the stream that widens to a meadow system (from the Forest Service boundary to the Swamp Creek Cow Camp) lacks shrub species diversity and quantity, and some streambank reaches are unstable. The current shrub component along Swamp Creek is sporadic and is predominately alder with some dogwood, hawthorn, willow, and water birch. Other species appropriate for this area are lacking, such as mountain maple, aspen, mountain snowberry, service berry, black elderberry, black cottonwood, and mountain ash. Many of the herbaceous plants include non-native seeded grasses such as timothy, orchard, and brome.

The Swamp Creek Restoration Project is in progress for the meadow segment. The project purpose is to restore the physical, chemical, and biological processes along the meadow section of Swamp Creek. Project objectives include: improve streambank stability, increase and diversify riparian vegetation, improve floodplain functionality and reduce erosion, improve habitat for a variety of fish and wildlife species, decrease stream temperatures, improve fish passage, decrease sediment entering the stream from roads, inventory

heritage resources, and provide local school students educational opportunities. The project will achieve the objectives through upland water developments, riparian fencing, water gap hardening, riparian planting/caging, road maintenance, and livestock grazing management. The livestock management portion of the project will be addressed in the current analysis. The Swamp Creek Restoration Project includes fence construction that will detach the Swamp Creek floodplain from the remainder of the Upper Swamp Pasture. This fence construction was completed in 2004. For purposes of this document, the streamside portion of the Upper Swamp Pasture is not considered a separate pasture. It is instead referred to as the Swamp Meadow portion of the Upper Swamp Pasture. Although, now that the fence is completed, there will be an ability to control livestock use along this portion of Swamp Creek as if a separate pasture existed.

The Catchfly Pasture of the Swamp Creek Allotment is noted here because of the presence of Spalding's catchfly. There are no condition and trend plots located within this pasture although field observations and photos indicate the range to consist of mid to late seral stage community with a vigorous bluebunch wheatgrass plant community. Past and current management since the formation of this pasture has included late fall grazing. Areas of the pasture that contain Spalding's catchfly populations are showing little use by livestock.

Existing conditions reflect grazing of the Swamp Creek Allotment where in three of the last four years, the allotment was stocked at a level that is 78 percent of the 4901 head-months currently authorized by the permits issued for this allotment. Because one of the permittees has elected to not stock the allotment for three of these four years, the remaining permittees were able to distribute livestock among the pastures. Consequently, existing conditions may not exhibit the impacts of livestock grazing that would be associated with grazing the full permitted numbers. If the permittee had decided to stock the allotment according to his permit, the cattle would have reached utilization standards early in the Little Elk, Elk Creek, and Dorrance Pastures. At 78 percent stocking level, utilization standards are readily met in regular years, but must be closely monitored in dry years.

Alternative 1 – Range Condition

This alternative eliminates livestock grazing from the JCRAA. Grazing by big game would continue. The changes in range condition described here are expected to occur within the timeframe of 10 to 20 years. Timeframes for changes in range condition are influenced by climate, precipitation, and big game use. Evaluations of condition and trend are not particularly useful unless observed over a period of at least 10 years.

Al-Cunningham- This alternative would allow an area with mid to late seral stage communities to maintain that condition over time. Isolated areas of early seral stage communities associated with historic homesteading along Joseph Creek would continue to exist. The annual non-native grass species populating these areas would not convert to native perennial grasses without direct restoration techniques such as drilling and re-seeding. This assumption is based on the observation that homesteading occurred prior to establishment of the National Forest in 1907, and annual grasses still persist in these

previously cultivated areas.

Cougar Creek Allotment – This alternative would allow the pastures with mid to late seral stage communities to maintain that condition over time. Early seral stage communities in the Sumac Pasture would convert to mid to late seral stage communities.

Crow Creek Allotment – This alternative would allow the pastures with mid to late seral stage communities to maintain that condition over time. Incidental areas where perennial plant communities have been converted to annual communities within these pastures would persist, and mid to late seral stage communities would not be achieved without direct restoration techniques such as drilling and reseeding.

Davis Creek Allotment – Eliminating livestock grazing from this allotment would accelerate the current rate of improvement for range condition. Mid to late seral stage communities may be achieved in 5 to 10 years. Refer to the Swamp Creek Allotment for a description of the Bennett Pasture of the Davis Creek Allotment.

Dobbins Allotment – This alternative would allow an area with mid to late seral stage communities to maintain that condition over time.

Elk Mountain Allotment - This alternative would allow an area with mid to late seral stage communities to maintain that condition over time.

Fine Allotment – This alternative would allow an area with mid to late seral stage communities to maintain that condition over time.

Hunting Camp / Table Mountain Allotments – This alternative would allow an area with mid to late seral stage communities to maintain that condition over time. Isolated areas of early seral stage communities associated with historic homesteading along Joseph Creek would continue to exist. The annual non-native grass species populating these areas would not convert to native perennial grasses without direct restoration techniques such as drilling and re-seeding.

Joseph Creek Allotment - This alternative would allow an area with mid to late seral stage communities to maintain that condition over time.

Swamp Creek Allotment – This alternative would allow the pastures with mid to late seral stage communities to maintain that condition over time.

In the Upper Swamp and Bennett Pastures (and Bennett Pasture of the Davis Creek Allotment), removing livestock grazing would allow the riparian vegetation along the meadow segment of Swamp Creek to recover at a natural rate. Shrub density and diversity would increase over the next 10 years with continuation of the Swamp Creek Restoration Project. The influence of livestock grazing on existing and planted riparian shrubs would be removed. Existing shrubs would recover at a natural rate. Based on the recovery of shrubs observed within livestock exclosures on Elk Creek, existing shrub density would double in 5 years. Shrub diversity would continue to be introduced by plantings from the

Swamp Creek Restoration Project. Livestock would not be present, and these planted shrubs would be caged to reduce browse by big game. Within 10 years, these shrubs would no longer need the caging protection from wildlife.

Alternative 2 – Range Condition

This alternative would authorize continuation of current grazing systems, although changes would be made with the Crow Creek Allotment to ensure protection of Spalding's catchfly populations. The changes in range condition described here are expected to occur within the timeframe of 10 to 20 years. Timeframes for changes in range condition are influenced by climate, precipitation, and livestock and big game use. Evaluations of condition and trend are not particularly useful unless observed over a period of at least 10 years.

Al-Cunningham Allotment – This allotment would continue to have range conditions similar to the existing condition previously described. Range condition would still be dominated by mid to late seral stage conditions.

Cougar Creek Allotment – For the pastures currently with mid to late seral stage communities, they would remain in that condition. The Sumac Pasture currently exhibits early seral stage communities. Forest Plan utilization standards would dictate that allowable utilization be reduced. These standards would remain in effect until mid to late seral stage communities are noted.

Crow Creek Allotment – This allotment would be managed to minimize impacts to Spalding's catchfly in the North Crow, South Crow, and Doe Gulch Pastures. Protections for the plant during the critical period of growth (mid May through August) would include fencing, caging, herding, or avoiding grazing of occurrences. Mid to late seral communities would remain in that condition. Incidental areas where perennial plant communities have been converted to annual communities within these pastures would persist, and mid to late seral stage communities would not be achieved without direct restoration techniques such as drilling and reseeding.

Davis Creek Allotment – Due to changes in management over the past three years, continuation of the current grazing schedule is expected to result in an upward trend and mid to late seral stage communities within 10 to 20 years. Because of the change in grazing systems, new C&T plots would be established for monitoring range condition trend, and new key areas would be established for managing livestock utilization. Refer to the Swamp Creek Allotment for a description of the Bennett Pasture of the Davis Creek Allotment.

Dobbins Allotment - Range conditions within this allotment would continue to exhibit mid to late seral stage communities as previously described for the existing condition.

Elk Mountain Allotment – Range conditions within this allotment would continue to exhibit mid to late seral stage communities as previously described for the existing condition.

Fine Allotment - Range conditions within this allotment would continue to exhibit mid to late seral stage communities as previously described for the existing condition.

Hunting Camp / Table Mountain Allotment – Range conditions within this allotment would continue to exhibit mid to late seral stage communities as previously described for the existing condition.

Joseph Creek Allotment - Range conditions within this allotment would continue to exhibit mid to late seral stage communities as previously described for the existing condition.

Swamp Creek Allotment – Pastures that currently exhibit mid to late seral stage communities would remain in this condition. If the full number of permitted livestock used this allotment on a regular basis, some pastures would receive more use than in the recent past. If utilization and key area monitoring indicated a problem, Annual Operating Instructions would be used to reduce livestock numbers and/or shorten seasons of use for the pastures of concern.

The meadow section of the Upper Swamp Pasture and the Bennett Pasture (and the Bennett Pasture of the Davis Creek Allotment) would exhibit changes caused by the Swamp Creek Restoration Project. These pastures would be grazed according to Forest Plan allowable utilization standards for unsatisfactory riparian range condition (less than 35 percent utilization of grasses and less than 30 percent utilization of shrubs). Before these standards are exceeded, livestock would be removed. In addition, planted shrubs from the Swamp Creek Restoration Project would be caged and protected from ungulate grazing. Cattle would not be allowed to access steelhead redds in Swamp Creek, so grazing of these pastures would begin only after July 1. This level of grazing would allow for recovery of riparian shrubs to mid to late seral stage communities, although the timeframe would be influenced by climatic conditions, wild ungulate grazing, and high streamflow events.

Cumulative Effects - Elk numbers are at approximately 83 percent of the management objective for the Chesnimnus Big Game Management Unit and 78 percent of the management objective for the Sled Springs Big Game Management Unit. The JCRAA contains a portion of each of these big game units. Elk populations are currently being managed through changes in hunting regulations and could increase to management objectives. While deer populations are more sensitive to variations from predation and harsh climatic conditions, deer populations could increase as well. Considering that forage conditions throughout the JCRAA are generally satisfactory, increases in deer and elk use could occur and still allow for continuation of satisfactory range conditions. If elk and deer populations maintained management objective population levels over a long period, any potential decline in forage condition would be avoided because key area and utilization monitoring would indicate a need to reduce livestock numbers and/or seasons of use. These changes would be implemented through the Annual Operating Instructions.

The Blue Mountain Land Exchange is a foreseeable future action that would bring private lands within and adjacent to the Al-Cunningham Allotment into the National Forest System. The current permittee may elect to continue using the permit; however the adjacent private lands currently outside of the permitted area and private lands within the

allotment boundary would become subject to Forest Plan standards and guidelines. The area has been cultivated for hayfields, and riparian shrubs are sparse along Joseph Creek.

Prescribed fire blocks within the JCRAA have been identified with the Hungry Bob, Lone Dog, Wapiti, and Haypen Vegetation Management Projects as well as the Fire Ridge Fuels Reduction Project. The Baldwin Vegetation Management Project includes prescribed fire blocks within the JCRAA and is a foreseeable future action. Some of the burning is prescribed for spring and some is prescribed for fall. Underburning occurs in blocks approximately 500 to 1000 acres in size, using existing fuel breaks such as roads or ridgelines to control the fire's spread. The objective of these projects is to reduce fuel loadings within conifer stands. However, to minimize ground disturbance that would result from constructing fireline, existing control features such as roads and ridgelines are used to bound the prescription area, resulting in the burning of intervening rangeland. Bunchgrasses respond to burning with improved vigor which attracts an increase in big game and livestock use (Johnson 1998). The additional use can damage long-term bunchgrass vigor. This effect has been mitigated within the prescribed burning projects by implementing a review process where burned areas are reviewed by the fuels specialist and range manager to allow a rest from livestock grazing for one growing season where necessary to prevent impacts to bunchgrass health.

Alternative 3 Modified – Range Condition

This alternative authorizes the continuation of grazing at current stocking levels for each allotment, but allows flexibility in how livestock are managed among pastures in the allotments, provided that resource conditions are maintained as described in Chapter 2. Monitoring for changes in stocking would be conducted for three years with the Swamp Creek Allotment. As described for Alternative 2, the changes in range condition described below would occur within the timeframe of 10 to 20 years.

Al-Cunningham Allotment – This allotment would continue to have range conditions with mid to late seral stage communities. The grazing season for each pasture would span from April to October, whereas, Alternative 2 gives specific grazing seasons for each pasture. As a result, greater flexibility would be provided for the upcoming changes in ownership expected with the Blue Mountain Land Exchange. Greater opportunities for rest and rotation would be made available for the Al-Cunningham Allotment and for adjoining allotments such as the Cougar, Fine, or Crow Creek Allotments. Depending on whether the current permit is extended, the allotment could be used for grass-banking or tribal grazing during a period that extends from April to October. Overall stocking would not increase and could decrease from the current stocking level for this allotment. Therefore, range conditions would continue to exhibit mid to late seral stage communities.

Cougar Allotment – The unsatisfactory range condition in the Sumac Pasture would be addressed by applying Forest Plan utilization standards for unsatisfactory range condition (up to 35 percent utilization allowed). This measure would cause range condition to improve in this pasture. This alternative also allows greater flexibility in moving livestock from the Sumac Pasture to another allotment or pasture such as the Dorrance Pasture of the Swamp Creek Allotment. In the Cougar and Peavine Pastures, the C&T plots that

indicated unsatisfactory range condition do not represent conditions in the remainder of the pasture. Grazing management changes would not be implemented unless key area monitoring indicated a need for change in the future. New key areas would be established and monitored to ensure that at least 50 to 60 percent of the available forage remains at the end of the livestock gracing period within areas designated as big-game winter range (Management Area 3).

Crow Creek Allotment – This allotment would be managed to minimize impacts to Spalding's catchfly in the North Crow, South Crow, and Doe Gulch Pastures. Protections for the plant during the critical period of growth (mid May through August) would include fencing, caging, herding, or avoiding grazing of occurrences. Mid to late seral communities would remain in that condition. Incidental areas where perennial plant communities have been converted to annual communities would persist, and mid to late seral stage communities would not be achieved without direct restoration techniques such as drilling and reseeding.

Spring drought protections for Spalding's catchfly would require permittees to fence, cage, or otherwise protect catchfly occurrences from livestock grazing during the spring.

Livestock would no longer be trailed through the South Crow and Doe Gulch pastures in the fall enroute from the Swamp Creek Allotment to deeded ground. Trailing impacts such as concentrated hoof action, compaction and grazing associated with trailing would cease, accelerating the upward trend toward mid and late seral plant communities.

Davis Creek Allotment – This allotment would continue to improve from a mixture of pastures having mid to late and early to mid seral stage communities to a set of pastures all with mid to late seral stage communities. The recent changes made by splitting one pasture into three pastures and reducing numbers by half would continue to contribute to improved range condition in this allotment. Mid to late seral stage communities would be achieved within 10 to 20 years.

Dobbins Allotment – This allotment would continue to exhibit mid to late seral stage communities. The allotment would be managed the same as Alternative 2.

Elk Mountain Allotment - This allotment would continue to exhibit mid to late seral stage communities. The allotment would be managed the same as Alternative 2.

Fine Allotment – This allotment would continue to exhibit mid to late seral stage communities. Greater flexibility in the grazing season would occur for each individual pasture than described for Alternative 2. If the Dorrance Pasture of Swamp Creek Allotment or the Al-Cunningham Allotment becomes available, this alternative allows for ready movement of livestock from pastures that may need rest or rotation to maintain mid to late seral stage communities.

Hunting Camp and Table Mountain Allotments – This alternative would allow areas with mid to late seral stage communities on the two allotments to maintain that condition over time. Isolated areas of early seral stage communities would not improve without active restoration as described for Alternative 2. New key areas would be established and monitored to ensure that at least 50 to 60 percent of the available forage remains at the end

of the livestock gracing period within areas designated as big-game winter range.

Joseph Creek Allotment - This allotment would continue to exhibit mid to late seral stage communities. The allotment would be managed the same as Alternative 2.

Swamp Creek Allotment - Pastures currently exhibiting mid to late seral stage conditions would remain in this condition under this alternative. Early seral stage communities in the Bennett Pasture (including the Bennett Pasture of the Davis Creek Allotment) and Swamp Meadow portion of the Upper Swamp Pasture would have an accelerated rate of recovery from Alternative 2 because Alternative 3 Modified differs from Alternative 2 by adopting a monitoring program that guides annual decisions about grazing management systems. By monitoring shrub utilization and streambank stability on an annual basis, decisions can be made each year on when to authorize grazing and for how many head-months. Alternative 3 Modified bases decisions to adjust livestock grazing numbers and timing on an evaluation of riparian recovery, rather than on Forest Plan allowable utilization standards. Similar evaluation of riparian recovery would be used to guide livestock grazing authorized for the two Bennett Pastures. While the Swamp Creek floodplain is not fenced from the remainder of Bennett Pastures, the pastures offer opportunities for managing cattle through herding and maintenance of upland water sources.

The planted shrubs from the Swamp Creek Restoration Project would persist as described for Alternative 2 because they would be caged from livestock and big game use. While Alternative 3 Modified would provide for a faster rate of recovery for riparian shrubs along the meadow section of Swamp Creek than Alternative 2, the rate of recovery is also based on factors such as climate, wild ungulate use, and high streamflow events.

In addition to elements stated in Alternative 2, this alternative identifies a portion of Crow Creek in the Dorrance Pasture of the Swamp Creek Allotment to be fenced. This will exclude all livestock grazing, or soil disturbance effects within this area of the Dorrance Pasture, enhancing overall riparian vegetation condition within the exclosure. Reducing the amount of utilization by 5 to 15 per cent in MA 3 could increase dry matter and litter fall in those areas, enhancing soil protection and reducing the risk of erosion. Changes in grazing management could occur if additional Threatened or Sensitive plant occurrences are found during the inventory of "risk areas". These changes may include fencing or caging the occurrences, altering the season of use, or herding cattle away from the occurrences. This change in management could increase livestock impacts elsewhere on an allotment, depending on the action taken to protect the plants, if any. While this could have a positive effect for some plant species, it may negatively affect livestock distribution by concentrating livestock in smaller areas. Similar consequences from livestock concentrations could occur as a result of measures to protect areas around Spalding's catchfly occurrences when spring drought conditions occur.

Cumulative Effects – Cumulative effects would be the same as those described for Alternative 2 except that utilization standards would be established for areas designated as big-game winter range (Management Area 3). These standards, and the associated monitoring, would provide a greater level of assurance than under Alternative 2 that forage would be available for over-wintering big-game. Increases in big-game numbers would be accounted for by ensuring that designated big-game winter range has 50 to 60 percent of the available

forage retained at the end of the livestock grazing season. Enstating this requirement with Alternative 3 Modified prevents a future adaptation to the current livestock grazing program from creating impacts to wintering big game. However, it does not necessarily induce a need to reduce livestock grazing below current stocking levels because many of these areas are in steep terrain and rarely see full utilization by livestock.

Alternative 4 – Range Condition

Alternative 4 is the same as Alternative 3 Modified with the following exceptions. The influence of livestock grazing on fish-bearing streams will be virtually removed through fencing approximately 9 miles of riparian area, increased herding, and changing season of use. Range/riparian condition in the newly fenced areas would be expected to move faster toward desired condition as vegetation and streambanks would not be altered by livestock in the absence of livestock grazing. Removing Al Cunningham Allotment from livestock grazing after completion of the Blue Mountain Land Exchange, would be the same as described for Alternative 1.

Additional fencing is costly to construct, and maintain, and is unsightly in our riparian areas. Eliminating grazing from the Al-Cunningham Allotment with completion of the Blue Mountain Land Exchange removes the availability of this rangeland for other allotments that may be undergoing resource concerns (ie. Wildfire, fuels treatment, active restoration). Closing watergaps cause concern that livestock will no longer have access to adequate water. Upland water sources to be developed on the Cougar and Swamp Creek Allotments could be costly. Discontinuing grazing in the Road Pasture of the Crow Creek Allotment and halting spring grazing in the South Crow and North Crow Pastures reduces AUM's by 13 percent for that allotment and reduces flexibility for the permittee to rotate cattle. Allowing only spring grazing or winter grazing in the Joseph Breaks and Wilder Pastures of the Table Mountain Allotment and the Joseph Pasture of the Joseph Allotment reduces the authorized stocking by 18 percent for the Table Mountain Allotment and 44 percent for the Joseph Allotment, threatening the viability of the operation for these allotments. This also reduces management flexibility in the grazing system for the allotment as a whole.

Issue 7 – Range Condition

Key Issue - Grazing as proposed for the JCRAA may not adequately provide for long-term range health in the 4 pastures which were identified as having areas with early seral stage plant communities.

Table 17 - Comparison of Issue 7 Indicators by Alternative

Indicator	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Predominant seral stage of plant communities within 10 to 20 years in the Sumac Pasture of the Cougar Allotment	Mid to Late	Mid to Late	Mid to Late	Mid to Late
Allowable shrub utilization in the Meadow Segment of Swamp Creek	Wildlife use	Less than 30%	Determined by monitoring	Determined by monitoring

As shown above, Alternative 1 resolves the range condition issue because no livestock grazing would be authorized, and the four pastures currently exhibiting early to mid seral stage would recover at a natural rate. Alternatives 2 and 3 Modified have a similar rate of recovery for the Sumac Pasture. Alternative 1 provides the greatest protection of riparian shrubs in the Meadow Segment of Swamp Creek because only wildlife related herbivery would occur. Alternative 2 enstates Forest Plan Standards and Guidelines of less than 30 percent utilization. Alternatives 3 Modified and 4 recognize that current utilization measurement methods are coarse and subject to differences among individuals. The utilization is instead determined by a monitoring program consisting of photo points and annual site visits.

Existing Conditions – Noxious Weeds

There are 7 known high priority noxious weeds present within the JCRPA. These are meadow hawkweed, diffuse and spotted knapweed, tansy ragwort, Scotch thistle, whitetop and yellow starthistle. These species are rated high priority, as they are aggressively invasive, persistent, and prolific reproducers. They have the ability to displace native vegetation and continue to spread from inventoried sites. Most of these sites are localized enough that treatment and monitoring is feasible.

There are numerous lower priority weeds (Wallowa County "B" list) scattered throughout the project area. Some of these include, hounds tongue, Canada thistle, bull thistle, and St. John's wart.

Primary mechanisms of dispersal vectors such as vehicles, wind, water, livestock, wildlife, birds, and heavy equipment. The diffuse and spotted knapweeds are primarily distributed along secondary haul roads some of which are now closed. Scotch thistle sites vary between some private, old homesteads and on the National Forest. Several sites of yellow star have been inventoried and aggressively treated both on private, and forestland. Meadow hawkweed is a relatively a new invader to this project area and aggressively treated when encountered. Refer to Table 18 for location and status of the inventoried weed sites within the Joseph Creek Range Planning Area.

Preventing the introduction and spread of noxious weeds is one objective of the Integrated Weed Management Programs on National Forest System lands throughout the United States. Treatment strategies are also included in the integrated weed management programs.

Forest policy identifies prevention of the introduction and establishment of noxious weed infestations as an agency objective. This policy directs the Forest Service to: 1) determine the factors that favor establishment and spread of noxious weeds, 2) analyze weed risks in resource management projects, and 3) design management practices to reduce these risks (USDA Guide to Noxious Weed Prevention Practices, 2001). Specific strategies for grazing management include five goals with specific strategies to achieve each goal (USDA Guide to Noxious Weed Prevention Practices, pg. 13-15, 2001).

Annual operating meetings and instructions include information about weed sites and inventory/reporting direction for permittees. Annual instructions include quarantining livestock that come from known weed infested areas before turning out on the National Forest and also inspection and treatment for allotment entry units if livestock have come from weed infested areas. Timing, intensity, and duration of grazing is adjusted if current management is not meeting Forest Plan standards for maintaining overall vegetative health. Permittees are also instructed not to place salt or herd livestock through known noxious weed sites. Ground disturbing activities are monitored for noxious weed invasions and seeded as needed with certified and tested seed. Any off-road or other equipment used in the maintenance of improvements, or for the administration of the allotments, will be cleaned in a sufficient manner so as not to bring weeds on to the allotments.

In addition, specific to this project area, the Wallowa Mountains Office range and weed personnel work closely with active partners in the prevention and control of invasive species, including participating in the development of the Integrated Weed Management Plan for Wallowa County. Partners the Forest Service work with include: permittees, private land owners, Wallowa County Weed Department, Wallowa Resources, Oregon Department of Agriculture, and Tri-State/Tri-County Weed Management Areas.

Table 18 – Known Priority Noxious Weeds Within the JCRAA

Site no.	Species	Allotment	Action	Date Reported	Last Treatment	Site Status 2004
2-0001	Scotch Thistle	Davis Cr./Swamp Cr	Monitor	7/93	6/01	No plants
2-0011	White Top	Cougar	Monitor	6/92	7/93	No plants
2-0016	Diffuse Knapweed	Joseph Cr/Cougar/Swamp Cr/Crow Cr/Davis	Treat	12/95	7/03	Declining pop
2-0017	Diffuse Knapweed	Swamp Creek	Treat	8/92	7/03	Declining pop
2-0019	Spotted Knapweed	Swamp Creek	Treat	5/94	7/03	Stable
2-0020	Diffuse Knapweed	Fine/Joseph Cr./Cougar	Treat	8/92	7/03	Declining
2-0029	Diffuse Knapweed	Swamp Cr/Davis	Treat	8/93	8/03	Stable
2-0030	Scotch Thistle	Davis Cr	Treat	11/93	8/03	Stable
2-0032	Scotch Thistle	Swamp Cr/Hunting Camp/Table Mt/Cougar	Treat	9/93	6/03	Declining
2-0033	Diffuse Knapweed	Al Cunningham Cougar/Hunting Camp/Table Mt	Treat	6/95	7/03	Stable
2-0034	Tansy Ragwort	Davis	Monitor	8/93	9/98	No plants
2-0056	Yellow Starthistle	Hunting Camp	Treat	7/99	7/03	Declining
2-0064	Scotch Thistle	Table Mt	Treat	5/01	7/03	Declining
2-0067	Yellow Starthistle	Cougar	Monitor	6/92	7/93	No plants
2-0073	Meadow Hawkweed	Cougar	Treat	7/03	7/03	Stable

Primary mechanisms of dispersal appear to be a combination of vectors. These include vehicles, recreationists, logging equipment, wind, birds, wildlife, livestock, and water. The diffuse and spotted knapweed populations are primarily distributed along open roads and are clearly introduced and spread by motorized vehicles. The scotch thistle populations appear to have originated on adjacent private lands, whether from logging operations or from ranching. The source of other weeds is not known, but some of the introduction and spread could be attributed to livestock.

Within the Wild and Scenic River corridor, the Management Plan directs managers to annually monitor range conditions of late-season grasses, inventory and monitor the river corridor for noxious weeds and non- native grasses and prepare a map of concentrations. It also recommends every third year to evaluate the inventory to determine programs needed to reduce populations. It recommends aggressive action to reduce noxious weeds in the corridor so that natural communities are maintained. A review in 2003 indicated that low priority weeds do occur within this W&S river corridor but were limited to isolated locations which have been mapped and inventoried and are under a treatment strategy.

Alternative 1 – Noxious Weeds

The no-grazing alternative provides the lowest level of new disturbance to existing vegetation by domestic livestock and therefore does not reduce the existing vegetation's ability to deter invasion by noxious weeds. In this way, Alternative I provides the lowest level of risk of new noxious weed infestations introduced by livestock when compared to the other alternatives analyzed. In addition, all activities indirectly associated with grazing which present a potential risk for the establishment and spread of noxious weeds would not occur across the project area. While this would potentially reduce noxious weed propagule dispersal and introduction, it would also drastically reduce the degree of new infestation recognition and reporting by permittees, thereby resulting in longer establishment time frames and larger infestation sizes prior to initial treatment.

Disturbance (whether management induced or not) of soil and vegetation creates habitat for and a vector of dispersal for noxious weeds. Infestations currently occur within the area under analysis. Dry forests representative of the type in which the project area occurs are particularly susceptible to noxious weed infestation (Interior Columbia Basin Ecosystem Management Project Draft Environmental Impact Statement, Vol. II, page 69). Noxious weed infestation and expansion has the potential to profoundly alter ecosystem functions and processes (Interior Columbia Basin Ecosystem Management Project, PNW-GTR-405, Vol. II, page 784-785). Past and present activities that could have influenced noxious weed establishment and spread due to ground disturbance include: one salvage project, four vegetation management projects, the pre-commercial thinning of plantations two special use permits for spring and water withdrawal, campground operations, Dog Fight pond reconstruction and planting, Sumac Culvert replacements, removal of instream structures on Swamp and Elk Creeks, grazing of adjacent allotments, noxious weed treatment and OHV recreational use. The above activities also include mechanical and prescribed burn treatments, road building, maintenance and travel. Although these activities play a role in existing conditions, projects such as these are site specific and weed establishment and spread are abated by mitigation measures which include inventories, inspections and follow

up treatment. Other activities that are ongoing within the analysis area and affect overall ecosystem health include wildfire, and fire suppression activities.

Existing inventories indicate that the following high priority weeds species occur or have occurred within the planning area: meadow hawkweed, diffuse and spotted knapweed, tansy ragwort, Scotch thistle, whitetop and yellow starthistle. Potential for the establishment and presentation of these and possibly other invasive species is considerable. Due to the mobility of our current populace, noxious weed species propagules can be transported great distances. Other weed species which occur within a relatively short transport radius would include: leafy spurge, dalmation toadflax and yellow hawkweed.

Under the no-grazing alternative effective treatment of noxious weeds would continue as authorized under the current NEPA analysis. This would continue to reduce the risk of subsequent noxious weed invasion and therefore would reduce the risk of ecosystem alteration.

Alternatives 2, 3 Modified, and 4 – Noxious Weeds

Direct and Indirect Effects - The effects of Alternatives 2, 3 Modified and 4 on noxious weeds are similar, and are discussed here as common effects. Effects specific to Alternative 3 Modified and 4 are presented following this discussion.

Disturbance (whether management induced or not) of soil and vegetation creates habitat for, and often, a vector of dispersal for noxious weeds. Infestations currently occur within the area under analysis. Dry forests representative of the type in which the project area occurs are particularly susceptible to noxious weed infestation (Interior Columbia Basin Ecosystem Management Project Draft Environmental Impact Statement, Vol. II, page 69). Noxious weed infestation and expansion has the potential to profoundly alter ecosystem functions and processes (Interior Columbia Basin Ecosystem Management Project, PNW-GTR-405, Vol. II, page 784-785). Past and present activities that could have influenced noxious weed establishment and spread due to ground disturbance include: one salvage project, four vegetation management projects, the pre-commercial thinning of plantations two special use permits for spring and water withdrawal, campground operations, Dog Fight pond reconstruction and planting, Sumac Culvert replacements, removal of instream structures on Swamp and Elk Creeks, grazing of adjacent allotments, noxious weed treatment and OHV recreational use. The above activities also include prescribed burn and mechanical fuels treatments, road building and maintenance. Although these activities play a role in existing conditions, projects such as these are site specific and weed establishment and spread are abated by inventories, inspections and follow up treatment. Other activities that are ongoing within the analysis area and affect overall ecosystem health include wildfire, and fire suppression activities.

Existing inventories indicate that the following high priority weeds species occur or have occurred within the planning area: meadow hawkweed, diffuse and spotted knapweed, tansy ragwort, Scotch thistle, whitetop and yellow starthistle. Potential for the establishment and presentation of these and possibly other invasive species is considerable. Due to the mobility of our current populace, noxious weed species propagules can be

transported great distances. Other weed species which occur within a relatively short transport radius would include: leafy spurge, dalmation toadflax and yellow hawkweed.

Under Alternatives 2, 3 Modified and 4 the intensity and magnitude of the disturbance under analysis is very similar. Within all the action alternatives, there is a low to moderate probability (intensity) that noxious weeds would be transported and deposited on the allotment by livestock, and a moderate probability (intensity) that permittee vehicles and/or equipment will carry and deposit noxious weed propagules. With implementation of mitigation measures, which require permittee equipment cleaning for improvement reconstruction and increased permittee awareness and presence due to providing identification aids and existing infestation maps, this later probability is expected to be reduced to a range of slight to low probability (intensity) considered over the duration of the analysis.

Risks of noxious weed invasion and spread would be controlled by a series of measures that are consistent with the National Guide to Noxious Weed Prevention Practices (2001). This guide emphasizes the following steps related to livestock grazing:

- Consider noxious weed prevention and control practices in the management of grazing allotments.
- Avoid or remove sources of weed seed and propagules to prevent new weed infestations and the spread of existing weed.
- Minimize transport of weed seed into and within allotments.
- Maintain healthy, desirable vegetation that is resistant to weed establishment.
- Minimize disturbed ground conditions favorable for weed establishment in the management of livestock grazing.
- Promote weed awareness and prevention efforts among range permittees.

Mitigation measures listed in Chapter 2 would address these noxious weed prevention steps and minimize the risk of existing noxious weed occurrences spreading or introducing new occurrences.

Specific to Alternative 3 Modified, a small portion of Crow Creek in the Dorrance Pasture of the Swamp Creek Allotment would be excluded from grazing, eliminating livestock induced weed establishment and spread. Also livestock trailing ion the vicinity of the Swamp Creek and Crow Creek Allotments would be restricted to existing roads, reducing concentrated soil disturbance, which in turn would reduce the risk of invasive weed establishment.

Alternative 4 could reduce risks of noxious weed establishment and spread by reducing livestock AUMs in Joseph Breaks and Wilder pastures of the Table Mt. Allotment, the Joseph Creek Allotment, and Buck pasture of the Swamp Creek Allotment, as this alternative eliminates summer and fall grazing. This alternative would also eliminate any ground disturbance or noxious weed seed spread by livestock in several riparian areas, as it

limits access to fish-bearing streams through fencing and herding. Although this alternative could reduce risks of noxious weed spread and establishment, it could also increase risks from the ground disturbance associated with the installation of riparian fencing.

Cumulative Effects - Cumulatively there are a number of activities which occur within the Joseph Creek Range Planning Area which can and do provide a moderate to high probability of the introduction and spread of noxious weeds. These reasonably foreseeable future activities include (but are not limited to): vegetation management projects, motorized and non-motorized recreation, hunting and gathering, road maintenance, future phases of Swamp Creek Restoration Project, Starvation Spring fencing, Joseph Canyon Overlook project, fish passage culvert repairs, and increased recreational OHV use. Although the action alternatives continue as a disturbance factor that provides a potential risk of noxious weed introduction and spread, and provides for a greater level of disturbance that Alternative 1, they retain current levels of recognition and reporting of new noxious weed infestations. Even in the absence of this point, the increased establishment and spread of noxious weeds under current grazing management would be expected to be imperceptible when viewed in the context of all of the other ongoing activities. Application of the mitigation measures of all future projects within the planning area are expected to substantially reduce noxious weed spread and establishment through vectors controlled and administered by the Forest Service.

Botanical Resources

Botanical resources refer to those plant species that are distinguished through listing either as Threatened or Endangered through the Endangered Species Act or Sensitive through the Pacific Northwest Regional Forester's Sensitive Species list.

Existing Conditions – Threatened or Endangered

Threatened or Endangered plant species with the potential to be found on Wallowa Valley Ranger District are water howellia, Ute's ladies' tresses, Howell's spectacular thelopody, MacFarlane's four-o'clock, and Spalding's catchfly. All five species are listed as Threatened. Habitat descriptions were assembled from professional experience and available literature including the *Section 7 Guidelines – Snake River Basin Office* (USFWS 1997) for managing listed plant species. After review of potential habitat within the analysis area, it was determined that no habitat for water howellia, Ute's ladies' tresses, or Howell's spectacular thelopody occurs within the analysis area. Potential habitat for the remaining two species exists, and known occurrences of Spalding's catchfly occur within the JCRAA.

MacFarlane's Four-o'clock - This species grows in canyon grassland habitats between 1,000 and 3,200 feet in elevation, in the Imnaha, Snake, and Salmon River drainages of Oregon and Idaho. Populations have been found in many different non-forest plant associations, soil types, and on all aspects and slopes. The US Fish and Wildlife Service (USFWS) counts 12 populations over its range, with 5 occurring in the Hells Canyon National Recreation Area. No populations are known within the JCRAA.

There is potential habitat for MacFarlane's Four-o-clock in the project area. The Joseph Canyon environment, the known plant associations there, and the range of elevations are consistent with those of known MacFarlane's sites across its range. A habitat model was also used to indicate the potential for habitat within the JCRAA. The model was developed in cooperation between the Wallowa-Whitman National Forest and the Oregon Natural Heritage Program for the HCNRA Comprehensive Management Plan and was used to identify potential habitat within the JCRAA. This model stratified the landscape into potential habitat classes of no, medium, high, and very high potential habitat for MacFarlane's four-o-clock. Inventory of the high and very high potential habitat in the spring of 2004 resulted in the discovery of no MacFarlane's four-o'clock occurrences. Consequently, it is highly unlikely that any occurrences would be found within the JCRAA.

Spalding's catchfly is described below with respect to known occurrences and potential habitat within the JCRAA.

Spalding's Catchfly Known Populations - Seven occurrences (17 patches) of Spalding's catchfly are known from within the JCRAA. These occurrences range in size from 20 to 659 plants for a total of approximately 1181 plants on Forest Service managed land, and an additional 90 plants on private land. All of the occurrences occur in the vicinity of Fire Ridge and an unnamed ridgeline east of Crow Creek, internally referred to as Tommy's Ridge. Refer to

Figure 4. Frequently, the number of individuals observed will vary by the year (or time of year) in which the observation is made. Individual plant numbers reported can also vary some between observations because of different observers and because larger numbers are often the result of estimates rather than a specific count of individuals. The numbers given below represent the largest number of individuals recorded among a number of observations over the years. Because a number of individuals may be dormant, in any given year, the total population is likely under-represented.

Table 19: Documented Spalding's Catchfly Occurrences

Allotment	Pasture Name	State Element Occurrence #	W-W GIS #s	# Plants reported	Current Grazing Season Rotations
Crow Creek	North Crow	EO 016	1266 & 1267	99-203	April - May & Nov. – Dec. With spring rest & fall rest every 1 of 3 years
Crow Creek	South Crow	EO 014	0519,1337, 1338 0518 / New patches found in 2004, 0600 to 0608	126-295 / 414	Same as North Crow with rest in 1 of 3 springs and 2 of 3 falls
Crow Creek	Doe Gulch	EO 013	0516,0517	41-94	Sept. 2 of 3 yrs & Oct. 1 of 3 yrs
Swamp Creek	Dorrance	EO 017	1268 & 1269	58-79	October
Swamp Creek	Dorrance Holding	EO 019	1280	14-20	Oct. or Nov.
Swamp Creek	Catchfly	EO 020	1275 to 1279	659-1860	April & October
Private Land	Private Land	EO 018	1265	91-300	Spring one year and fall the next yr

For information about the range condition of the pastures that have catchfly occurrences, refer to the previous section on range condition in this chapter.

On the Wallowa-Whitman National Forest, Spalding's catchfly is only known from two general locations within the Wallowa Valley Ranger District. The first location is within the JCRAA, and the second location is the vicinity of Clear Lake Ridge which is southeast of Enterprise. Spalding's catchfly is found in relatively mesic grassland sites with northwest to northeast facing aspects, or in flat areas. The plants often occur in microhabitats at the heads of draws, in small swales, or in depressions in ridge tops. The soils are deeper and seem to hold moisture longer than the surrounding areas.

In Wallowa County, occurrences have also been noted at the north end of Wallowa Lake and near the Joseph cemetery. There are highly credible but unofficially documented patches of healthy Spalding's catchfly on private land on the north end of the lateral moraine of the Lostine canyon. Several patches of Spalding's catchfly totaling over 1000 plants were discovered on The Nature Conservancy land on the eastern edge of the Zumwalt prairie. Other patches of Spalding's catchfly might occur elsewhere on the Zumwalt Prairie, but no survey work has been done on this vast area of private land.

Spalding's catchfly has been found at widely scattered sites throughout northeastern Oregon, western Idaho, eastern Washington, western Montana, and southern British Columbia. These sites are in remnant Palouse prairie or canyon grasslands (Oregon Natural Heritage Program 1998, Washington Natural Heritage Program 1998).

In northeastern Oregon, the species is typically found in grasslands dominated by Idaho fescue. Depending on soil and moisture characteristics, some sites have few or no shrubs or trees present, whereas other sites may have large shrub thickets. Scattered individuals of Ponderosa pine or Douglas-fir may be found in or adjacent to this habitat. Some populations occur in relatively open stands of ponderosa pine (Gamon 1991, USDA 1997).

Spalding's Catchfly Potential Habitat – Approximately 30% of the JCRAA has been surveyed for the presence of rare plants. Because all of the terrain within the JCRAA has not been surveyed, professional judgment, District records, and a habitat model were used to indicate the potential for habitat within the JCRAA.

The Wallowa-Whitman National Forest botany program completed a cooperative project with the Oregon Natural Heritage Program to model potential habitat for Spalding's catchfly for the HCNRA Comprehensive Management Plan. Attributes from documented sites throughout the plant's range were used to identify and weight parameters of vegetation, elevation, slope, and aspect (Murray 2001). This model was used to identify potential habitat within the JCRAA. It stratified the landscape into potential habitat classes of no, medium, high, and very high potential habitat for Spalding's catchfly. All known occurrences correspond to areas depicted as being very high or high potential habitat by the model.

The habitat model is good at predicting habitat suitability, but not necessarily occupancy as plants rarely occupy all potential habitat. This model is probably most accurate at predicting where poor habitat potential exists. A random test of a roughly similar modeling effort for a Great Smokey Mountain endemic plant found their model to be highly accurate at predicting areas of species absence. Less than 20% of the test plots in modeled suitable habitat contained the target species, likely because of population processes (localized extinction or colonization) not explained by the model (Boetsch et al 2003).

As described in the range condition portion of this chapter, rangeland capability was modeled. This model was assumed to indicate where cattle are more likely to graze. Where capable rangeland intersects with potential habitat, the potential for livestock grazing to affect Spalding's catchfly was anticipated to be high. Refer to Table 20 for a list of modeled habitat and capable habitat intersections by pasture. Combining the two models somewhat alters the accuracy of each model, in that it under-represents potential areas of concern. Professional judgment about plant associations and livestock movement in the area was used to temper the model results so that logical blocks of 'risk areas' could be established. These risk areas are displayed in Figure 4. A total of 10,662 acres fall within Spalding's catchfly risk areas.

Table 20 – Potential Habitat for Spalding's Catchfly

Allotment and Pasture	Grazing Season	Total Area (acres)	Moderate Potential (acres)	Moderate Potential and Capable (acres)	High Potential (acres)	High Potential and Capable (acres)	Very High Potential (acres)	Very High Potential and Capable (acres)
Al-Cunningham								
South Alford	Spring Fall	603	65	2.18	23	2.18	38	.56
Sumac	Spring Fall	243	55	0	31	0	16	0
North Alford	Spring or fall	542	13	0.34	7	0.03	0	0
Shoot Canyon	Spring or fall	634	128	0	51	0.10	44	0.33
Cougar Creek								
Trap Canyon	Spring or summer	724	123	0.02	66	0.07	45	0.28
Breeding Pasture	Spring or summer	693	9	0	4	0	1	0
Sumac	Spring or summer	1273	182	0.31	93	0.78	247	8.68
Hilton Corner	Summer or fall	383	0	0	1	0.22	5	0.08
Boner	Summer or fall	769	4	0	1	0	243	0
Cougar	Summer or fall	5046	549	11.11	253	6.64	588	86.92
Peavine	Summer or fall	4602	54	3.30	102	8.82	274	43.05
Baldwin	Summer	2700	58	.20	26	9.79	122	30.9
Muddy	Summer or fall	2162	49	0.10	62	0.70	502	8.55
Crow Creek								
North Crow	Spring Fall	386	22	16.34	98	81.93	50	45.58
South Crow	Spring Fall	116	10	0.02	3	0	51	1.57
Crow Creek	Summer	62	0	0	1	0	0	0
Special Use	Spring Fall	609	0	0	0	0	45	1.99
Doe Gulch	Fall	242	0	0.68	0	0.54	0	4.91
Road	Summer	158	4	0	15	0	81	0
Davis Creek								
Hillside	Summer	393	45	2.21	29	2.34	23	2.91
Elk Creek east and west	Spring or summer	1345	0	0	0	0	222	38.83
Starvation Springs	Summer	625	2	0.05	6	0.05	35	7.82
Davis Creek west, east, south	Summer	4168	154	5.15	200	13.18	414	39.43
Bennett	Summer	516	37	1.49	33	1.047	24	1.65
Dobbins								
Dobbins	Spring, Summer, and Fall	1615	0	0	0	0	27	0.87
Elk Mountain								
Homestead	Spring or summer	166	0	0	0	0	0	0
Fine								
Westside	Spring, summer, or fall	279	2	0	0	0	0	0
Home Place	Spring, summer, or fall	207	0	0	0	0	0	0
Peavine #1	Spring,	158	0	0	0	0	0	0

Allotment and Pasture	Grazing Season	Total Area (acres)	Moderate Potential (acres)	Moderate Potential and Capable (acres)	High Potential (acres)	High Potential and Capable (acres)	Very High Potential (acres)	Very High Potential and Capable (acres)
	summer, or fall							
Peavine # 2	Spring, summer, or fall	108	0	0	0	0	0	0
Peavine # 3	Spring, summer, or fall	110	0	0	0	0	0	0
Peavine # 4	Spring, summer, or fall	653	4	0	4	0	9	0.96
Hunting Camp / Table Mountain								
Tamarack	Summer	3329	804	2.01	172	6.70	388	7.86
Kirkland	Summer	6515	461	0.86	68	1.33	11	4.78
Holding Pasture	Summer	384	81	2.18	40	4.01	76	5.91
Wilder	Spring and fall	1680	154	0	93	.28	54	0
Joseph Breaks	Spring and fall	4319	1066	0.41	416	0	299	0
Horse Pasture	Summer	360	56	0	18	.06	13	0
Thorn Hollow	Spring or summer	1542	545	4.33	210	2.81	192	4.49
Horse Pasture Ridge	Summer	1443	472	0	40	0	148	.81
Corral Springs	Summer	2628	170	1.21	93	2.39	161	8.99
Table Mountain	Summer	2763	332	1.93	51	1.58	147	7.17
Dog Fight	Fall	334	8	0	48	2.38	9	0
Joseph Creek								
Joseph Creek	Spring and fall	1571	78	0.18	51	1.03	10	.41
Swamp Creek								
Lower Swamp	Spring	1327	355	0.05	79	0.02	51	0
Baker Gulch	Spring	1199	276	0	72	0.42	40	0
Red Fir	Spring	586	103	0	47	0	24	0
Lower Davis	Spring	2836	640	.12	149	.11	146	5.02
Barney Flat	Spring	1475	316	0	88	0	148	0
Miller Spring	Summer or fall	2023	302	0.21	88	1.39	157	0.32
Beef Pasture	Spring, summer, or fall	2161	717	2.10	189	.84	178	0
Swamp Creek	Summer or fall	183	2	0.36	8	0.03	0	0
Upper Davis	Spring and summer	2733	597	3.61	199	8.31	160	10.11
Little Elk Creek	Summer and fall	8921	378	10.34	398	24.81	1784	303.09
Elk Creek	Fall	3478	17	4.43	57	10.93	287	42.92
Catchfly	Fall		0	0	0	0	0	0
Dorrance	Summer and Fall	1748	13	6.27	50	8.79	227	87.51
Holding Pasture	Fall	45	2	1.98	1	1.35	5	4.97
Horse Pasture	Incidental	15	0	0	1	0	0	0
Upper Swamp	Summer or fall	1344	287	5.81	66	1.05	20	1.14
Snake Canyon	Spring	1130	337	0	57	0	62	0
Bennett	Summer or fall	1210	134	3.87	84	6.05	35	3.38
Buck	Spring	2076	310	0	96	0	25	0

Reserve for Figure 4 – Spalding's Catchfly Risk Areas

Alternative 1 – Threatened or Endangered Species

MacFarlane's Four-o'clock – There would be no effect to this species from livestock grazing as no populations were located within areas modeled as high or very high potential habitat, and it is highly unlikely that this species occurs within the JCRAA.

Spalding's Catchfly Known Populations and Potential Habitat **-** Under this alternative there would be no direct effects to the known or un-located Spalding's catchfly and its potential habitat from livestock and its management. Other ongoing activities would continue as at present.

Upland range vegetation and soils currently identified in unsatisfactory condition would be expected to improve as domestic livestock grazing is removed from the area. Rate of improvement may accelerate on sites such as in the North Crow Pasture of the Crow Creek Allotment, as more plant material would be left on site rather than being consumed, and soils would be less compacted or displaced by livestock. Discontinuing grazing is not expected to lead to rapid improvement or much improvement on range sites that have been converted to annual sites due to homesteading/grazing activities. However, some level of improvement would be expected during a ten-year period.

Indirect effects would also lessen. Overall there would be less herbivory on the grassland habitats of this species. There may be better wildlife dispersal and less fence-line trailing and areas of concentrated ground disturbance with the removal of livestock fences. In the short term there would be little change in species composition and thus competitive interactions as recovery is often slow in this arid environment. With less herbivore pressure, over the long term the rangeland would tend toward a composition of species being more palatable, and this could include plants like Spalding's catchfly. The rate of change is expected to be slightly faster with no livestock grazing than with improved grazing management (under the action alternatives), but the rate of change and the extent of change as that affects Spalding's catchfly can not be quantified.

Under the no-grazing alternative, the permittees and permit administrators would play a markedly decreased role in the detection and management of noxious weeds thus increasing the chances that new weed populations could become well established prior to detection. Treatment of known sites could continue, although Forest Service funds derived from grazing fees would not be available for noxious weed treatment. Any role (seed vectors or ground disturbance) played in the spread of noxious weeds by livestock in the project area would cease.

Potential weed spread from other vectors (wildlife, human activities, wind) would continue. Overall, the chances of noxious weeds indirectly or cumulative affecting known or potential Spalding's catchfly populations or potential habitat might be slightly less than or equal to the action alternatives, but this cannot be quantified.

Alternative 2 – Threatened or Endangered Species

MacFarlane's Four-o'clock – There would be no effect to this species as no populations were located within areas modeled as high or very high potential habitat, and it is highly unlikely that this species occurs within the JCRAA.

Spalding's Catchfly Known Populations – Known populations of Spalding's catchfly occur in the Crow Creek and Swamp Creek Allotments.

In the Crow Creek Allotment, the North Crow, South Crow, and Doe Gulch Pastures contain known occurrences of Spalding's catchfly. The pastures in this allotment are being used in the early spring or late fall. Reproduction of Spalding's catchfly is by seed only as the plant does not possess rhizomes or other means of vegetative reproduction. Spalding's catchfly seed can germinate in the fall but seems to mainly germinate in the spring. With spring germination, it can grow for two months, at which time the seedlings go dormant. When cooler temperatures and rains come with the autumn, growth again commences (Lesica 1988 a). Because of this, seedlings are rarely observed in the summer. Mature Spalding's catchfly plants are observed in the summer and generally flower from mid-July through August (Lesica 1995), although sometimes as late as September (Kagan 1989). Among the sites adjacent to the Crow Creek drainage, growth appears to commence in mid May, as site visits in late April have not detected shoot production. Senescence is observed by mid September. Therefore, the critical growth period for populations within the JCRAA is approximately mid-May through August. The potential for direct herbivory of Spalding's catchfly in this allotment is very low because livestock would not be present during the critical growth period for adult plants, and seedlings may be present, but do not present much biomass to entice herbivory.

With respect to trampling by livestock, adult catchfly plants present in the summer would not be exposed to livestock and there is little threat from trampling when livestock pass through the pastures in the fall. However, seedlings in the South Crow and Doe Gulch Pastures are at moderate risk to trampling because the topography, habitat, fences, and ponds constrict livestock movement near the vicinity of the Spalding's catchfly occurrences. Spalding's catchfly sites near fence lines and near pasture cross-fence gates or water sources face the most threat from trampling.

The potential for indirect effects in these pastures is moderate to high, primarily relating to secondary wildlife herbivory on residual range and based on the range condition. In the DEIS, range condition in South Crow and Doe Gulch Pastures was characterized as 'unsatisfactory.' Over the years, patches of poor condition range had been observed in parts of the three Crow Creek pastures containing Spalding's catchfly, and these observations were inadvertently recorded as an Unsatisfactory rating for these pastures as a whole. The permittees questioned this assessment of the range condition, and the pastures were re-evaluated by the Forest Service in 2004. The initial finding in 2004 was that while areas of early seral stage plant communities occurred in the pastures, the pastures as a whole contained mid to late seral stage plant communities. Further evaluation and monitoring work will be conducted in 2005, and with the implementation of the Annual Operating Plan(s) resulting from the JCRAA FEIS.

The flat topography of the ridge top in these pastures retains vernal moisture. This in combination with historical heavy spring use, subsequent repeated spring grazing, and

constriction of livestock movement by pasture fences tends to maintain the habitat in a degraded annual grass condition. This degraded range condition puts more competitive pressures (from annual species) on Spalding's catchfly and makes it more susceptible to herbivores in the summer. That is, Spalding's catchfly is more desirable as forage than most of the vegetation components in poor condition range, and the species dominating poor condition range do not obscure Spalding's catchfly from wildlife herbivores in summer. In Doe Gulch, this condition is further exacerbated by the livestock pond in the draw, just down slope from the east fence-line and Spalding's catchfly sites. The pond causes cattle and wildlife to spend even more time milling about this part of the pasture, adding to trampling and grazing effects to Spalding's catchfly and the associated vegetation. Alternative 2 adopts measures for protecting known sites through fencing or caging. Fencing and caging have proven very effective in protecting from grazing, both common species like aspen and MacFarlane's four-o'clock plants at West Creek near Pittsburg Landing in Idaho. Assuming fence maintenance is consistent, it is expected that fencing would also work well at protecting Spalding's catchfly. Altering the season of use, and resting and deferring pasture use has been employed to affect changes in range condition for a long time and is an accepted range management practice. Salting is very effective at manipulating livestock locations as can be witnessed at any historic salt-site. Active herding/riding techniques also have the potential to be very effective.

Professional judgment rates the North Crow Pasture in better condition than South Crow and Doe Gulch. This is likely because it has more area for better cattle dispersal, and perhaps better soils. Indirect effects of wildlife herbivory in North Crow Pasture would be low to moderate. The grass meadows are in better condition, thus providing more available forage for wildlife, thus taking pressure off of Spalding's catchfly as well as providing more biomass to obscure Spalding's catchfly from herbivores. The topography and range structures here also do not constrict cattle movement so much that it concentrates cattle movements.

In the Swamp Creek Allotment, Spalding's catchfly occur in the Dorrance, Holding, and Catchfly Pastures. The potential for direct effects to Spalding's catchfly from herbivory in this allotment is moderate to low. The Catchfly Pasture is being used in the fall only. The Dorrance and Holding Pastures are used in the summer and fall. The summer use is in June. This is in the critical growth period for the Crow Creek populations as a whole, but to date no impacts from cattle grazing have been observed at the part of either Dorrance Pasture where Spalding's catchfly sites reside. This is likely due to the lack of natural or developed water near this part of the pasture. Thus cattle spend very little time here and when they are just grazing while passing through (rather than lingering) there is a much smaller chance that they will affect the Spalding's catchfly plants, either through direct herbivory or trampling. Also the range is in good condition here, so there is less pressure on the Spalding's catchfly as potential forage and the robust grasses help obscure the Spalding's catchfly from herbivores, regardless of season of use.

The potential for indirect effects in the Dorrance, Holding, and Catchfly Pastures is low, both because of the season of use already discussed and because the range in both pastures is in good (or better) condition. Noxious weed monitoring indicates that the two noxious weed sites within the Dorrance Pasture are under control, and pose only a small threat of spreading into Spalding's catchfly areas.

In order to reduce the potential for effects to known Spalding's catchfly occurrences, Alternative 2 adopts the following protections:

- In the Catchfly, Holding, North Crow, South Crow, and Doe Gulch Pastures, protect Spalding's catchfly sites between approximately mid-May and late-August by not grazing in those pastures during that critical growth time period. Alternatively, avoid grazing management impacts to Spalding's catchfly sites in those pastures at that time by utilizing various fencing techniques to eliminate livestock around the Spalding's catchfly sites.

- In the North Crow, South Crow, Doe Gulch, Holding, Catchfly, and Dorrance Pastures, place salt so that livestock will not be encouraged to move toward the known populations of Spalding's catchfly. Keep salting locations greater than 1/4th mile from known occurrences unless site specific conditions dictate otherwise and the Forest Service concurs.

- Manage the South Crow and Doe Gulch Pastures in a manner that continues their recovery and transition past a mid-seral stage.

Refer to Chapter 2 for the monitoring items that would be completed, primarily to ensure adequate range condition. Refer also to the Biological Assessment for Effects on Spalding's Catchfly in the analysis file for additional information on grazing effects.

Spalding's Catchfly Potential Habitat - Relative to Spalding's catchfly *potential* habitat, this discussion focuses on the intersection of four factors: potential catchfly habitat, capable rangeland, existing inventory status, and season of livestock use. As previously described, the intersection of high potential habitat and capable rangeland predicts areas where the catchfly populations are more likely to occur and where livestock grazing is likely to be more concentrated. The capability model results were tempered somewhat with professional experience, as the model appears to occasionally under-represent where cattle will be. Consequently, risk area perimeters were drawn to enclose the areas of highest risk to Spalding's catchfly. These areas were then assigned a risk level depending on (1) whether inventory has been conducted in the area which would tend to discount the existence of the plant and (2) whether livestock are scheduled to use the area during the critical growth period.

Areas surveyed with negative results represent the least risk of impact to the plant. Summer grazing is considered to have the most potential to impact Spalding's catchfly as that time period is at the heart of its growth and seed producing period.

Seventeen risk areas, totaling 10,672 acres were identified for this effects analysis, and potential future surveys. These risk areas (of potential habitat) were identified using the following criteria:

1) The areas contained a high degree of aggregation of terrain pieces modeled at the 3 potential habitat levels, as apposed to a peppering of widely scattered potential habitat pixels, and,

2) These areas exhibited at least some overlap with the range capability model, and,

3) These areas had no or very limited previous survey work, and,

4) These areas had a proposal for summer grazing or spring and summer grazing, and,

5) These areas would identify terrain for investigation with a better distribution across the whole JCRAA than is represented by previous surveys and would help test habitat assumptions. The proposed survey area distribution contains more Canyon Grassland terrain than had been looked at previously, and,

6) These areas contained potential habitat for other Region 6 Sensitive plant species, that are part of this analysis, as well as had some areas of no potential habitat for Spalding's catchfly.

The composite level of risk falls within a spectrum of high to low. The greatest potential for effects would be where summer grazing is planned in areas where little inventory has occurred and the area contains high or very high potential habitat, and especially high in those areas also modeled as capable range. The lowest potential for effects would be in those pastures that have no or very little modeled potential habitat within the capable rangeland, regardless of the season of grazing. Risk areas are identified in Figure 4. Portions of the JCRAA not within a risk area could be assumed to be at the low end of the composite risk level.

Alternative 2 was scheduled in the DEIS to complete inventory in 3032 acres of the risk areas. These inventories were completed in summer 2004 and no new occurrences were found.

Pastures containing some rare plant surveys are considered to be at a lower risk of posing a threat to Spalding's catchfly than pastures with no survey information. Negative survey results (for the presence of Spalding's catchfly) provide a reasonable level of confidence that the species is not in the survey area. Actions outside areas of potential habitat would have almost no effect to Spalding's catchfly or its habitat because of the low likelihood that the species would be found outside areas predicted by the model.

Surveys are designed to detect the presence of a species, not prove they are absent - a landscape is never surveyed at a level that looks at every square yard of potential habitat. Survey design integrates the amount of potential habitat for a given species with potential impacts from a given action. The inventories are conducted in such a way that the potential for the surveyor to intersect rare plant patches is commensurate with the perceived level of risk that the management action would intersect those potential rare plant patches. Given this perspective, survey results from properly designed and executed inventories provide a reasonably accurate characterization of the presence or absence of the species in question.

Roughly 30 percent of the JCRAA has been inventoried in the past, mostly for timber and fuels management projects, although some of the routes were designed to specifically locate Spalding's catchfly. A map of these inventory routes is contained in the Biological

Assessment. About 80 percent of the surveys are appropriate to use for the analysis of effects of Alternative 2. The other 20 percent either were not conducted at the appropriate time of year to detect Spalding's catchfly or the survey route may not have been intensive enough to detect Spalding's catchfly.

Inventories were completed on 3032 acres of the Spalding's catchfly risk areas in the summer of 2004. In the remaining 7640 acres of risk areas, inventory would not be initiated by this analysis. These uninventoried areas have a moderate to high probability of containing habitat as determined by the model, and they experience some degree of grazing during the critical growth period for Spalding's catchfly. Analysis of this alternative assumes the presence of Spalding's catchfly in these 7640 acres of uninventoried risk area. These uninventoried areas include risk areas 1 through 9 on Figure 4 within the Hunting Camp and Table Mountain Allotments and risk areas 12 through 17 in the Davis Creek, Swamp Creek, Elk Mountain, and Crow Creek Allotments.

While the Davis Creek Allotment exhibits some areas of unsatisfactory range condition, recent changes in grazing systems are expected to initiate an upward trend in range condition. All of the remaining pastures that occur within these uninventoried risk areas exhibit satisfactory range condition. Because these assessments of range condition are completed on a pasture-wide basis, they do not account for isolated concentrations of livestock use around watering sites or near fences. These concentration areas comprise approximately 10 to 15 percent of the area within these pastures. Catchfly occurrences near areas of livestock concentration may have already been eliminated through the pattern of use over time. However, if any catchfly occurrences persisted in these livestock concentration areas, they would likely be surrounded by discrete areas of poor range condition. This degraded range condition puts competitive pressures (from annual species) on Spalding's catchfly and makes it more susceptible to herbivores in the summer. That is, Spalding's catchfly is more desirable as forage than most of the vegetation components in poor condition range, and the species dominating poor condition range do not obscure Spalding's catchfly from summer wildlife herbivores.

Other than areas of livestock concentration, range condition throughout these pastures is satisfactory (except for the Davis Creek Allotment as noted above). For catchfly occurrences that might exist throughout these uninventoried risk areas, the satisfactory range condition reduces the risk of direct herbivory and trampling by livestock or other herbivores. Adequate palatable forage species help obscure the Spalding's catchfly from herbivores. Even when some livestock consumption of catchfly plants occurred, the plant can apparently endure these conditions for a long period because of its very deep taproot, propensity for dormancy, and long lived lifecycle. Therefore, except for livestock concentration areas, effects on Spalding's catchfly would be due to incidental herbivory and a low risk of trampling effects. However, because of the risks presented by the livestock concentration areas and the fact that inventory would not locate and protect any residual occurrences of Spalding's catchfly in these livestock concentration areas, a determination of *May Affect, Likely to Adversely Affect* would be appropriate.

Cumulative Effects - With respect to cumulative effects, other activities and actions within the JCRAA (refer to Table 14) have potential to overlap with the activities under Alternative 2 and contribute to cumulative effects as described below. Refer also to the Biological

Assessment for Effects on Spalding's Catchfly in the analysis file for additional information on cumulative effects.

Due to the non-forested nature of the habitat for Spalding's catchfly, logging does not occur in areas where the species grows. Therefore, these activities have a negligible cumulative effect to the species. There is no timber harvest in Spalding's catchfly habitat, however, logging roads, and often log decks/landings were constructed in or through non-forested habitats in the past and have contributed to a loss of habitat through conversion.

Most of the known Spalding's catchfly sites in the JCRAA are on gentle hillsides or ridge tops. This kind of terrain is susceptible to off-route travel of All-Terrain-Vehicle / Off Highway Vehicle (ATV/OHV) use. Off-route travel is not currently prohibited (with the exception of specific hunting season closures), and is documented to be on the increase across the Wallowa Valley Ranger District, including many areas within the JCRAA, especially across the general swath of terrain between Robert's Butte and Hunting Camp Ridge, and around Coyote campground and the Chesnimnus Creek drainage to the east. Both FS personnel as well as ODF&W personnel have reported this use increase. The known occurrences of Spalding's catchfly are all within pastures enclosed by fencing away from roads, so the risk of ATVs crossing a site from existing routes is small and would only happen during fence maintenance or cattle moving activities. However, there is potential for ATVs to impact un-located sites and potential habitat in larger pastures with ample access points. Noxious weeds can be transported along ATV trails just as easily as vehicular roads. Thus off-road motorized recreation could be contributing to cumulative effects to this species through weed transport or conversion of habitat (or plants) to trail, but the degree of this impact is not currently quantifiable. ATV use is expected to increase over the next 10 years.

There are no roads in or near the Tommy's Ridge Spalding's catchfly sites on the east side of Crow Creek. The Doe gulch road stays in the bottomland and is not in Spalding's catchfly habitat. There are at least two old roads, barely evident on the ground and still on Forest maps that intersect habitat and known sites along Fire Ridge on the west side of Crow Creek. It is highly likely that Spalding's catchfly plants were impacted when these roads were created, and thus has contributed to cumulative effects to this species. However, neither of these roads is currently used and they have been growing over for several years. So, currently roads should be contributing almost no cumulative effects to known Spalding's catchfly sites, but may still be impacting un-located site and potential habitat elsewhere in the JCRAA. A review of the map of potential habitat areas shows quite a number of roads bisecting this terrain, but the contribution of roads to impacts to potential habitat is difficult to quantify.

There are very few developed recreational trails in potential Spalding's catchfly habitat within the JCRAA and maintenance is light and confined to the current trail prism. The trails that do exist are not designed nor maintained for ATV use. There is one developed campground in the JCRAA and surveys have not located Spalding's catchfly at that site (Geer 2000). Therefore developed camping & trail use likely has minimal cumulative effects to the species, although at some level, any access to wild-lands enables the user to go off-trail whether by foot or by livestock.

The trailed areas receive very light backpacking and livestock packing use with the

majority of dispersed camping use occurring during deer and elk hunting seasons in the fall. There are a lot of dispersed campsites in the JCRAA, though most of these are along open roads and tend to be used annually (during hunting season or holidays), such that impact levels have been fairly consistent over the years. So these potential camping impacts (habitat alteration of plant crushing) should not be contributing much to cumulative effect, over the level established historically. In the long term, societal demographics may bring more recreationists to this part of the Forest and impacts could increase. The degree of impacts to potential Spalding's catchfly habitat, radiating from the actual dispersed camps themselves is not clear and cannot be quantified.

Knapweed and yellow starthistle patches occur near the Spalding's catchfly sites on Fire Ridge. They have been under an integrated noxious weed treatment strategy by the district since 1994 and are believed to be under control, based on observations made by District weed treatment personnel. Thus these known weed sites pose only a small threat to the Spalding's catchfly habitat and sites, so their contribution to cumulative effects would be negligible. Current and future noxious weed management projects are planned and analyzed on a site-specific basis and would protect any known Spalding's catchfly occurrences.

However, there is a serious threat of new noxious weed species colonizing potential Spalding's catchfly habitat in the JCRAA. On state, private, BLM, and tribal lands north of the analysis area, occurrences of yellow starthistle, Common Cuprina, (Porter 2003 / others) were reported during weed surveys in the 2003 field season. Livestock, wildlife, humans, and wind could all transport seeds of these species into the analysis area. Weedy species, especially noxious weeds, once established out-compete desirable vegetation/rare plants for space and resources often displacing the desirable species. They also tend to destabilize the hydrologic functioning of the soil by reducing plant density and plant root depth and density. This degrades the habitat for beneficial soil organisms that contribute to native plant health. These actions would further unravel the ability of potential or occupied habitat to support Spalding's catchfly. Parts of this analysis area are highly roaded while other areas are virtually unroaded. Roads are a documented path for weed spread. Detecting new noxious weeds sites across this many acres is very difficult because of its size and undulating topography. To date, Forest Service efforts at controlling small noxious weed infestations have been successful but treatment options are limited, and the potential for new weed populations to overwhelm our ability to contain them is palpable. Funding for treating noxious weeds has not kept up with their potential to spread, and political and procedural obstacles have increasingly hampered efforts to treat known noxious weed sites. Thus it is highly probable that over the long term, future noxious weed invasion will contribute toward cumulative effects (habitat loss & localized occurrence extirpation) to Spalding's catchfly, although the imminent threats are small.

Prescribed fire projects are planned and analyzed on a site-specific basis and would account for (protect from burning or line construction) any known Spalding's catchfly occurrences in the design of the project. Foreseeable future prescribed fire activities include the Hungry Bob, Lone Dog, Wapiti, Haypen, and Baldwin Vegetation Management Projects along with the Fire Ridge Fuels Reduction Project. Although not conclusive, fire appears to have the potential to enhance Spalding's catchfly habitat (Lesica 1992, Hill, Gray & Glenn 2003 *Draft Conservation Strategy For Spalding's Catchfly*). Although predicting what the historical fire regime would have been in the grasslands containing Spalding's catchfly is

difficult, it is highly likely that wildfire periodically occurred in this terrain (Weddel 2001)– at least until homesteader livestock management and propensity for fire suppression altered the historical wildfire regime. Were fire to be prescribed around Spalding's catchfly sites or habitat it would be applied in such a way as to minimize the chance for directly burning the plants through seasonal design constraints. It would not be applied where analysis suggests that the range condition could allow weedy species to respond more heartily to the burning than Spalding's catchfly. Thus prescribed fire activities likely contribute negligibly to potential cumulative effects to this species.

Most of the grassland habitat within the JCRAA is bisected with timbered stands from which fire could have emanated after lighting or human ignition. Thus it is likely that historically a mosaic of grasslands burned with the timbered stands. A large part of the Joseph Canyon burned in a wildfire during the fire season of 1986 as well as before then. These areas contain potential Spalding's catchfly habitat but no known occurrences. Wildfires generally occur during the late summer months when Spalding's catchfly is in flower or setting seed. Therefore wildfire probably did directly impact some individuals over time. However, Spalding's catchfly plants are long-lived, deeply rooted, and often dormant during the summer, so individuals or patches as a whole would have been able to cope with mosaic wildfire on a periodic basis. In the future, wildfire may also affect populations of invasive non-native species. Over the long term, wildfire in concert with undesirable species could play an undeterminable role in cumulative effect to Spalding's catchfly.

Wildland fire suppression actions could impact Spalding's catchfly or habitat via line construction, fire retardant drops, mop-up operations, or post fire seeding. Obviously, fire-line construction and mop-up operations could dig-up and kill plants and disrupt habitat. Fire-lines are also good paths for weed invasions that would displace desirable species. Firefighting equipment is also frequently driven off-road to support suppression efforts. These vehicles could also dislodge or crush plants. Good situational awareness provided by the District in the Wildland Fire Escape Situation Analysis and by District Resource Advisors should minimize these potential effects. Fire retardant is actually a crude form of fertilizer. It is not known how Spalding' catchfly would respond to retardant fertilization. However most plant species in arid western grasslands have evolved under a low-nutrient (relatively) environment and are not adept at quickly responding to a pulse of chemical nutrients. Most exotic weedy species have evolved to respond much more quickly and often have the advantage or native species in these situations. Any impacts to Spalding's catchfly from fire suppression would be dealt with during Fire Emergency Consultation and subsequent restoration plans. This should minimize but not eliminate its potential cumulative effect.

Potential habitat for Spalding's catchfly exists on public and private land within the JCRAA, although the number of acres of private land is small. Since most private lands tend to be managed intensively, these areas may no longer provide optimal habitat for Spalding's catchfly. The single known Spalding's catchfly occurrence on private land on the north end of Fire Ridge is in rangeland with good condition but appears to be declining based on observation and comments on the occurrence report form. The landowner is currently coordinating with USFWS on a management plan for this occurrence and the surrounding area. Under the Blue Mountain Land Exchange proposal, the Forest Service would acquire parcels along Joseph Creek. These lands would be managed in a way that

improves range condition and protects Spalding's catchfly if it is found on these parcels. Thus acquiring land into the public domain might increase opportunities for improving management for Spalding's catchfly, although incentives are available through USFWS for private landowners to improve management of Spalding's catchfly, and some landowners may chose to manage for the species without incentives. Overall the contribution of private rangeland management to possible cumulative effects to Spalding's catchfly varies by individual landowner and would be difficult to determine with the amount of information available on private land management.

The effects of future State and local government actions would not add cumulatively to the effects described above to Spalding's catchfly. State and local government actions are limited to state and county road maintenance. Though there are county roads within the JCRAA, the road maintenance is restricted to the existing road prism. There are no county roads intersecting currently known Spalding's catchfly sites.

Alternative 3 Modified – Threatened or Endangered Species

MacFarlane's Four-o'clock – There would be no effect to this species as no populations were located within areas modeled as high or very high potential habitat and the likelihood of this species occurring within the JCRAA is highly unlikely.

Spalding's Catchfly Known Populations – Relative to known Spalding's catchfly occurrences, Alternative 3 Modified proposes to carry out the same actions as Alternative 2. The improvement of range condition within the Crow Creek Allotment would be addressed through monitoring, reduction of trailing through the pastures, and rotation so that spring grazing is rested. Refer to the range condition section of this chapter. Continued improvement in range condition in the South Crow and Doe Gulch Pastures would decrease the livestock grazing pressure on Spalding's catchfly occurrences because the mid to late-seral plant communities act to reduce the level of risk to direct herbivory and trampling by livestock or other herbivores. Adequate palatable forage species help obscure the Spalding's catchfly from herbivores.

Alternative 3 Modified adopts additional protections to Spalding's catchfly from Alternative 2 through mitigation and monitoring. Mitigations include spring drought protections, restrictions on herding through the Doe Gulch pasture, and summer grazing protections. Effectiveness monitoring would ensure that the protective measures are working as designed. Consistent site visits, with field-notes and photos, capture site conditions and record management needs. These kinds of observations have been proven as useful at forwarding knowledge of the rare plant MacFarlane's four-o'clock in Idaho.

Spalding's Catchfly Potential Habitat – The Effects Analysis for Alternative 3 Modified is the same as Alternative 2 with the following exceptions:

Alternative 3 Modified would complete inventories for Spalding's catchfly over an area ranging from 2890 to 7630 acres over a period of 3 years. The inventory would be staged as follows. Risk areas 10 and 11 were inventoried in the Summer of 2004 and no new occurrences were found. Risk areas 1, 6, 7, 8, and 9 would then be inventoried next. The

results of inventory would be evaluated at that point, and in conjunction with inventory that is occurring on the Hells Canyon National Recreation Area, conclusions about the validity of the Spalding's catchfly habitat model would be made. A determination on whether to proceed with inventory would be made based on the number and distribution of Spalding's catchfly occurrences found during this initial inventory. If a decision to proceed with inventory was made, risk areas 2, 3, 4, and 5 would be inventoried next. Again, the results of the inventory would be evaluated to determine the need for continued inventory. If a decision to proceed with inventory was made, risk areas 12 through 17 would be inventoried. These inventories would either (1) affirm that the likelihood of Spalding's catchfly occurrences within the risk area is very low or (2) identify the locations of occurrences. If any occurrences were found, they would be protected as described for the Tommy's Ridge and Fire Ridge populations. By increasing the amount of risk area that is inventoried, then potential effects to currently undiscovered catchfly occurrences would be reduced below the level described for Alternative 2.

Alternative 3 Modified proposes to use somewhat different techniques relative to rangeland management as a whole. In essence, it proposes more flexibility in terms of pasture grazing season, while still staying within the overall permit requirements and abiding by the standards and guidelines. This may shorten recovery time for degraded areas and hasten the achievement of improving trends relative to Alternative 2. To the degree this occurs, it would intrinsically improve the habitat around any known or potential Spalding's catchfly to a greater degree than Alternative 2.

Alternative 3 Modified also assumes that at any time, tribal assertion of treaty rights may occur, and areas previously grazed by cattle would be grazed by horses. A conversion of numbers (roughly 1 horse for every two cows) would occur, and utilization standards would be the same as for current cattle grazing. While the preference for Spalding's catchfly by horses is not known, the plant's sticky glandular qualities are dissimilar from forage normally preferred by horses. Therefore, it is likely that so long as range conditions are maintained over time, the impact of horses on Spalding's catchfly would be similar to that of cattle as previously described.

Due to the risk to Spalding's catchfly that would continue to exist; a determination of May Affect, Likely to Adversely Affect is warranted for this alternative; however, the level of risk to yet undiscovered occurrences would be reduced within 3 years. At this point inventories would either be completed or the model used to predict the risk areas would be verified to the point that further inventory would not be necessary.

Because all of the potential habitat for **Spalding's catchfly** has not been surveyed, it is prescribed that additional terrain, identified here as risk areas, (at risk of being impacted by range management activities) be inventoried to further our knowledge of the species, its habitat affinities and our analysis assumptions, to minimize the time that undiscovered occurrences may be at risk and to reduce the uncertainty in quantifying effects to Spalding's catchfly.

Consultation with the US Fish and Wildlife Service on this determination of effect has been initiated. A Biological Assessment (refer to the analysis file) was prepared, with the final document submitted on July 25, 2005. All steps of the consultation process have been consistent with Section 7 of the Endangered Species Act. A Biological Opinion from the US

Fish and Wildlife Service is pending. Any decision to proceed with implementing the JCRA would not be made until the Biological Opinion is received.

Cumulative Effects - The contribution of past, present, and foreseeable future actions to cumulative effects (refer to Table 14) would be the same as those described for Alternative 2. However, the overlap of those effects with respect to timing and location would integrate differently for Alternative 3 Modified Alternative 3 Modified provides a greater level of protection for currently undiscovered Spalding's catchfly populations by completing inventories on up to 7630 more acres of risk areas than does Alternative 2. Within 3 years, the influence of livestock grazing on Spalding's catchfly subsistence and reproduction would be greatly reduced because any found occurrences would be protected with the same measures prescribed for the currently known populations on Fire Ridge and Tommy's Ridge. The cumulative effects of Alternative 3 Modified along with past, present, and foreseeable future actions would be considerably less than Alternative 2 because of the diminished effect contributed by Alternative 3 Modified.

Alternative 4 – Threatened or Endangered Species

Alternative 4 is patterned on Alternative 2, though it departs from Alternative 2 with respect to the management regime in the Wild and Scenic River corridor and along some fish bearing streams. Relative to Spalding's Catchfly Alternative 4 adopts the additional protective actions proposed in Alternative 3 Modified. Thus in general the effects of Alternative 4 to Spalding's Catchfly would be equivalent to that described above.

Alternative 4 differs from Alternative 3 Modified in two action elements with respect to Spalding's Catchfly. Alternative 4 eliminates all spring use of the North Crow, South Crow and Doe Gulch pastures. This would inherently provide an additional level of protection from potential trampling impacts over that proposed in Alternative 2 or 3 Modified. This regime would also reduce the pressure of herbivory to the habitat surrounding the Spalding's Catchfly sites and so could increase the competitive potential of the native vegetation surrounding the sites. This in turn would reduce Spalding's Catchfly's vulnerability to impacts from weedy vegetation and indirect herbivory from wildlife later in the growing season. However the degree of these benefits is not quantifiable.

As with Alternative 2, Alternative 4 does not propose spring grazing in the Catchfly pasture of the Swamp Creek allotment. In this situation Alternative 4 poses less of a risk of trampling to Spalding's Catchfly in this pasture than does Alternative 3 Modified. The effects to occupied Spalding's Catchfly habitat from not grazing in the spring would be the same as discussed above under Alternative 2. As was stated above the difference in these impact levels is likely small due to the number of animals and season of use proposed in Alternative 3 Modified.

Alternative 4 proposes to minimize livestock use of the Wild and Scenic River (WSR) portion of the Joseph Canyon by eliminating summer and fall use of those areas. This action would provide protection from herbivory and trampling to undiscovered patches of Spalding Catchfly possibly residing in potential habitat found within those areas. This protection would begin functioning upon implementation of the Annual Operating plans

derived from the selection of this alternative. In these areas, this would lessen the time that the potential Spalding's Catchfly patches might be at risk as compared to the Alternative 3 or 2. Both Alternative 3-Modified and Alternative 4 propose inventory work in potential habitat most at risk (identified in this analysis as Risk Areas) over a 3-year period but do not intend to inventory all of the potential habitat falling within the WSR corridor. The amount of risk area that would warrant inventory work could be reduced as well, although the amount of terrain identified in the risk areas that overlaps with the WSR terrain is small.

Given the effects analysis and determination provided by the Alternative 2 and 3 Modified discussion, and given, that overall, there is only a small net gain in protection to Spalding's Catchfly from Alternative 4 as compared to Alternative 3 modified, the effects determination for Alternative 4 is concluded to be May Affect, Likely To Adversely Affect

Issue 4 – Spalding's Catchfly

Key Issue - Authorizing livestock grazing within the Tommy's Ridge and Fire Ridge areas as proposed may or may not adequately protect a Threatened plant, Spalding's catchfly, from livestock trampling and habitat alteration. It may or may not adequately protect unknown Spalding's catchfly occurrences in uninventoried portions of the analysis area.

Table 21 - Comparison of Issue 4 Indicators by Alternative

Indicator	Alternative 1	Alternative 2	Alternative 3 Modified	Alterantive 4
Uninventoried Spalding's catchfly risk areas subjected to livestock grazing impacts after 3 years	0	7630	0 to 4740	0 to 4740
Acres of additional risk areas that would be inventoried for the presence of Spalding's catchfly within 3 years	0	0	2890 to 7630	2890 to 7630

As shown above, Alternative 1 resolves the Spalding's catchfly issue because no livestock grazing would be authorized, and none of the known occurrences or the potential occurrences in risk areas would be susceptible to livestock related herbivory or trampling. Further inventory, therefore, would be a moot point for the purposes of reducing livestock related impacts. Alternative 2 relies on the 2004 inventory of 3032 acres of risk areas, but does not include provisions for future inventory and protection of located occurrences of Spalding's catchfly. This approach leaves these potential occurrences at risk. Alternatives 3 Modified and 4 initiate the inventory of at least 2,890 acres of risk areas. Based on an evaluation of the results from that inventory, a decision on whether to proceed with the inventory would be made. Potentially, an additional 7,630 acres of risk area would be inventoried. Found occurrences would be protected.

Existing Conditions – Sensitive Species

A review was conducted to determine if there are any *known* rare plant populations or habitat within the Joseph Canyon Rangeland Analysis Area or any *potential habitat*. The

Regional Forester's Sensitive Species List for Region 6 (1999) and the USFWS list referenced above were used. The Wallowa Mountain Zone records (Department Files, zone GIS system, and literature), and rare plant occurrence database were consulted. This review showed known occurrences of 4 species and potential habitat for an additional 13 species. Refer to the Biological Evaluation for plants contained in the analysis file for further information on sensitive species and the effects of grazing on these species.

Table 22 – Known or Potential Sensitive Species in the JCRAA

Plant Species	Allotments and Pastures Where Documented in JCRAA	Coarse Habitat Type [1]
Wallowa Mountain Ricegrass *Achnatherum wallowaensis*	Swamp Creek Allotment – Miller Spring, Little Elk, and Elk Creek Pastures Cougar Creek Allotment – Sumac, Breeding Pasture, Boner, and Hinton Corner Pastures Davis Creek Allotment – Elk Creek Pasture	L, G
Snake River Daisy *Erigeron disparipilus*	Hunting Camp Allotment – Kirkland, Holding, and Tamarack Pastures	L, G, RCB
Engelmann's Daisy *Erigeron engelmanni var. davisii*		L, G, RCB
Hazel's Prickly Phlox *Leptodactylon pungens ssp. hazeliae*	Table Mountain – Joseph Breaks Pasture	G, RCB
Crenulate Leaved Moonwort *Botrychium crenulatum*	None	F, R, MWM
Lance-Leaved Moonwort *Botrychium lanceolatum*	None	F, R, MWM
Common Moonwort *Botrychium lunaria*	None	F, R, MWM
Mingan Moonwort *Botrychium minganense*	None	R, MWM
Lewiston Mariposa Lily *Calochortus macrocarpus var. maculosus*	None	G, MWM
Back's Sedge *Carex backii*	None	CF, R
Porcupine Sedge *Carex hystericina*	None	MWM, R
Needleleaf Sedge *Carex stenophylla*	None	G, MWM
Clustered Lady Slipper *Cypripedium fasciculatum*	None	CF, R
Bank Monkey Flower *Mimulus clivicola*	None	L,G,MWM
Membrane-Leaved Monkey Flower *Mimulus hymenophyllus*	None	R, RCB
Least Phacelia *Phacelia minutissima*	None	L, MWM, G

[1.] Habitat: A=Alpine; CF = Coniferous Forest; G = Grassland; L = Lithosol; MWM = Moist and Wet Meadows; R = Riparian Areas; RCB = Rock Outcrops, Cliffs, and Bluffs.

Wallowa Mountain Ricegrass is a small perennial bunchgrass found from 3,400 to 5,400 feet in elevation. It occurs on shallow lithosolic substrates (or welded tuffs) in open, often "scabby" habitat within a broader matrix of ponderosa pine and bunchgrass stands. It prefers gentle slopes or level ground with soils containing high levels of weathered (often

redish-orange) basalt gravel and rock. In Wallowa County, Oregon, this species is known from the vicinity of a place called Clear Lake Ridge, upper and lower Joseph watersheds, and on private land near Lostine. There are 13 known occurrences with 16 sites of Wallowa Mountain Ricegrass in the JCRAA. A draft Species Management Guide for this Ricegrass on the Wallowa-Whitman National Forest identified 5 occurrences that should receive specific attention to be managed to maintain the long-term viability of these populations as a whole, and 3 of these occurrences are within the JCRAA.

Two species are considered under the title of Engelmann's Daisy. Elsewhere across their range *Erigeron disparipilus* (Snake River Daisy – Owyhee Idaho to southeast Washington) and *Erigeron englamanii* var *davisii* (western Idaho to Wallowa Co.) are apparently distinct species, but in Wallowa County, they grow in the same areas and intergrade such that they cannot be differentiated. Both are uncommon and on the Region 6 Sensitive species list. This (these) small perennial species is known from the northeastern end of Wallowa County from both the Wallowa Valley Ranger District and the Hells Canyon National Recreation Area. It is found on dry stony ground and shallow soiled lithosolic sites, open slopes with sparse bunchgrass, scattered pine, and rimrocks, usually from 1000 to 5,500 ft in elevation. Seven known occurrences of this species are within the JCRAA.

Hazel's Prickly Phlox is a species with a wide range throughout the west. However its subspecies hazelii is unique to the Snake River canyon and feeder canyons of Idaho and Oregon. This long-lived perennial, somewhat woody species, is found on basalt cliffs, talus-covered slopes, and steep slopes with sparse bunchgrass between 975 feet and 2,000 feet in elevation. It is reported with Sandberg's bluegrass, bluebunch wheatgrass, antelope bitterbrush, netleaf hackberry, and rabbitbrush. The white flowers on this plant support evening pollinators such as nocturnal moths, although it also blooms during the day. Seedling establishment is noted as very uncommon and has not been observed at any of the known occurrences. It is currently known from Hells Canyon Dam and the Snake River Canyon to Joseph Canyon. There is one known occurrence of this species within the JCRAA.

The remaining species listed in Table 22 are not known to occur within the JCRAA, but the potential exists for these species to occur. Refer to the Biological Assessment/Evaluation for specific information on the habitats associated with these species.

Alternative 1 – Sensitive Species

Under this alternative there would be no direct effects to the known or un-located Wallowa Mountain ricegrass, Hazel's Prickly Phlox, and Engelmann's Daisy and their potential habitat from livestock and its management. Other ongoing activities would continue as at present.

Upland range vegetation and soils currently in unsatisfactory condition would be expected to improve as domestic livestock grazing is removed from the area. Rate of improvement may accelerate on sites such as in the Crow Creek Pasture of the Crow Creek allotment as more plant material would be left on site rather than being consumed, and soils would be less compacted or displaced by livestock. Discontinuing grazing is not expected to lead to

rapid improvement or much improvement on range sites that have been converted to annual sites due to homesteading/grazing activities. However, some level of improvement would be expected over a ten-year period.

Many aspects of potential indirect effects would also lessen. Overall there would be less herbivore pressure on the grassland habitats of this species. There maybe better wildlife dispersal and less fence-line trailing and areas of concentrated ground disturbance with the removal of livestock fences. In the short term there would be little change in species composition and thus competitive interactions as recovery is often slow in this arid environment. With less herbivore pressure, over the long term the rangeland would tend toward a composition of species being more palatable, and this could include plants like Wallowa Ricegrass, and Engelmann's Daisy. The rate of change is expected to be slightly faster with no livestock grazing than with improved grazing management (under the action alternatives), but the rate of change and the extent of change as that affects Wallowa Mountain ricegrass, Hazel's Prickly Phlox, and Engelmann's Daisy cannot be quantified.

Under the no-grazing alternative, the permittees and permit administrators would play significantly decreased role in the detection and management of noxious weeds thus increasing the chances that new weed populations could become well established prior to detection. Treatment of known sites could continue, although at a potentially reduces level as budgets for this work correspondingly drop with the elimination of range management. Forest Service funds derived from grazing fees would not be available for noxious weed treatment. However, any role (seed vectors or ground disturbance) played in the spread of noxious weeds by livestock in the project area would cease.

Potential weed spread from other vectors (wildlife, human activities, wind) would continue. Thus overall the chances of noxious weeds directly, indirectly or cumulative affecting known or potential Wallowa Mountain ricegrass, Hazel's Prickly Phlox, and Engelmann's Daisy populations or potential habitat might be slightly less than or equal to the action alternatives, but this cannot be quantified.

Livestock management would no longer contribute toward cumulative effects.

Alternative 2 - Sensitive Species

Wallowa Mountain Ricegrass Direct/Indirect Effects - This species grows on harsh sites – often on very skeletal basaltic scabby areas characterized by small reddish basalt gravel over shallow basalt soils. Ricegrass habitat is not as productive as other grassland habitat types and was often used as salting locations or road locations. These salt-lick sites receive enough livestock and wildlife visitation that vegetation is denuded in a circle of about 50 feet around each. No known sites are currently known to be impacted by salting, but these impacts were noted when this species was first being discovered on the District (early 1990s), and salting changes were made.

Wallowa Mountain ricegrass habitat is usually not as desirable as forage as the more productive bluebunch wheatgrass grasses surrounding these sites. Thus livestock do not spend as much time or energy grazing in these habitats as in the adjacent bluebunch

wheatgrass stands. Sometimes trailing impacts are observed through Wallowa Mountain ricegrass patches as cattle travel to better grasslands or water/salt sources. Wallowa Mountain ricegrass is as palatable and provides about as much forage as Sandberg's bluegrass and so it is occasionally grazed. Late-season grazing would not affect this species as it will be dry and dormant by then. It is most susceptible to grazing early in the spring as it develops leaves and flowers earlier than adjacent bluebunch wheatgrass. This early green-up and leaf palatability make it susceptible to herbivory, though it does not provide as much biomass as other more desirable grasses and so is not often specifically selected for. Allotment and pastures with Spring grazing are listed in Chapter 2. Maze & Robson (1996) noted where the soil was especially thin and cattle grazing evidence was present, the Wallowa Mountain ricegrass plants tended to be smaller overall than was typical for the species. They speculated that microsite conditions and impacts from grazing were causing this smaller size. Although impacts from grazing are occasionally noted, extensive damage has not been noted during site visits to the majority of Wallowa Mountain ricegrass patches. Patches that receive very little use by cattle, either because they are in a pasture grazed later in the season or are in a part of the pasture not frequented by the herd, see very few grazing impacts. One livestock exclosure still remains from a 15-year old effort to observe grazing effects to this species. This exclosure is in a pasture grazed in the summer. While the exclosure was very small and may not have provided a true representation of differences between grazed and ungrazed occurrences for this species, it did show that only subtle visual differences could be observed between the exclosure and surrounding Wallowa Mountain ricegrass habitat. However, sometimes grazing timing, forage and water availability, or proximity to shade entice cattle through a Ricegrass site.

Four of twelve sites have incurred some level of herbivory and trampling as shown in Table 23.

Table 23 – Identified Grazing Impacts to Wallowa Mountain Ricegrass

GIS #	Pop. #	Pasture	Allotment	Comments
0506	200	Sumac	Cougar Creek	(95*) Cattle Trailing impacts
0502	1,000	Boner	Cougar Creek	(90*) extensive cattle trailing, (02) less signs of cattle trailing
0258	1,000	Elk Crk.	Davis Creek	(91*) Grazing evidence
1040	150	Little Elk Crk.	Swamp Creek	(91*) Degrading site, actively grazed

Quantifying direct impacts at these sites is difficult. There is no trend monitoring at these sites to indicate whether they are increasing or declining. The number of individuals impacted at each site has not been consistently determined. However, two of the populations are quite small, making them increasing vulnerable to problems related to genetic drift or stochastic events with a loss of individuals. The minimum viable number of individuals needed to perpetuate a given site, or a suite of sites in a population has not been determined. The consistency and duration of the reported impacts has not been determined. Maze & Robson (1996) noted that in most of the populations studied, seedlings were very rarely detected. Thus it would appear that this fairly long-lived perennial grass

species rarely reproduces by seed. This would make it vulnerable to physical or competitive disturbances and slow to recover from them.

It does not appear that these sites have been impacted to the degree that they have been extirpated. On the other hand this Ricegrass is a Wallowa County endemic with a very limited range and a limited number of known occurrences. For populations that are small or vulnerable, each individual may be important for short and long-term viability. Intrinsically, impacted sites might be at risk of not being able to contribute sufficiently to the viability of the species. There is no conservation strategy that designates the number of occurrences or individuals that need to be protected to be reasonably assured that the species will be able to perpetuate under a given management regime. Regardless, the mitigation measures employed by this plan will minimize potential impacts in the future.

Wallowa Mountain Ricegrass Cumulative Effects - The most likely potential indirect effect to Wallowa Mountain ricegrass would be from changes in grassland species composition associated with livestock use or other disturbances (refer to Table 14). Noxious weed invasion is a constant background threat, though no Wallowa Mountain ricegrass sites are currently known to have adjacent noxious weed sites. Its habitat is actually more prone to invasion by annual weedy grasses (and forbs) such as ventinata and cheatgrass. Where the range is in improving or good condition overall, there will still be isolated pockets of disturbed ground from livestock herds. This ground disturbance facilitates the spread of these competing annuals, which can move onto Wallowa Mountain ricegrass sites. Though a relative threat, it cannot be quantified at this time. Other potential threats to Wallowa Mountain ricegrass may result from this and other ongoing actions in areas where undiscovered populations may exist.

The Joseph watershed has historically experienced grazing at various levels by deer and elk, followed by cattle, sheep, and horses. Nez Perce Indians grazed thousands of horses as early as the 1730s. (Upper Joseph Community Watershed Assessment report 2003) In the latter half of the 19th century, Euro-American settlers began grazing livestock. During this time, millions of sheep and thousands of cattle ranged as long as weather, water, and forage conditions permitted, and much of the accessible range was severely damaged by overgrazing. Heavy impacts began to lessen in the early 1900s when the Forest Service began to regulate numbers of livestock use. Sheep and cattle permits peaked in the 1920s. Due to a lack of historical reference conditions, it is not possible to determine whether grazing has eliminated (or enhanced) patches of Wallowa Mountain ricegrass in the JCRAA. However, it is highly likely that cattle, horse, and sheep grazing have historically caused some impacts to the species, and its habitat. It is possible that any decline in Wallowa Mountain ricegrass populations resulting from Native American or homesteader grazing practices could have slowed in the middle or end of the last century. Improvements in range management since that time could have helped Wallowa Mountain ricegrass persist in the sites known today, although there is no specific trend monitoring at any known sites to indicate population growth or decline. Nor are there any studies that directly tie Wallowa Mountain ricegrass occurrence vigor to standards and guidelines for managing other grassland species. It is also possible that Wallowa Mountain ricegrass was able to colonize some grassland habitats that were converted to a more harsh site by heavy historical grazing as it would have been more competitive on those sites after cessation of the intensive grazing regimes. However the extent of this scenario cannot be quantified.

Noxious weed management projects are planned and analyzed on a site-specific basis and would account for any known Wallowa Mountain ricegrass occurrences in the design of the project. Known weed sites are currently being controlled and pose only a small threat to Wallowa Mountain ricegrass, thus their contribution to cumulative effects would be negligible. The threat of new sites becoming established is still present. Thus it is highly probable that future noxious weed invasion may contribute toward cumulative effects to Wallowa Mountain ricegrass in the future but the degree of this threat is not highly predictable.

Wallowa Mountain ricegrass habitat is not impacted by timber harvest, though associated road and landing construction activities often were placed through its terrain. Contemporary planning procedures ensure that all aspects of vegetation management projects are designed to avoid these kinds of impacts. Thus they are no longer contributing to potential cumulative effects to this species.

Where this species often occurs, surrounding fuel levels are low. The interaction between it, wildfire or prescribed fire, is minimal because this perennial plant is not likely to be adversely affected by the low-intensity fire that would be sustained where fuel levels are so low. Fuels reduction projects such as the Hungry Bob, Wapiti, Bugcheck, Lone Dog, Baldwin, and Fire Ridge Vegetation Management are foreseeable future actions that include both spring and fall underburning components. It is not likely these plants would burn during spring burns and they would be dormant during fall burns. Fire-line construction would be the only potential threat. Line construction would dislodge and kill plants and disturb habitat. Line construction for prescribed fire can be designed and installed to avoid Wallowa Mountain ricegrass site impacts. Line construction during wildfire events is more difficult to direct. The threat of line construction for wildfire suppression is difficult to quantify. It is desirable to put line through areas of low fuel loading and sparse grasslands make good fuel breaks. Only through good resource advising and District data availability can this threat be mitigated during the development (and subsequent deployment) of the Wildfire Situation Analysis.

Most of the known Wallowa Mountain ricegrass sites in the JCRAA are on gentle hillsides or ridge tops. This kind of terrain is susceptible to off-route travel of Off-Highway Vehicle (OHV) use. These vehicles disrupt plants and soil where they travel often leading to the mortality of individual plants in their tails. Off-route travel is not currently prohibited (with the exception of specific hunting season closures), and is documented to be on the increase across the Wallowa Valley Ranger District. The potential for OHVs to impact Wallowa Mountain ricegrass sites is larger in pastures with roads bisecting numerous parts. These impacts are being noticed at Wallowa Mountain ricegrass sites in the Hunting Camp Allotment. Noxious weeds can be transported along OHV trails just as easily as vehicular roads. Thus off-road motorized recreation could be contributing to cumulative effects to this species, but the contribution is not currently quantifiable. That is, the number of Wallowa Mountain ricegrass plants or the acres of Wallowa Mountain ricegrass habitat that is being lost to ORV impacts is not yet completely determined.

There are no official trails in known Wallowa Mountain ricegrass populations so trail maintenance and trail use would not contribute to cumulative effects. There is one developed campgrounds in the JCRAA and surveys have not located Wallowa Mountain

ricegrass at that site. Therefore, developed camping has no measurable cumulative effect to the species, other than facilitating visits by recreationists that might then travel through Wallowa Mountain ricegrass sites. Wallowa Mountain ricegrass habitat tends not to be desirable dispersed camping areas, so it is unlikely this activity is contributing to cumulative effects any more than developed sites.

The potential for cumulative effects from Tribal and County activates would be the same as described for Spalding's catchfly discussed above.

Because inventories in all potential habitat for Wallowa Mountain ricegrass have not been completed, undiscovered populations of these species could exist in the analysis area and Alternate 2 could have direct (plant damage) and indirect (habitat alterations) effects to this species. The threat of grazing or trampling Wallowa Mountain ricegrass plants or parts in undiscovered populations could impact the viability of the plants and the occurrence. Therefore the loss of any individual to a small isolated patch would increase the risk of potential inbreeding depression. Also, the potential undiscovered patches could contain valuable adaptive traits not necessarily found in other populations evolving in the county. Although some potential exists for direct effects, the continuation of these effects would not occur throughout the JCRAA. The 3032 acres of botanical inventories completed in Summer 2004 and designed to inventory Spalding's catchfly sites (see the Spalding's catchfly section) also included areas of potential habitat for other Forest Service Sensitive species including Wallowa Mountain ricegrass. Through this effort, additional Wallowa Mountain ricegrass potential habitat was surveyed. The results of this inventory work helped limit the risk and intensity of the potential effects.

Potential threats and impacts to Wallowa Mountain ricegrass have been identified here. Without a better way of quantifying these impacts it is difficult to identify enough cumulative effects to rise to the level of certain adverse effects. Also, the 3032 acres of additional survey (which discovered no new occurrences), coupled with the ability to address impacts through the Annual Operating Instructions if occurrences are found in the future should be adequate to minimize adverse cumulative effect. Thus this evaluation determined that Alternative 2 May Impact Individuals or habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to populations or species of Wallowa Mountain ricegrass.

Hazel's Prickly Phlox Direct/ Indirect Effects - The Hunting Camp potential Research Natural Area has reported but undocumented occurrences of this species. It is also known from the Wilder Pasture of the Table Mountain Allotment. This species is edible, but not palatable due to its unpleasant (extremely prickly) texture. Herbivory has almost never been observed on this species in the JCRAA. It is a woody species that grows in harsh sites within steep rocky terrain which is rarely used by grazing livestock. Thus the potential for trampling impacts is very small and isolated to stock drive-ways that might intersect un-surveyed Prickly Phlox habitat. Because inventories in all potential habitat for Hazel's Prickly Phlox have not been completed, undiscovered populations of these species could exist in the analysis area.

Hazel's Prickly Phlox Cumulative Effects - This species is somewhat susceptible to fire because of its above ground woody nature, abundant fine leaves and poor budding ability, but most of

the habitat and occurrences are situated in low fuel terrain. Prescribed fire would be unlikely to impact this species because of design criteria avoiding impacts. Wildfire suppression could impact this species with line construction. Good resource advising during the formation and implementation of the Wildfire Situation Analyses might minimize this threat. The greatest potential for impact to this species would be noxious weed invasion and where water developments, salting, or containment of livestock would concentrate the potential for mechanical damage from livestock. Because of its habitat and growth form it would not receive cumulative effects from logging, OHVs, recreational activities, or contemporary road-work. It is not known from any private land within the JCRAA. The potential for cumulative effects from Tribal and County activates would be the same as described for Spalding's catchfly discussed above. Because of these factors and the following mitigation measures, this evaluation determined that Alternative 2 May Impact Individuals or habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to populations or species of Hazel's Prickly Phlox.

Engelmann's Daisy Direct/Indirect Effects - This species is potentially more numerous than is currently known, judging by the available occurrence information. It is a grassland habitat generalist within a very restricted range, from approximately the breaks of the lower Grande Ronde River to the adjacent portions of the Snake River, including canyon tributaries. It is Sensitive in Oregon because of its very restricted range and because it has seldom been documented and collected. Also, its response to grazing has been unclear, and there have been taxonomic confusion between reports of *Erigeron Engelmanni* var. *davisii* and *E. disparipilus* (also listed as Sensitive).

Table 24 depicts a summary of the known occurrences and their condition. There are 10 occurrences (19 patches) of this species within the JCRAA. These occurrences are found in terrain currently encompassed by the Holding, Kirkland, and Tamarack Pastures of the Hunting Camp Allotment, and the Horse-Pasture Ridge of the Table Mountain Allotment.

Table 24 - Engelmann's Daisy and Noted Livestock Impacts Within JCRAA

GIS #	Pop #	Pasture	Allotment	Comments
007	0243	Kirkland	Hunting Camp	No impacts noted
008	0244	Kirkland	Hunting Camp	(00*) Cattle trampling
004	0247, 0249	(247)=Holding Pasture, (249)-Kirkland	Hunting Camp	(91*) extensive trampling, off-road travel threats, road reconstruction threats
003	0248	Tamarack and Kirkland	Hunting Camp	No impacts noted
005	0250-0254	Tamarack	Hunting Camp	(91*) Extensively grazed
Nr	2082, 0249, 2094	Tamarack	Hunting Camp	No impacts noted
006	0240	Tamarack	Hunting Camp	No impacts noted
Nr	1354	Kirkland	Hunting Camp	No impacts noted
Nr	0247, 2089,	Holding	Hunting Camp	No impacts noted

GIS #	Pop #	Pasture	Allotment	Comments
	2090, 2087			
Nr	2093, 2091 2092,	Horse Pasture Ridge	Table Mountain	No impacts noted

nr = not recorded
Comment (yr*) = year of the last observation

Engelmann's Daisy grows within a matrix of bluebunch wheatgrass habitat, but on somewhat more open, rocky or thinly soiled sites within these areas. Grazing of this plant within the analysis area has been noted at some sites and is likely attributed to both cows and wildlife. Observations indicated that it does not appear that ungulates select this species unless the timing and forage conditions are such that the cattle are being encouraged to utilize this species. Other members of this genus are seldom grazed. The potential for herbivory may increase in areas where the range condition is poor, or the season of use is later in the summer when the grasses are dryer than the daisy, such that Engelmann's daisy becomes more desirable as a forage species relative to the surrounding vegetation.

Engelmann's daisy is a prolific seed producer and most seeds have a small bristly papus that helps aid in wind or animal dispersion. Thus they are often able to respond well to disturbances such as wildfire or grazing. The greatest potential for impact to this species would be where water developments, salting, or containment of livestock concentrate use on known occurrences.

The greatest potential for impact to this species would be noxious weed invasion and where water developments, salting, or containment of livestock would concentrate the potential for mechanical damage from livestock. The greatest potential for noxious weed invasions comes from terrain to the north of the Forest and JCRAA boundary. Treatment of known noxious weed sites within the JCRAA has been effective (according to weed site monitoring reports) and has avoided known Engelmann's daisy occurrences.

Engelmann's Daisy Cumulative Effects - Cumulative effects to this species from prescribed fire or wildfire would be minimal as its critical growth period is late spring to early summer. Also this species is a perennial and tends to re-sprout after fire as fire generally burns very light in the low fuel condition of its habitat. The interaction of fire and grazing for this species has not been documented. Potential effects may be reduced in that grazing after prescribed burning is evaluated to determine if deferment of grazing for one growing season is needed. Because wildfires tend to burn at a higher intensity than prescribed fire, grazing after wildfire is usually deferred for two growing seasons. Wildfire suppression could impact this species with line construction. Good resource advising during the formation and implementation of the Wildfire Situation Analyses might minimize this threat.

Because of its habitat and growth form it would not receive cumulative effects from logging. Road (and very little trail) building has occurred in its habitat historically but new construction projects are planned to avoid impacts to Engelmann's daisy occurrences. Road and trail maintenance is confined to existing route prisms and would not contribute to cumulative effects.

Some of its habitat is potentially being impacted by off road recreational vehicles and this is contributing to cumulative effects to this species. Most of the known Engelmann's daisy sites in the JCRAA are on hillsides or ridge tops. This kind of terrain is susceptible to OHV use. These vehicles disrupt plants and soil where they travel, often leading to the mortality of individual plants in their tails. Off-route travel is not currently prohibited within the JCRAA (with the exception of specific hunting season closures). Observations of an increase in OHV use have been reported by the public, Wallowa Valley Ranger District employees, and ODFW biologists. The potential for OHVs to impact Engelmann's daisy sites is larger in pastures with roads bisecting numerous parts. These impacts are being noticed at Engelmann's daisy sites in the Hunting Camp Allotment. Noxious weeds can be transported along OHV trails just as easily as vehicular roads. If finalized into regulations, the recent draft National OHV Policy may influence OHV travel by instructing districts to designate open routes for OHVs and eliminating all other off-road travel. Off-road motorized recreation could be contributing to cumulative effects to this species, but the contribution is not currently quantifiable and is subject to change from upcoming policy changes. That is, the number of Engelmann's daisy plants or the acres of Engelmann's Daisy habitat that is being lost to ORV impacts is not known. Most other recreational activities rarely intersect Engelmann's daisy sites or habitat.

The potential for cumulative effects from Tribal and County activities would be the same as described for Wallowa Mountain ricegrass discussed above.

As previously described, all potential habitat has not been inventoried, but the 3032 acres of inventory scheduled for Spalding's catchfly habitat also included areas of potential habitat for this Sensitive species, and none were found.

Potential threats and impacts to Engelmann's daisy have been identified here. Without a better way of quantifying these impacts, it is difficult to identify enough cumulative effects to rise to the level of certain adverse effects. Also, completion of the 3032 acres of additional survey (resulting in no new occurrences), coupled with the ability to address impacts through the Annual Operating Instructions if new occurrences were found should be adequate to minimize adverse cumulative effect. Thus this evaluation determined that Alternative 2 May Impact Individuals or habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to populations or species of Engelmann's daisy.

Sensitive Species Potential Habitat - The following section describes direct, indirect, and cumulative effects on sensitive species having potential to occur in the JCRAA, but for which no occurrences of the species are known. This analysis assumes that although none of the species have been located after inventorying approximately 30 percent of the analysis area, these species could occur in the uninventoried portions of the JCRAA. Due to lack of better information, the analysis assumes that the plants could occur in their potential habitat and identifies the effects that could be occurring to these species.

Membrane-leaved monkey flower habitat is narrowly restricted to seepy cliffs and very steep slopes with small seeps. As such, there is little potential for livestock to directly affect this species as they seldom spend time on very steep slopes, and they cannot rock climb onto the cliffs. Indirectly, upland water developments and habitat conditions

(vegetative cover and composition as well as the degree of roading and compacted cattle trails) influencing landscape hydrology could influence the viability of membrane leaved monkey flower sites by disrupting their source of water, but this effect is likely small and it is not quantifiable. Other ongoing actions are not likely to intersect this species because of where it grows. Because of these factors, it is unlikely that there would be measurable effects (direct or cumulative) to this species from implementing either action alternative.

Of all the moonwort species that are Sensitive in Region 6, the following are potentially the most likely to be discovered within the JCRAA: **crenulate-leaved moonwort, lance-leaved moonwort, common moonwort, and Mingan moonwort**. These species inhabit small openings in mesic forest or meadow environments, including riparian areas and seeps. **Porcupine sedge** inhabits wet meadow, swamp, and riparian environments and will be discussed in this group as well. These areas historically and contemporarily receive a disproportionate amount of direct and indirect effects from livestock grazing (herbivory and trampling). Cattle seek mesic forest stands for shade and forage. Livestock seek riparian areas for forage, water, and a cooler climate in the summer. Thus they will tend to spend more time and energy in riparian areas than upland habitats. This attention to riparian areas can lead to direct effects (herbivory and trampling) and indirect effects (changes in species composition, competitive interactions, and hydrologic functions).

Many upland seeps have been converted to ponds or developed springs and troughs. Historically, this kind of site conversion likely directly impacted some number of these species and their habitat. Some seeps and springs remain undeveloped or unrecorded, however those in capable range areas are often impacted. Many riparian areas within the JCRAA have been altered by removal of beaver and the resultant changes in hydrology. There are also riparian areas where species composition has degraded resulting from historic overgrazing, homesteading, and logging practices. These factors likely have contributed to the cumulative impacts to these species over time. Parts of Swamp Creek, Elk Creek, Sumac Creek, and Peavine Creek exhibit these conditions and likely are low potential habitat for these species. However, portions of these same stream reaches are in a restoration phase, including exclosures or strict control on livestock access. In more remote areas, in relatively higher elevations such as in the north and northwest part of the JCRAA, many drainages still retain segments that do provide potential habitat for these species. These areas are within active grazing allotments.

Riparian habitats also have the greatest potential to recover the most quickly. Improving range and natural resource management over the last 3 decades may have allowed many of these species to persist in patchy pieces of refugia. Porcupine sedge is a prolific seed producer and the moonworts reproduce by spores, so they could be hanging on at some level across the landscape or responding to shifts and pulses in the disturbance regime imparted by livestock management.

Contemporary utilization standards have likely helped improve conditions for some of these species to some degree. There is no study directly linking stubble height levels or percent utilization levels established for graminoid health to some level of health and vigor of the rare plants being discussed here. Stubble height monitoring is simply a trigger mechanism designed to indicate when to move the livestock to a different area, it is not an ecological measurement. Stubble height recordings from key areas and other areas are also an average of the conditions in the pasture. It does not mean that there is that level of

uniform utilization across the pasture – there will be areas with more and less utilization.

Timber management actions have had site-specific surveys and analysis and/or have buffered riparian areas, thus reducing their contribution to potential cumulative effects. The same could be said for prescribed fire activities. Most of the riparian areas within the JCRAA have reacted as much to historic fire suppression (from active suppression efforts and livestock fuel modifications) as from the wildfire events themselves. A contribution to potential cumulative effects from wildfire can not be calculated.

Traditional recreation activities generally have little interaction with riparian areas. Except for Swamp Creek, there are few trails in the riparian area. Trail maintenance is restricted to the current trail prism. No new trails are expected to be built in any foreseeable future. OHV use is increasing and many of the new user created routes bisect riparian areas, thus potentially causing cumulative impacts to this habitat and species. The degree of impact is not currently known.

Noxious weed invasion poses a threat of cumulative effects similar to that previously discussed for other sensitive species.

Because not all potential habitat for these species has been inventoried, undiscovered populations of these species could exist in the analysis area, and the action alternatives could have direct (plant damage) and indirect (habitat alterations) effects to this species. The threat of grazing or trampling plants or parts in undiscovered populations could impact the viability of the plants and their occurrences. Therefore, the loss of any individual to a small isolated patch would increase the risk of potential inbreeding depression. Also, the potential undiscovered patches could contain valuable adaptive traits not necessarily found in other populations evolving in the county. Although some potential exists for direct effects, the continuation of these effects would not occur throughout the JCRAA. The 3032 acres of botanical inventories proposed and designed to inventory Spalding's catchfly sites also included areas of potential habitat for other Forest Service Sensitive species including those being discussed here. Through this effort, additional Sensitive plant habitat was surveyed and found not to occur within those areas. The results of this inventory work helped limit the risk and intensity of the potential effects. Protective measures would be determined on a site specific basis and implemented as needed through the Annual Operating Plans if additional occurrences were found. Thus the potential for effects, direct, indirect, or cumulative should be reduced.

Bank monkey flower and least phacelia are attractive yet diminutive annuals that inhabit small microsites in grassland and sometimes meadow terrain. Often these gravely, sandy or silty sites contain some ephemeral moisture but not to the degree that they would constitute a seep or riparian area. This ephemeral moisture makes them more vulnerable to spring grazing than summer or later. These sites stay green longer and the moist soil is easily displaced by hoof action. Most known sites of these species are small and widely scattered across the landscape.

They flower early to mid spring, though individual sites may vary widely in their phonologic expression in a given year. Patch sizes are usually not very large. Little is known about the biology of these species, especially its seed bank ecology. As annuals, it is not uncommon for some patches to "disappear" for a number of seasons, only to return

when annual climatic conditions align such that they favor seed germination. These species are too small and unapparent to be available as forage species, and cattle do not seem to choose to eat them (though historically sheep could have had some level of impact). Because of their habitat attributes, they are susceptible to trampling, especially in the spring if livestock cross their habitat en route to forage on the adjacent bunchgrass or if they stop to see what is green in the vernal moist spots.

Except for roads and landings, historical timber management actions did not have an effect on these species. Current vegetation management projects are planned to avoid impacts. The same can be said for prescribed fire activities. The effects of wildfire on these species are unknown.

As previously described, off road vehicle use is increasing within the JCRAA and is not regulated except for during parts of deer and elk hunting seasons. However, the draft National OHV policy may result in future reductions in the extent of OHV use throughout the landscape.. OHV use is contributing to potential cumulative effects to these species. However the degree to which OHVs are intersecting and disturbing these plants or habitat has not been determined.

Noxious weed invasion is and will be a potential threat as discussed for the species above. The effects of State, private and tribal actions are the same as that discussed for Wallowa Mountain ricegrass.

As previously described, all potential habitat has not been inventoried, but the 3032 acres of inventory scheduled for Spalding's catchfly habitat also included areas of potential habitat for these Sensitive species, and none were found. If additional occurrences were found, these occurrences would be protected through the Annual Operating Instructions, reducing the potential for direct, indirect, or cumulative effects.

Clustered lady slipper and **Beck's sedge** are both rare generalists that inhabit mid to late seral conifer stands with moderate canopy cover. Livestock spend much less time grazing in timbered stands then they do grasslands, but they do tend to congregate under shady conifers at the edge of these grasslands, and near water sources. These concentrated areas of livestock use impact the understory vegetation. Clustered lady slipper is not known to be particularly palatable, but it is susceptible to trampling. Beck's sedge is very palatable. Cattle will graze the plant when it is in a patch as has been observed on the Pine and LaGrande Ranger Districts, but it is not known to what degree they seek it out if better forage is available. Historic timber harvest likely did contribute to cumulative effects to this species but contemporary land management prescriptions protect these plants with site-specific inventories and analysis. Beck's sedge is more likely to respond favorably to thinning activities and prescribed or wildfire. Clustered lady slipper does not respond well to fire or large changes in canopy cover. However, due to the lack of historical reference populations, the degree of these impacts to these species cannot be determined. OHV use and noxious weed invasions also pose a threat to these species as discussed above. Because of its palatability, Beck's sedge is more likely to be impacted by grazing pressure than clustered lady slipper.

As previously described, all potential habitat has not been inventoried, but the 3032 acres of inventory scheduled for Spalding's catchfly habitat also included areas of potential

habitat for these Sensitive species, and none were found. If additional occurrences were found, these occurrences would be protected through the Annual Operating Instructions, reducing the potential for direct, indirect, or cumulative effects.

Lewiston mariposa lily and **needleleaf sedge** are both species with an affinity to grassland habitats and sometimes, small stringer meadows. Both are palatable to livestock and the mariposa lily is highly desirable. It is quite possible that intensive historic levels of herbivory reduced the ability of populations of these species to set seed and persist widely across their landscape. However, due to the lack of historical reference populations the degree of these impacts to these species cannot be determined. Both are long-lived perennial species. Although susceptible to herbivory, the tough roots of the needleleaf sedge, and the deep bulb of the mariposa lily may help enable them to cope to some degree with trampling, (if these impacts are not too extreme or constant). Contemporary management actions are likely better for these species (to the extent they maintain healthy grasslands as a whole), but the degree of their response to improved range management has not been quantified. Nor are there any studies linking a particular grassland stubble height or percent utilization standard to a level of vigor in these species.

The bulbs and strong rhizomes of these two species also provide a way for these species to accommodate wild fire or prescribed fire. Fire suppression actions could impact these species if the fire lines pass through a site. Again, the only way to mitigate this impact (the level of which is not currently quantifiable) is to carefully plan and implement fire suppression action with good resource advising and resource identification in the Wildfire Situation Analysis.

Except for historic road building and log deck locating, timber management actions likely have not impacted these species or their habitat. New projects are planned to avoid impacts to these species.

Increasing off route OHV use is also a threat. OHV trails displace vegetation in their paths. Currently, no known occurrences of these species have been ridden through. There are no known occurrences of these sensitive species around any developed recreation facility. Dispersed recreation could have impacts from campers trampling habitat or plants. Most of this impact would occur during hunting season when hunting camps are erected across the forest. These camps are almost always along and adjacent to open roads, so the scope of these potential impacts is limited, but not currently quantifiable.

Noxious weed invasions pose the largest threat to these species through loss of or altered habitat, altered competitive interactions, or actual extirpation of individuals by these weeds. Currently the known noxious weed patches being treated have kept these weeds from impacting known sites of these sensitive species. But future threats, especially from yellow starthistle, of weed invasions are credible but not yet quantifiable.

As previously described, all potential habitat has not been inventoried, but the 3032 acres of inventory scheduled for Spalding's catchfly habitat also included areas of potential habitat for Sensitive species, and none were found. If additional occurrences were found, these occurrences would be protected through the Annual Operating Instructions, reducing the potential for direct, indirect, or cumulative effects.

Refer to the Botanical Biological Evaluation for further information regarding Sensitive species. The Forest Plan (Page 4-30) requires that all actions and programs be reviewed to determine their potential effects on threatened, endangered, and sensitive species. This evaluation has been prepared and therefore complies with the Forest Plan.

Alternative 3 Modified - Sensitive Species

Wallowa Mountain Ricegrass – Alternative 3 Modified would demonstrate the same type of effects to Wallowa Mountain ricegrass as described for Alternative 2. However, the extent of these effects would be reduced through an increase in the area inventoried for the presence of the plant. Alternative 3 provides for 2,890 to 7,630 acres of inventory for Spalding's catchfly, the location of which would also intersect with some potential habitat for Wallowa Mountain ricegrass. As described in the mitigation and monitoring section in Chapter 2, Alternative 3 Modified would adopt mitigations and monitoring specifically for Wallowa Mountain ricegrass. Salt placement would avoid known occurrences, permittees would be assisted with identification skills for this plant, and representative populations of ricegrass would be visited every five years with indicator populations being reviewed every year.

Alternative 3 Modified proposed to use somewhat different techniques relative to rangeland management as a whole, offering greater flexibility in managing for resource concerns. For example, if inventories identified additional Wallowa Mountain ricegrass occurrences, changes in pasture use could be identified with the permittee to protect the species without initiating a permit action. Annual Operating Instructions could be used to change pasture use to provide protections to newly discovered issues. However, this improvement in responding to resource concerns would not be easily measured relative to Alternative 2 and does not make Alternative 3 Modified different enough with respect to Wallowa Mountain ricegrass to change the determination of effect. Therefore, this alternative May Impact Individuals or habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to populations or species of Wallowa Mountain ricegrass.

Hazel's Prickly Phlox - The difference in effects between Alternatives 2 and 3 Modified would be the same as described for Wallowa Mountain ricegrass.

Engelmann's Daisy - The difference in effects between Alternatives 2 and 3 Modified would be the same as described for Wallowa Mountain ricegrass.

Sensitive Species Potential Habitat – The difference in effects between Alternatives 2 and 3 Modified would be the same as described for Wallowa Mountain ricegrass.

Alternative 4 - Sensitive Species

Wallowa Mountain Ricegrass - As with Alternative 3 Modified, Alternative 4 is similar to Alternative 2 relative to Wallowa Ricegrass with some exceptions. With respect to Wallowa Ricegrass, Alternative 4 adopts the protective actions proposed in Alternative 3 Modified. Thus, in general the effects of Alternative 4 to Wallowa Ricegrass would be equivalent to that described above in 3 Modified.

Alternative 4 is patterned on Alternative 2, though it departs from Alternative 2 in respect

to the management regime in the Wild and Scenic River corridor and along some fish-bearing streams. Alternative 4 proposes to minimize livestock use of the Wild and Scenic River (WSR) portion of the Joseph Canyon by eliminating summer and fall use of those areas. This action would provide protection from herbivory and trampling to undiscovered patches of Wallowa Ricegrass possibly residing in potential habitat found within those areas. However the amount of potential Wallowa Ricegrass habitat in this area is small, so the benefit would be tough to quantify or measure. Regardless, this protection would begin functioning upon implementation of the Annual Operating plans derived from the selection of this alternative. In these areas, this would lessen the time that the potential Wallowa Ricegrass patches in this corridor might be at risk as compared to the Alternative 3 or 2.

Both Alternative 3 Modified and 4 propose inventory work in potential habitat most at risk of livestock management impacts (identified in this analysis as Risk Areas) over a 3-year period. These risk areas contain some potential habitat for this Ricegrass. Locating and protecting additional occurrences would have the effect of increasing our knowledge of the species, increasing our management options and lessening the potential for cumulative effects to the species. Any potential risk to undiscovered Ricegrass occurrences in these areas would be limited to an additional 3 years – less than with Alternative 2.

As with Alternative 2 above some impacts are expected, although this alternative goes a little further toward Ricegrass conservation by seeking out additional occurrences. Again, protective mitigation measures that accompany this alternative should help minimize potential direct and cumulative effects and temper the consequences of potential impacts to sites that are yet undiscovered. Thus, this evaluation determined that Alternative 4 may impact individuals or habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to populations or species of Wallowa Ricegrass.

Hazel's Prickly Phlox – The difference in effects between Alternative 4 and those described for Alternatives 2 and 3 Modified would be the same as described for Wallowa Mountain ricegrass.

Engelmann's Daisy - The difference in effects between Alternative 4 and those described for Alternatives 2 and 3 Modified would be the same as described for Wallowa Mountain ricegrass.

Sensitive Species Potential Habitat – The difference in effects between Alternative 4 and those described for Alternatives 2 and 3 Modified would be the same as described for Wallowa Mountain ricegrass.

Aquatic Resources

The JCRAA is located north of Enterprise, Oregon within the Lower and Upper Joseph Creek Watersheds. The headwaters of Joseph Creek originate from spring-fed tributaries. Major tributaries include Chesnimnus Creek, Crow Creek, Elk Creek, Davis Creek, and Swamp Creek. Joseph Creek is a tributary of the Grande Ronde River, which flows into the Snake River. The JCRAA contains all or portions of 15 subwatersheds. Refer to Figure 5.

Table 25 - Joseph Creek Subwatershed Information

Upper Joseph Creek Subwatersheds	USGS HUC 17060106	Acres (total)	Acres (FS)	Allotment Acres (FS)	Allotment Acres (Other)	Stream Lengths within Allotments (miles)*
Lower Crow Creek	26A	6,283	2,605	2,576	1,577	5.78
Elk Creek	26B	16,769	9,705	9,705	2,051	15.94
Middle Crow	26C	12,520	0	0	251	0.96
Lower Chesnimnus	26E	13,663	952	833	0	0.08
Peavine Creek	26M	15,976	15,107	8,174	0	6.68
Lower Joseph Creek Subwatersheds						
Broady Creek	02D	13,552	10,255	4,744	0	5.18
Joseph Creek – Mile 14	02H	20,467	5,663	5,663	0	7.43
Peavine Creek	02I	8,097	7,718	7,718	0	9.98
Joseph Creek – Mile 27	02J	6,680	3,522	3,522	632	4.94
Lower Swamp Creek	02K	17,075	14,933	14,933	1,902	19.44
Davis Creek	02L	10,705	7,662	7,662	1,037	12.11
Upper Swamp Creek	02M	20,854	2	0	894	0.03
Joseph Creek – Mile 34	02N	6,494	6,223	6,233	263	6.29
Cougar Creek	02O	6,885	6,719	6,719	165	8.73
Joseph Creek – Mile 41	02P	11,148	9,647	9,647	663	8.78

*Miles of perennial and intermittent streams within allotments

The Joseph Creek Watershed drains 352,669 acres or 551 square miles. All water drains into the Grande Ronde River. The length of Joseph Creek from its confluence with Crow Creek and Chesnimnus Creek to its confluence with the Grande Ronde River is 49 miles.

Elevation within the Joseph Creek Watershed ranges from a low of 920 feet at the confluence with the Grande Ronde River to a high of 5,420 feet at the headwaters of Chesnimnus Creek. Elevation within the analysis area ranges between 1880 and 5200 feet.

Changes in elevation affect the hydrology within the Joseph Watershed. Air temperatures vary with elevation. Low elevation areas have relatively mild winters (20-40°F) and hot summers (>85°F). Cooler summers and more severe winters occur at the higher elevations. Average annual precipitation also varies with elevation. Lower elevations receive 12-17 inches of precipitation while higher elevations receive 30-45 inches. Approximately 90 percent of precipitation falls from September through June. At the lower elevations precipitation falls as rain, while higher elevations receive both snow and rain.

Reserve for Figure 5

In general, the subwatersheds within the Joseph Creek Watershed can be divided into those with and those without a dominance of conifer vegetation. Runoff patterns within ecosystems dominated by open grassland prairie, peak relatively early in the year while conifer dominated slopes deliver water later during May and into June.

Although few systematic hydrologic measurements have been recorded, a USGS gauging station was in operation at Chico (two miles downstream of Crow Creek confluence) from July 1931 to September 1933. From this limited data, a snowmelt and spring rain hydrograph was developed. Peak flows generally occur in March, April, or May with low flows from June through February.

A stream survey of Joseph Creek during July in 1991 measured the discharge at the mouth to be 55 cfs. Flows in the lower part of the Joseph Creek Watershed are dependent on the runoff from the upper watershed, spring-fed tributaries, and intense spring/summer rain storms (2-3 inches/hour). Because the valley floor is narrow (50-300 feet), there is limited water storage available in floodplains.

Observations of the interaction of precipitation and streamflow indicate that this watershed is "flashy"; streamflow can rise and drop quickly. A late spring rain can cause streamflow change within 24 hours. These changes vary by the size of storm as well as by subwatershed because of their respective differences in soil moisture, soil thickness, topography, forest canopy, condition of stream/floodplain, and past management.

The draft *Upper Joseph Creek Watershed Assessment* (NRAC 2005) and *Lower Joseph Creek Watershed Assessment* (USDA 2001) provide more information discussing hydrology and geology and soils of the Joseph Creek watershed.

Existing Conditions – Soil Productivity

The Joseph Creek Watershed is a gently sloping dissected plateau. Columbia River basalts form a plateau in the upper watershed, which drains into Joseph Creek Canyon. The basalt is generally thick bedded, fine grained, massive, and hard (Upper Joseph Watershed Assessment draft 2004). Locally there are interbeds of ash, old soil profiles, and sedimentary rocks. Volcanic vents, which were intruded through the basalt plateau, now exist as buttes, including Elk Mountain, Roberts, Greenwood, Haskins, and Findley Buttes.

Soil type is influenced by area geology and landform, surface deposits of windblown loess and volcanic ash, and colluvial materials. Primary landforms include plateau tops, mountain slopes, and dissected canyons. Soils are variable with surface textures ranging from very fine to coarse, with coarse rock fragment ranging from less than five to greater than 85 percent. Soils are generally deeper on north and east slopes (capable of supporting conifer stands) and more shallow on south and west facing slopes (capable of supporting mainly grasslands).

Principal soil types are "residual soils," (soils formed from local bedrock in place) and "ash" or "mixed" soils, derived from volcanic ash, or a mixture of volcanic ash, fine-textured windblown loess and colluvial surface deposits over bedrock or pre-existing residual soils.

Soil erosion depends on rock type from which soils are derived, soil properties (such as soil texture and rock content), vegetative cover, and slope. Potential soil erosion hazard (loss of soil by surface run-off) is rated from slight to high.

Residual soils are shallow to moderately deep, well drained, medium textured loams and silt loams, with variable rock content ranging from zero to greater than 35 percent. Soil erosion hazard for residual soils is rated low for slopes less than 30 percent and moderate for slopes greater than 30 percent.

Volcanic ash and mixed soils tend to be shallow to moderately deep, well drained, fine to medium textured silt loams and loams, with rock content from zero to greater than 35 percent. Occurrence and depth tends to be greater on north and east slopes, gently sloping ridge tops, alluvial fans, and stream terraces. Depth tends to be shallower or absent on south and west slopes, and steep-sloped canyons. Soils with volcanic ash are highly productive, but have higher soil erosion hazard ratings than residual soils because of their low bulk density and high detachability. Surface soil erosion hazard for ash or mixed soils is rated slight to moderate for slopes less than 30 percent and moderate to severe for slopes greater than 30 percent.

Creeks entering Joseph Creek form deep alluvial fans. Alluvial fans generally consist of stratified, deep, well-drained, very stony soils. Alluvial terraces have been formed primarily from alluvial deposition due to valley constraints. These terraces are gently sloping with very deep, well drained, fine to very coarse textured loam and fine sandy loam soils. Potential soil erosion hazard rating for alluvial fan and terrace soils is low to high depending on slope, vegetative cover, and carbonate concentration.

The hazard of mass movement (movement of soil which occurs below the surface) is rated low for slopes less than 30 percent and moderate for slopes greater than 30 percent.

Livestock and ungulate grazing affects soil productivity through herbivory and soil displacement and compaction. Herbivory of the vegetation reduces above ground biomass which is needed for soil organic matter, soil surface protection in storms, to hold sediment, to reduce the surface soil temperatures, and to provide sites for water infiltration.

In affected areas, soil displacement and compaction by hoof action leads to the dislodging of plants, loss of soil productivity, and changes in soil structure. Dislodging and trampling of vegetation damages not only the above ground biomass but may also damage or reduce the amount of below ground biomass necessary to bind soil. Compaction changes the soil structure, decreasing available refugia for soil organisms and reducing the rate of water/nutrient infiltration and percolation.

Evidence of reduced soil productivity due to a history of livestock and ungulate grazing occurs within each allotment throughout the analysis area. The most affected sites include livestock trails in the uplands and along stream bottoms, springs, salting areas, and developed water sites.

Alternative 1 – Soil Productivity

Under this Alternative, livestock would not compact or cause displacement of soils, so grazing related detrimental soil conditions would not increase beyond what currently exists.

The absence of livestock would have the indirect effect of allowing sites (livestock trails in the uplands and along stream bottoms, springs, salting areas, developed water sites) where soils are presently compacted to start recovering. Without the continued disturbance of livestock grazing, soil damage would likely improve over time through natural processes including freeze/thaw cycles, wet/dry cycles and vegetative growth, which would increase infiltration rates and decrease surface erosion. Groundcover would increase, soil bulk densities would begin to decrease, and biomass production would increase, although it may take 20-30 years before the recovery process is completed. This natural recovery process occurs most readily in the surface 6 inches of soil. The amount of natural recovery and the total amount of time for soil damage to recover to acceptable levels depends on the extent, depth, and degree of soil damage.
On most of the allotments, the benefits of eliminating livestock use would be minor when compared to the effects of historic overgrazing and other past and current management activities. By eliminating livestock, soil recovery in certain areas (livestock trails in the uplands and along stream bottoms, springs, salting areas, developed water sites) would recover at a faster rate (beginning within 10 years), whereas with current management detrimental soil conditions in these areas would persist. These areas are usually discontinuous and comprise of a very small proportion of the allotments. Soil compaction and erosion would continue in the analysis area even in the absence of livestock grazing. These ongoing impacts result from roads, vegetation management, recreation, and wild ungulates, and occur at a greater intensity than those resulting from grazing.

Alternative 2 – Soil Productivity

Continued livestock grazing would cause the current soil compaction and displacement in areas associated with livestock grazing to persist. Allowable utilization, season of use, and stocking levels would remain the same, perpetuating the current quantity and quality of effective ground cover. The areas most susceptible to compaction and erosion are those where livestock use is concentrated or season long. Activities from livestock that cause detrimental soil conditions include trailing in uplands and along stream bottoms, and hoof action around springs, water developments, and salting areas. These areas are particularly sensitive when soils are wet. Although the degree of soil compaction and displacement caused by livestock varies across the analysis area, it is generally less severe in areas with heavy timber and most severe in areas that provide easy access to cattle: low gradient open areas and meadows.

Root biomass can also be affected by vegetation damage or removal. Less energy is available for root maintenance while the plant is focusing its energy on regrowth of leaves. Loss of root biomass reduces soil stability leading to increased soil erosion.

Refer to the Aquatic Resources Cumulative Effects section in this chapter for cumulative effects.

This alternative is consistent with the Wallowa-Whitman Forest Plan Standards and Guidelines for soil resources and Forest Service Manual Direction, Region 6 Supplement 2500-98-1, effective 4/1998. Based on detrimental soil condition inventories from former timber sales, any increase in detrimental soil conditions is expected to be limited in aerial extent (found in localized areas only) and size (generally in small, isolated conditions).

Alternative 3 Modified – Soil Productivity

The effects to soil productivity from actions proposed under Alternative 3 Modified could potentially be the same as Alternative 2. In the long term (10-20 years) this Alternative *would likely* improve watershed conditions, and hence soil productivity, at a faster rate than Alternative 2 through increased flexibility to move cattle in response to natural disasters, changing conditions, and resource needs. Although an adaptive management approach, this alternative would not improve conditions as fast as Alternative 1.

Alternative 4 – Soil Productivity

The effects to soil productivity from actions proposed under Alternative 4 would likely be better than Alternatives 2 and 3 because livestock would be excluded from several stream reaches and deterred from trailing along the banks. Other areas of reduced soil productivity such as springs, salting areas and developed water sites would still be affected. Although Alternative 4 would likely improve watershed conditions at a faster rate than Alternatives 2 and 3, this alternative would not improve conditions as fast as Alternative 1.

Existing Conditions – Biological Crusts

Biological soil crusts are a mosaic of living organisms composed of algae, lichens, mosses, liverworts, cyanobacteria, bacteria, and fungi. The composition of the crusts is related to soil and climatic factors.

Biological soil crusts have several important functions and roles in semi-arid and arid rangeland. They stabilize the soil and thus maintain water and air quality, fix carbon and atmospheric nitrogen, and make other nutrients more available for vascular plants.

Biological crusts are found throughout the analysis area, especially in areas protected from ungulate grazing, off road vehicles, and other soil surface disturbing activities. No quantifiable data is available on the distribution, density, diversity, or condition of crusts throughout the area. Biological crusts are important pioneer species, especially following fire. In addition, they provide surface stability and retention, are essential for nutrient cycling and availability, contribute to biological diversity, hold soil moisture (depending upon soil texture and crust composition), help reduce cheatgrass invasion, and are a visible

indicator of surface disturbance and rangeland health. It has been noted that on trampled soils, the diversity and density of biological crust species diminishes.

Alternative 1 – Biological Crusts

Because no quantifiable data is available on the distribution and condition of biological crusts within the analysis area, the relationship with soil and vegetative conditions is used as an indicator of biological crust health. Under this Alternative, livestock would not compact or cause displacement of soils, so there would be no increase in grazing related detrimental effects to biological crusts beyond what currently exists. Biological crusts are dependent on soil and vegetative conditions, so as soil and ground cover recover, biological crusts would improve (may take up to 50 years for full recovery).

Alternatives 2, 3 Modified, and 4 – Biological Crusts

Continued livestock grazing under Alternatives 2 and 3 Modified would perpetuate current amounts of soil compaction and displacement, causing the existing biological crust conditions to persist. Limited improvement in biological crust conditions might occur under Alternative 4 based on the limited increase in protected riparian areas and expected associated increases in soil and vegetative conditions. Refer to the Aquatic Resource Cumulative Effects section for an analysis of cumulative effects.

Existing Conditions – Listed Fish Species

The JCRAA includes portions of 15 subwatersheds all containing Snake River summer steelhead, which were listed in 1997 as threatened by National Marine Fisheries Service (NMFS). Summer steelhead spawn and rear in the main stem of Joseph Creek and its tributaries. Named tributary streams supporting steelhead on forest system lands within the analysis area include Davis Creek, Swamp Creek, Elk Creek, Little Elk Creek, Gould Gulch, Crow Creek, Cougar Creek, Sumac Creek, Peavine Creek, West Fork Peavine Creek (Chesnimnus Creek tributary), Tamarack Creek, Brushy Creek, Peavine Creek (Joseph Creek tributary), Lupine Creek, and West Fork Broady Creek. Refer to Figure 5. Spawning and rearing habitat includes rearing habitat that for many streams is not year-round due to lack of sufficient flow and water quality.

Distribution of steelhead may have occurred further upstream in the channels that currently contain habitat, but due to the cumulative effects of intensive management such as logging, road construction, and grazing, less functional habitat is available. Current and historic habitat information provided by ODFW, the Nez Perce Tribe, and Forest Service were used to determine the extent of habitat critical to the needs of steelhead.

A more extensive discussion of condition and trend of populations, life history characteristics, and production capabilities can be found in the *Joseph Creek Section 7 Watershed Assessments of Ongoing and Proposed Activities 1998.*

Redband trout are currently listed on the USDA Forest Service Region 6, Regional Foresters Sensitive Species List, and listed as vulnerable under the ODFW Sensitive Species list. Redband trout and steelhead trout exist in the same habitats throughout the watershed. At this time, it is impossible to distinguish the difference between redband and steelhead at young life stages. They often interbreed and are believed to be the same species. Habitat requirements are similar to the steelhead.

Alternative 1 – Listed Fish Species

This alternative is the no grazing alternative. Although this alternative removes the action of livestock grazing on Forest land, the potential exists to increase grazing pressure and consequently higher disturbance on adjacent and interspersed private land. None of the subwatershed matrix indicator ratings would change as a result of implementing this alternative in the short term (0-10 years). All of the subwatershed matrix indicator ratings would be maintained, although conditions would have the opportunity to improve at a faster recovery rate. Subwatersheds would begin to move towards Functioning Appropriately in the long term (10-20 years). Table 26 displays the effects of the alternative to the habitat parameters. The ratings for Alternative 1 are based on a 10-20 year time frame before the effects are realized.

Alternatives 2, 3 Modified, and 4 – Listed Fish Species

As analyzed in the Lower Grande Ronde Biological Assessment, the proposed action 'may affect, but is not likely to adversely affect' listed Snake River steelhead. This is supported by the determination that the proposed actions would maintain or improve the environmental baseline of Matrix indicators for streams within the analysis area and would decrease the risk of aggregate and cumulative effects on population and/or habitat. A risk of direct effects from trampling of steelhead redds is identified, but the risk would be minimized through protection measures adopted for allotments containing steelhead habitat. Refer to the Biological Assessment in the analysis file for further information on direct and indirect, aggregate, and cumulative effects. Under Alternative 2, habitat conditions for listed Snake River steelhead would improve over time, mostly due to watershed improvement projects that have been implemented over the last five years. Actions under Alternative 3 Modified may hasten the rate of improvement because it is more adaptive and provides the range managers and permittees with additional tools to better manage grazing, resulting in less of an effect on fish and other aquatic species. Alternative 4 provides the benefits of Alternative 3 Modified and adds protection fencing on another 4.0 miles of stream. Therefore, Alternative 4 would further hasten the rate of improvement in meadow sections of Swamp, Davis, Sumac, Elk, and Peavine creeks.

National Marine Fisheries Service and US Fish and Wildlife Service have reviewed the best available information and concur with information presented in the Lower Grande Ronde Subbasin Multi-Species Biological Assessment (contained in the Analysis File). Both agencies concur with the Wallowa-Whitman National Forest finding that authorizing grazing in the JCRAA 'may affect, but is not likely to adversely affect' listed Snake River

steelhead trout. This concurrence was documented in a joint Letter of Concurrence from the two agencies received on April 30, 2001 and contained in the analysis file.

Existing Conditions – Aquatic Habitat

Habitat is the most basic requirement for achieving or maintaining healthy fish populations. Viable, stable populations require abundant, high quality, and diverse habitats that satisfy requirements for all life stages. The most significant effects on fisheries from land management activities are indirect and cumulative. Proper riparian function will meet most habitat objectives for fish. In many streams, degradation of the RHCAs has decreased habitat diversity and complexity necessary to support strong populations or mitigate effects from extreme temperatures, fires, floods, or other natural events. Healthy riparian areas require preserving water quality, diverse and complex vegetative communities, and stream channel morphology. Historic and current livestock grazing have negatively influenced these elements in localized sections of most streams in the analysis area where riparian areas are low gradient and easy to get to. These are typically Rosgen C or E type channel sections with wider floodplains and fine grained stream banks. These conditions can be seen in sections of Swamp Creek, Davis Creek, Elk Creek, Peavine Creek, Crow Creek, Cougar Creek, and Sumac Creek. As displayed in Table 26, many of the subwatersheds in the analysis area are "Functioning at Risk" for parameters that are sensitive to grazing systems.

Effects on current habitat indicators were evaluated as described in *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). The rating criteria for each Matrix parameter is contained in the analysis file. Note that this rating system uses phrasing of "properly functioning"; however, the rating system does not necessarily relate

The habitat indicators have been evaluated and rated using available data provided by stream surveys, Properly Functioning Condition (PFC) (BLM 1993) surveys, water quality monitoring, habitat improvement monitoring, personal visits by local biologists, and professional judgment. Note that the habitat indicators are classified according to the word "functioning"; however, this does not imply that a PFC survey according to BLM protocol was completed. Habitat indicators are rated "Functioning Appropriately", "Functioning at Risk", or "Functioning at Unacceptable Risk". Table 26 displays the rating for each indicator for the subwatersheds partially or fully within the JCRAA. A more intensive discussion of habitat matrix indicators can be found in the *Upper Joseph Watershed Assessment 2004 draft, Lower Joseph Watershed Assessment 2001, and Lower Grande Ronde Subbasin Biological Assessment 2001.*

Indicators that have a low risk of being affected by livestock grazing include Chemical Contamination, Physical Barriers, Large Woody Material, Pool Frequency and Quality, Off Channel Habitat, Refugia, Floodplain Connectivity, Increase in Drainage Network, Road Density and Location, and Disturbance History. Livestock use has a very low risk of noticeably affecting these indicators, unless allotments are seriously overgrazed.

The following indicators can be directly affected by livestock grazing and are the most sensitive to poor grazing management: Water Quality (temperature, sediment/substrate), Channel Morphology (width/depth ratio, streambank stability), Timing and Magnitude of Peak/Base Flows, and Riparian Reserves. These indicators are discussed in detail below.

Water Quality - Stream water temperature in the Joseph Creek Watershed is a limiting factor to summer steelhead production. Overall, stream water temperatures are above state water standards for steelhead (55 degrees for spawning through emergence, and 64 degrees for rearing). Some stream segments approach the lethal temperature of 75 degrees Fahrenheit during the month of July. Overall the rating for temperature in the analysis area is Functioning at Risk.

There is the potential for water quality to be occasionally and locally affected by bovine fecal contamination, but it would be difficult to quantify, and if measured over time, it is unlikely that analysis would find a substantial amount. The nature of fecal contamination in streams is a very short-lived and localized spike of excess nutrients and bacteria. It is therefore highly unlikely that fecal contamination is a water quality issue in the Joseph Creek Watershed.

Sediment yield appears to be high in the upper reaches of the watershed, most likely the cumulative effect of past activities such as more intensive grazing and streamside timber harvest and road building. Review of stream surveys and on-ground analysis of channels indicate that the majority of fine sediment comes from inchannel sources, the channel banks and bed. Thus there are direct ties of fine sediment sources to bank stability and riparian vegetation health. Poor bank stability and reduced riparian vegetation has resulted from past timber harvest, channelization, livestock and elk grazing/browsing, and increased peak flows which have modified stream channels. Localized sediment problems exist throughout the analysis area. Of primary concern are those areas found in the interface between perennial and intermittent channels. These areas are often where springs are found, and the fine textured soils in the banks and stream beds are highly susceptible to trampling and trailing. Overall the rating for sediment/substrate in the analysis area is Functioning at Risk.

Channel Morphology - Data taken from stream surveys show that most streams are within Rosgen (1996) recommendations. Although most of the streams are within Rosgen guidelines, many tend to be on the high end of average. This indicator is Functioning at Risk for the analysis area.

Localized streambank instability exists throughout the analysis area, especially in headwater channels where fine-grained banks are highly erosive and in water gaps between riparian livestock exclosures. In some areas, unstable banks are the result of past management practices, resulting in stream downcutting and entrenchment. Portions of Crow, Davis, Swamp, and Elk Creeks are examples of this.

The primary result of unstable banks is increased sediment delivered to the stream. It has long been established that sediment is a detriment to water quality and salmonid habitat. “Livestock grazing, which may be the single greatest impactor to riparian areas, has contributed locally to streambank instability, channel cutting, sedimentation of fish spawning gravels and reduction of deciduous stream shade" (Forest Plan FEIS, 1990 pg S - 36). Most subwatersheds are within Forest Plan standards and guidelines for bank stability, although localized areas of bank instability are evident in Davis Creek, Swamp Creek, Crow Creek, Peavine Creek, Elk Creek, Little Elk Creek, Cougar Creek, and Sumac

Creek. It is important to consider that even small areas of bank disturbance can contribute to downstream sedimentation. This indicator is Functioning at Risk for the analysis area.

Peak/Base Flows - There is no current hydrograph data available on the Joseph Creek Watershed. Based on site-specific observations throughout the watershed, Wallowa Mountain Zone hydrology personnel estimate that Joseph Creek Watershed overall rates as "Functioning at Risk" for changes in peak and base flows. This rating is based on the amount of downcutting observed in the upper portions of at least half of the intermittent streams. This erosion has been caused largely by management activities, such as road building, logging, and grazing in the Upper Joseph Creek Watershed.

All streams, except Swamp Creek and to a lesser extent Davis Creek, could be termed as "flashy". Water levels quickly rise and fall in response to rainstorms or snowmelt. Swamp Creek and Davis Creek appear to have high base flows, which remain relatively constant throughout the year. It is suspected that floodplains and extensive headwater meadows buffer these systems. The headwater meadows of both streams are under private ownership and are managed for agriculture and grazing. For all streams in the analysis area, flow quantity and timing have been altered.

Groundwater recharge occurs through infiltration and percolation of snowmelt and rainfall, and functioning floodplains and small wetlands. Aquifers in the fracture basalt play an important role in providing perennial flow. Loss of floodplain function (especially in gullied channels) has resulted in an estimated loss of more than 30.0 acre feet of water storage and ground water recharge within the Lower Grande Ronde Subbasin (USDA Forest Service 1998, pages AQUA-HF/27).

Developed springs and constructed reservoirs have reduced summer and autumn flow in intermittent and small perennial streams by capturing water in the reservoir when ponds are not full, intercepting groundwater and advancing of the timing of groundwater flow, and increasing evaporation. Evaporation has been calculated to be approximately 6 acre feet, corresponding to approximately 3-12% of August flow (USDA Forest Service 1998, page AQUA-HF/27). Water developments (springs) and stock water reservoirs are a potential source of sediment to downstream channels if not maintained. There are currently 156 pond developments and 113 spring developments within the analysis area.

In-depth analysis of basin's hydrologic system can be found in the LGRSR (1998, pages AQUA-HF/1 to HF/64). Davis Creek, Swamp Creek, Elk Creek, Chesnimnus Creek, Peavine Creek (Chesnimnus Creek tributary), Cougar Creek, and Joseph Creek have been identified as having altered hydrologic function.

Timing of discharge in both watersheds appears to have shifted to one month earlier in the year. In addition, the quantity of water in the headwater channels is thought to be lower than historic (LGRSR 1998; Wallowa County-Nez Perce Salmon Recovery Plan 1993). These flow changes are attributed to dam construction, diversions, timber harvest, fire openings. increased tree density, and climate change. Information regarding private water rights and instream water rights can be found in the LGRSR (USDA Forest Service 1998).

The extent of which land management activities have effected the function of ground water

recharge and movement is not known, however, activities which alter soil condition (compaction, displacement, burning, or puddling), cut into slopes and intercept groundwater flow, or occur directly within upland wetlands, seeps, or springs have an effect on ground water routing and quantity. There is evidence to suggest that within the Joseph Watershed, ground water routing and quantity have been altered (Wallowa County-Nez Perce Salmon Recovery Plan 1993; USDA Forest Service 1998). This indicator is Functioning at Risk for the analysis area.

Riparian Reserves - Riparian reserves consist of vegetation that provides shade, LWM recruitment, habitat protection, and connectivity within drainage. Riparian reserves in the analysis area are generally in good condition, although sections of many of the streams show evidence of historic management activities, such as roads, grazing, and harvesting. These areas show riparian plant communities that are lacking completely, or are lacking the vigor, health, composition, and diversity to support riparian reserve values. Most of these areas have been included in riparian restoration projects. This usually consists of protecting the area with fencing and planting native trees and shrubs. This indicator is Functioning at Risk for the analysis area.

Table 26- Environmental Baseline for JCRAA Subwatersheds

Pathways/Indicators	Environmental Baseline		
	Functioning Appropriately	Functioning At Risk	Functioning at Unacceptable Risk
Temperature	02D, 02I, 02O	02H, 02J, 02K, 02M, 02N, 26A, 26B, 26C	02L, 02P, 26E, 26M
Sediment/Substrate	02D, 02H, 02I, 02J, 02K, 02O, 02P, 02N, 26A, 26C, 26E	02K, 02L, 26B, 26M	02M
Chemical Contamination	All	None	None
Physical Barriers	None	All	None
Large Woody Material	02D, 02I, 02K, 02L, 26B, 26E, 26M	02O	02H, 02J, 02M, 02N, 02P, 26A, 26C
Pool Frequency and Quality	02D, 02I	None	02H, 02J, 02K, 02L 02M, 02N, 02O, 02P, 26A, 26B, 26C, 26E, 26M
Off Channel Habitat	02D, 02I, 02K, 02L, 02M, 02P, 26A, 26B, 26C, 26E, 26M	02H, 02J, 02N, 02O	None
Refugia	All	None	None
Bankfull Width/Depth Ratio	02D, 02H, 02I, 02M, 02O, 26B, 26M	02J, 02K, 02L, 02N, 02P, 26A, 26C, 26E	None
Bank Stability	02D, 02H, 02I, 02J, 02O, 26M	02K, 02L, 02M, 02N, 02P, 26A, 26B, 26C, 26E,	None
Floodplain Connectivity	All	None	None
Peak/Base Flows	02D, 02I, 02L, 02M, 020, 26A, 26C	02H, 02J, 02K, 02N, 02P, 26B, 26E, 26M	None
Drainage Network	02D, 02H, 02I, 02J, 02M, 02N	02K, 02L, 02O, 02P, 26A, 26B, 26C, 26E, 26M	None

Pathways/Indicators	Environmental Baseline		
	Functioning Appropriately	Functioning At Risk	Functioning at Unacceptable Risk
Road Density	02H, 02I, 02J, 02M, 02N, 26E	02D, 02K, 02L, 02P, 26A, 26C	02O, 02P, 26B, 26M
Disturbance History	02D, 26A, 26B, 26E	02H, 02I, 02J, 02K, 02L, 02M, 02N, 02O, 02P, 26C, 26M	None
Riparian Reserves	02D, 02I, 02H, 02J, 02M, 02O, 26M	02K, 02L, 02N, 02P, 26A, 26B, 26C, 26E,	None
Disturbance Regime	02D, 02I	02H, 02J, 02K, 02L 02M, 02N, 02O, 02P, 26A, 26B, 26C, 26E, 26M	None

Matrix Indicator ratings were obtained from information in the Lower Grande Ronde Multi-Species Biological Assessment 2001, Upper Joseph Creek Watershed Assessment (2005), Lower Joseph Creek Watershed Assessment (2001), and Joseph Creek Section 7 Watershed Assessments of Ongoing and Proposed Activities (1998)

Clean Water Act - The Clean Water Act provides direction "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters". To carry out this law, the State of Oregon has established state water quality standards for factors such as water temperature, sedimentation, habitat modification and pH, and an anti-degradation policy to protect water quality conditions. Under the anti-degradation policy in Section 303(d) water bodies that do not meet water quality standards are designated as "water quality limited".

Table 27 shows the 2002 ODEQ (Oregon State Department of Environmental Quality) 303(d) list of Water Quality Limited Streams and the reason for listing. Water quality limitations have been identified for nine stream segments of five streams in the JCRAA for summer water temperature and sediment. A TMDL (Total Maximum Daily Load) assessment is currently being conducted by ODEQ. Information obtained through this analysis will allow land managers to write WQRP (Water Quality Restoration Plans), which when implemented will move water quality parameters towards desired goals and objectives. Water quality limitations have been identified for streams in the JCRAA for summer water temperature and sediment.

Table 27 - Water Quality Limited Streams ODEQ 303(d) List

Subwatersheds	Stream Name	Segment	Listed Parameter
Lower Chesnimnus	Chesnimnus Creek	Mouth to Headwaters	Sedimentation Summer Rearing Temperatures*
Lower and Middle Crow	Crow Creek	Mouth to Headwaters	Summer Rearing Temperatures*
Elk Creek	Elk Creek	Mouth to Headwaters	Sedimentation Summer Rearing Temperatures*
Peavine Creek	Peavine Creek	Mouth to East/West Confluence	Summer Rearing Temperatures*
Joseph Creek Mile 14, Mile 27, Mile 34, Mile 41	Joseph Creek	Washington Border to Crow/Ches Confluence	Summer Rearing Temperatures*

*State of Oregon DEQ Water Quality Standards state that there shall be no measurable increase in maximum water temperature that being less than 64°F in migration and rearing habitat and less than 55°F in spawning

habitat. The upper lethal temperature for steelhead is about 75°F, with preferred temperatures ranging from 50-55°F.

Fine sediment has been identified as a concern in some perennial tributaries. In Upper and Lower Joseph Watersheds, land management activities (roading, timber, and grazing) have introduced fine sediment into the channel. Fine sediment, silts, and sands, are being flushed through the system during high flow events. Gravel is being stored behind large woody material, in bars, and on floodplains. Though embeddedness is high, stream channels are classified as skeletal with little soil being deposited on bars to act as a rooting medium for riparian vegetation. Much of the embeddedness may be a relic condition.

Summer water temperatures are a concern across the Upper and Lower Watersheds. Analysis in the Joseph Watershed Section 7 Consultation Package (1998) and Wallowa County-Nez Perce Salmon Recovery Plan (1994) found water temperatures to be elevated above environmental potential due to changes in the flow regimes (advanced timing of peak flows and the duration and amount of flow throughout the summer), timber harvest, soil compaction, riparian roads, loss of riparian shade and vegetation, and livestock grazing. Low elevation and high air temperatures also lead to elevated stream water temperatures in the basin.

Alternative 1 – Aquatic Habitat

Water Quality – The elimination of livestock grazing would not have an impact on reducing water temperatures in the short term (0-10 years). Water temperatures for area streams are related to basin elevation, amount of baseflow, groundwater recharge, cold-water spring/seep influx, and the condition of the riparian vegetation. Based on current conditions, it may be 10-20 years before improvement in water temperature is measureable.

Livestock related sediment originating from bank trampling, livestock trails in the uplands and along stream bottoms, springs, and developed water sites would be substantially reduced. Sediment production associated with riparian areas (streambanks) and uplands are expected to gradually improve a small amount in the short term (0-10 years). As new flood plains are developed and upland headwaters and springs stabilize a more noticeable improvement will occur (10-20 years). Hillslope and road related sediment regimes would not change from the existing condition.

Channel Morphology – Heavy livestock grazing has created unstable banks along accessible stream reaches of larger streams in the analysis area, such as Crow, Elk, Swamp, and Davis Creeks. These conditions are most directly due to historic grazing practices and have been on the upward trend for the last 20 years due to intensive restoration projects and better grazing management. Some natural instability in streambanks is expected due to the hydrologic stream processes; however natural instability along the stream reaches of concern would not be expected to be higher than five to ten percent. Unstable steambanks are the primary source of sediment to the stream system related to livestock grazing activities in the analysis area. Riparian vegetation helps to stabilize banks, filter sediment, and provide cover and shade for aquatic species. With the elimination of livestock grazing, bank stability and riparian vegetation should improve. With the improvement of

streambanks and vegetation corresponding progress in the physical attributes is also expected. Stream channels would narrow (width/depth ratios), floodplains would become more effective in reducing erosive, high energy events, local water tables would rise, and sediment transport efficiency would increase.

Peak/Base Flows – Runoff timing and quantity reflects the magnitude of disturbance in a watershed. Changes in vegetation, soil condition, floodplain function (capture and storage of water), and channel condition (safe release of water) all affect timing and magnitude of peak and base flows (MacDonald et al. 1991, Dunne and Leopold 1978). Historic management within the analysis area has altered the flow regime, shifting the timing of peak discharge one month earlier (Lower Joseph Watershed Assessment 2001). Implementation of this Alternative will help to alleviate conditions that affect hydrologic functionality: livestock related soil compaction and displacement, impairment to upland springs/seeps, and vegetation deterioration which is prevalent throughout the analysis area. Improvement would be slight overall though, when compared to other ongoing activities in the analysis area that also affect peak/base flows (roads, harvest, and recreation).

Riparian Reserves – This Alternative would provide the greatest recovery potential to riparian reserves. With the elimination of livestock herbivory and hoof damage, vegetative health, diversity, and composition would improve. In the long term (5-20 years) canopy cover (shade) would increase and large woody material would become more available. Other ongoing actions that affect riparian reserves (roads, recreation, and ungulate herbivory) would still occur within riparian areas.

Alternative 2 – Aquatic Habitat

This alternative reflects current livestock management strategies. Current management incorporates changes that have occurred in the last 5 years and include one or more of the following: reduced stocking, reduced grazing durations, and changed seasons of use. These changes have the potential for improving overall water quality and fisheries habitat conditions within each of the allotments in the long term (10-40 years) and some of the effects of the management changes can already be seen in the short term (0-10 years). For many indicators though, it is still too early to tell if these changes in management will continue the recovery process or just maintain the current condition. Adherence to the monitoring plan will be imperative to determining if the changes are enough to improve conditions. None of the subwatershed matrix indicator ratings would change as a result of implementing this alternative. All of the subwatershed matrix indicator ratings would be maintained.

The effects analysis assumes that all fencing and water developments are maintained, all mitigation/protection measures will be followed, and the monitoring plan is implemented. It also assumes that the Swamp Creek Restoration Project would be fully implemented. A cause and effect analysis for livestock management is shown in Table 28. These relationships display potential effects that could occur to aquatic habitat as a result of livestock grazing. Site-specific application of these relationships is displayed in Table 32.

In general two areas of concern are associated with livestock grazing and aquatic habitat in the JCRAA: (1) short stream segments within most perennial streams and (2) water gaps between riparian exclosures. Within Swamp, Davis, Elk, Crow, Sumac, Cougar, Peavine (tributary to Chesnimnus), Joseph and Chesnimnus Creeks, areas of concern are typically found in short stream segments within low gradient sections that are grazed in summer with unimpeded stream access. These stream segments tend to be incised through deep fine-grained soils which are very susceptible to trampling and hoof sheer. This susceptibility, combined with the tendency of livestock to focus on riparian areas during the hotter months, results in a high potential for damage to banks. Grazing during the hotter season also tends to result in higher utilization of riparian deciduous vegetation.

Numerous riparian exclosures have been constructed along Davis and Elk Creeks to restrict livestock access to the riparian areas. Water gaps were strategically placed between the exclosures allow livestock to access the streams for water. These water gaps tend to be in a degraded condition because the exclosures severely limit the amount of stream accessible to livestock and therefore the water gaps receive concentrated use. Future restoration projects (not part of the activities within this alternative) would consider options for developing off-site watering sources or hardening water gaps to further limit livestock impacts on streams.

The function of intermittent streams and ephemeral drainages is also affected by livestock grazing. Virtually all intermittent and ephemeral draws within the analysis area have some level of trailing, trampling of streambanks, and grazing of deciduous vegetation. But these effects are concentrated where slopes are gentle, conifer cover is low, and live water is nearby. Like the areas of concern within perennial streams, these affected upland areas tend to be in short segments. They also can be long distances from any fish habitat.

Although there are areas of concern within essentially all perennial fish-bearing streams and their headwaters, the areas are localized and small in scale. Overall, grazing within the JCRAA is meeting Forest Plan standards and PacFish standards. By addressing the negative livestock effects within localized concern areas through restoration techniques (planting, fencing, woody material placement, water gap hardening), an improving trend is expected for all perennial stream systems within the JCRAA.

Water Quality - Stream water temperature in the Joseph Creek Watershed is a limiting factor to summer steelhead trout and other aquatic species. Chesnimnus, Crow, Elk, Peavine, and Joseph Creeks are on the 303(d) list for stream temperatures. Streamside vegetation is critical when it comes to moderating the temperature of streams. Vegetation provides shade and cover, helps keep stream water temperatures lower in the summer and moderates temperatures in the winter. Vegetation also helps to reduce the daily temperature fluctuation, providing for more consistent stream temperatures. Monitoring grass and shrub utilization is imperative to maintaining and improving water temperatures. Influx of cool groundwater and springs and seeps is also crucial to summer water temperatures.

As a result of the TMDL process, a Water Quality Restoration Plan will be developed for the Lower Grande Ronde Subbasin. Until then, ODEQ requires that conditions will be maintained or enhanced relative to parameters for which a 303(d) stream is listed. No

increase in stream water temperatures is expected with the implementation of this alternative. The current condition would be maintained. Fenced reaches are providing streamside shading which help regulate stream temperatures. Unfenced reaches would continue to experience livestock grazing of riparian vegetation within utilization standards.

Bank instability and deficient riparian vegetation in localized areas can contribute to instream sediment. Direct sediment input from bank sloughing occurs when livestock break down banks at watering sites and water gaps and trail along streambanks. Over utilization of vegetation reduces the ability of riparian vegetation to filter sediment before it enters stream channels. However, utilization monitoring within the JCRAA shows approximately 95 percent compliance on all monitoring sites within the last 9 years, so this effect is localized.

Livestock grazing is also impacting the intermittent channels and headland springs and seeps throughout the analysis area. Bank trampling and trailing can be a chronic source of fine sediment and impede the establishment of riparian vegetation. Livestock trails following the bottom of ephemeral/intermittent channels are contributing to increased fine sediment levels above natural in specific locations such as some of the Peavine Creek tributaries. Stock ponds and troughs built within the stream channel are also a source of chronic sediment, especially when not maintained.

Chesnimnus and Elk Creeks are on the ODEQ 303(d) list of Water Quality Limited Streams for sedimentation. As a result of the TMDL process being conducted by ODEQ, a Water Quality Management Plan will be developed. Until then, ODEQ requires that conditions will be maintained or enhanced relative to parameters for which a 303(d) stream is listed. Implementation of this alternative, with adherence to PacFish standards and guidelines and the mitigation measures from Chapter 2 act as surrogates for best management practices and would maintain or enhance the current condition.

Table 28 - Cause Effect Analysis of Grazing Management

Grazing Causes: **Matrix Indicators**	**Reduction in Vegetation due to trampling and browsing**	**Reduction in Soil productivity due to hoof action and trailing**	**Bank Trampling**	**Spring/Seep Disturbance and Nonfunctioning Water Developments**
Increased Stream Temperatures in Summer, reduced in winter*	Vegetation provides shade which help to reduce summer water temperatures and moderate winter water temperatures.	Less infiltration, more overland flow which increases channel length and water temperature, less ground water recharge into streams at critical low flow periods	Bank instability causes increased w/d ratios which results in a shallower stream with more surface area and increased stream temperatures	Interruption of spring/seep functionality causes more overland flow where temperatures can increase, instead of subsurface where water can stay cool.
Sediment from uplands and headwaters	Root biomass can also be affected by vegetation damage or removal. Less energy is available for root maintenance while the plant is focusing its energy on regrowth of leaves. Loss of root biomass reduces soil stability leading to increased soil erosion	Water riling down livestock trails collects displaced sediment and transports it downstream	Trampling of fine grained headwater channel banks moves downstream into fish bearing channels	Major source of sediment
Instream Fine Sediment Substrate and suspended sediment	Vegetation filters sediment before reaching stream and collects for bank rebuilding; increase in instream sediment from water and wind erosion of exposed streambanks	Soil compaction affects ability of vegetation to establish, without sufficient ground cover soil erosion occurs	Increase in instream fine sediment	
Change in headwater Channel Morphology	Reduction in bank stability causing erosion of fine grained channel banks that is highly susceptible to entrenchment		Bank trampling causes water to move out of channel	
Channel Morphology* Measure: bank stability, w/d ratios	Bank stability is lessened due to decline in root mass; surface erosion and mass wasting of streambanks is higher due to loss of dense and species diverse vegetation that forms layers over the ground; less capability of withstanding flood events		Increased width/depth ratios from bank shearing	
Fish Habitat Measure: pools/mi., LWM, cover	Loss of overhead hiding cover; Loss of undercut banks (hiding cover) that need dense, deep rooted vegetation; browsing of seedling conifers and deciduous trees reduce future LWM recruitment (hiding cover and pool formation)	Soil compaction decreases vegetation composition and density because of restricted rooting depths, and water and nutrient cycling	Shearing of banks - loss of undercut banks; increase of sediment fills in pool habitat, alteration of pool riffle ratios	Increase of sediment fills in pool habitat, alteration of pool riffle ratios; increase in fine sediment affects spawning habitat and viability of redds.
Timing and Magnitude of Peak/Base Flows and Lowering of the Water Table	Increase in surface runoff and flood energies – vegetation slows overland flow and aids in infiltration	Compaction decreases soil porosity, water infiltration and percolation which can increase overland flow and runoff and change timing and energy of water and lessen groundwater recharge	Causes intermittent channels to form further upstream than normal thereby receiving less late season flows; downcut streams lower water tables	Due to less infiltration, more overland flow, less ground water recharge into streams, also timing of recharge

*Clean Water Act Requirements
Notes: Information from Platts, 1991.

Channel Morphology - Impacts to the biological, physical, and chemical processes of the riparian and channel system from livestock grazing activities have been documented by numerous research efforts (Platts 1991, Chaney et al. 1993). Livestock can directly affect streambank stability by shearing streambanks through hoof action and indirectly through the loss of bank protecting vegetation. Unstable streambanks are found in Swamp Creek, Davis Creek, Elk Creek, and Crow Creek, primarily in low gradient, easily accessible sections, where late summer grazing typically occurs. Streambank instability is also high in areas between riparian exclosures (water gaps) where livestock are concentrated into small areas for watering purposes. For example, Elk Creek and Peavine Creek have long sections of riparian exclosure fencing with very small openings in between. Because of this, livestock that would normally be distributed throughout the length of the stream tend to congregate in the small sections where water is accessible, concentrating effects to these areas. The Wallowa-Whitman interpretation of PacFish states that 90 percent streambank stability is needed to prevent grazing activities from retarding or preventing attainment of Riparian Management Objectives. When considered for entire stream lengths, this standard is being met, with the exception of Swamp Creek. The Meadow Segment of Swamp Creek influences the average so that 90 percent stability is not being met. However, future management through the Swamp Creek Restoration Project would contribute to an improving trend on that segment. Small stream reaches on other drainages also would not meet the 90-percent standard (for example, unfenced segments of Elk Creek). However, streambanks in the fenced portions are unaffected by livestock grazing and would cause the average stability to be consistent with Wallowa-Whitman interpretations of PacFish.

Changes in the vegetation component and streambank stability in turn influence channel morphology, timing and magnitude of peak/base flows, and aquatic habitat. Increased width to depth ratios caused by erosion of streambanks decreases the ability of a channel to process sediment. In addition, higher width-to-depth ratios tend to result in higher stream temperatures, through a shallower stream and increased exposure to solar energy and warmer ambient air temperatures.

Intermittent and ephemeral channels are important for the routing of storm flows, sediment, and nutrients to perennial channels. These channels may or may not have associated riparian vegetation. Grazing affects these systems through grazing of riparian vegetation, trailing along and within the channel, and chiseling/trampling of the stream banks. These effects reduce the armoring of the stream so that when storm water fills the channel, accelerated erosion occurs. Surface erosion and mass wasting of stream banks is natural when it is done in equilibrium with bank rebuilding processes. Accelerated erosion can erode the channel bed or banks resulting in lowering of the water table or gully formation. Lowered water tables and gully formation reduce site productivity and vegetation growth, as well as altering on-site and downstream hydrologic processes and functions. Headwater and intermittent channels in poor condition occur in many of the allotments, especially lower gradient, easily accessible sections. Capability modeling for livestock grazing showed approximately 17,860 areas as capable lands. Capable lands are the lower gradient portions of the watershed that have little to no tree cover and are within 1/2-mile of water where slopes are between 20 and 45 percent grade and within 1 mile of water where slopes are less than 20 percent. Because of these features, livestock are more

likely to use capable lands. Therefore, capable lands could be assumed to coincide with areas where headwater and intermittent channel degradation is more likely to occur. Capable lands constitute about 19 percent of the JCRAA.

Peak/Base Flows - Livestock grazing is disturbing the hydrologic function of part of the subwatersheds in the analysis area, including some perennial channels, tributaries, headwaters, and most unprotected seeps and springs. Types of disturbance include streambank trampling and shearing, reduction of riparian and upland vegetation, and degradation of soil productivity. These disturbances can result in changes in channel morphology (relationship of channel to floodplain and water table), and reduced capture and storage of water in the uplands (infiltration). With this alternative watershed recovery would continue at the current rate. In the short term (0-20 years), area hydrology, snowfall and melt patterns, and runoff timing and quantity would not change from present conditions.

No grazing system has been developed for upland seeps and springs that adequately protects the sites from hoof action and adjacent herbivory. During the hotter summer months, these upland water sources are favored by livestock and wildlife for resting, watering, and foraging. In addition, these sites are often developed for livestock watering which allows for better cattle distribution on the pasture. If the spring/seep is developed and fenced, soil, water and biotic habitat functions are generally not altered. Development of a pond alters the spring/seep site into pond habitat, which changes soil and water productivity. Seeps and springs occur throughout each of the allotments, with a large portion of them developed. With the exception of the Swamp Creek Allotment, there is limited information on the conditions of these water developments. Based on a 2003 inventory of water developments in an area outside of the JCRAA, it is estimated that 60 percent of the approximately 270 water developments are not functioning properly, are in need of maintenance, or are located directly in channels (M. Lucas, Zone Hydrologist 2002). Implementation of this alternative would not change the condition of upland water developments.

Riparian Reserves - The greatest damage to riparian reserves occurs in the late summer. Livestock tend to concentrate in riparian areas later in the growing season when upland forage has been cured and is less palatable. Available drinking water is also more limited as ponds and springs supplying troughs dry up, making perennial streams even more attractive. Late summer grazing is harder to manage in riparian areas, increasing the need for more intensive monitoring. The level of herbivory in some segments of Swamp Creek, Davis Creek, Elk Creek, and Crow Creek affects the vigor, health, composition, and diversity of the riparian plant community. Other segments of these streams are fenced and experience no livestock herbivory. Implementation of this alternative with strict adherence to the mitigation/protection measures and monitoring plan could reduce the intensity of browsing, although shrub utilization measurements do not have an established protocol and can vary among observers. The rate of recovery (20-30 years) would be slower than Alternative 1.

Subwatershed and Allotment Specific Conditions - This section looks at the existing condition of each subwatershed in the analysis area and explores which ones are at most at risk to grazing related activities. Matrix indicator ratings for each subwatershed in the analysis area are

shown in Table 26. Based on the number of "Functioning at Risk" indicators, each subwatershed was assigned a rating of low, moderate, or high for the potential risk of grazing related effects to the subwatershed. In order to understand where these potential risks could occur, each allotment occurring within a particular subwatershed was given that subwatershed's risk rating. Based on the occurrence of low, moderate, and high ratings, allotments were given a low, moderate, moderate-high, or high concern score. As shown in Table 32, allotments of concern with respect to aquatic habitat are Swamp Creek, Davis Creek, Al-Cunningham, Table Mountain, and Cougar. These allotments should receive a higher level of monitoring and have been prioritized for restoration efforts, and some of these projects are underway.

Part of the risk to grazing related activities is based on natural channel conditions within the JCRAA. Major tributaries have a drainage pattern consisting of long parallel drainages. Minor tributaries are short in length and provide quick flow to mainstem systems (a mix of dendritic, trellis and parallel drainage patterns).

Plateau tops are a mixture of biscuit scablands, rolling grasslands, and managed timberlands interspersed with steep, forested drainages. This tableland is generally stable and well drained due to the fractured Columbia River Basalt however, pockets of Mt. Mazama ash and clay soils are found. The ash and clay often form soft spots in plateau top roads.

The plateau tops are cut by ephemeral draws and swales, Rosgen Valley type I and II. Historic impacts and current use of draws and swales as wildlife and livestock travel are prevalent throughout the analysis area. Alteration of the vegetation and compaction of valley fill has changed the hydrology of these areas resulting in the conversion of many swales and ephemeral draws into intermittent channels or gullies. If this conversion is associated with wet meadows, wetlands, seeps, or springs, the sites may be dewatered, further altering the local hydrology, sediment regimes, and wildlife habitat. Plateau top erosion concerns center around Rosgen channel type B with fine-grained bank and bed material. Examples of converted systems are found in the headwaters of Sumac, Cougar, Cottonwood, Crow, Davis, and Swamp Creeks on National Forest System Lands.

The Joseph River Canyon is a V-shaped stream-cut canyon formed by the convergence of Chesnimnus Creek and Crow Creeks (Upper Joseph Creek watershed). Joseph Creek is a Rosgen Channel Type B or C (depending on reach) with moderate gradient and narrow floodplains formed where the channel gradient lessens and the valley widens. There are numerous small tributaries, most of which are intermittent or ephemeral in nature, which flow directly into Joseph Creek from the plateau tops.

Davis Creek and Swamp Creek both flow within broad alluvial bottoms, Rosgen Valley types II and VIII. These channels have well-developed floodplains (although functioning at less than desired levels), originally built and maintained with the influence of beavers. The channels are classified as a Rosgen Channel Type B, C, or E depending on reach characteristics. The channels enter Joseph Creek at very low angles forming long parallel drainage basins. Small, short tributaries (Rosgen A channel type) feed Davis and Swamp Creek in a trellis pattern.

The smaller Joseph Creek tributaries (Sumac Creek, Cougar Creek, Peavine Creek (Joseph

Trib.), and Tamarack Creek) are framed by Rosgen Valley type II. These channels are incised within narrow colluvial and alluvial floodplains, now converted to terraces. These tributaries (Rosgen A and B channel type) have dendritic channel patterns.

In the Upper Joseph Creek watershed, Rosgen Valley types II and VIII frame Chesnimnus, Crow, and Elk Creeks. These channels are incised into alluvial floodplains, many which have been converted to terraces. Originally built and maintained by the influence of beaver, flood flows of greater than the 25-50 year event are now needed to access these relic floodplains. The channels are classified as modified Rosgen Channel Type B or C depending on reach characteristics. Upper Joseph Creek channels provide flashy runoff and sediment into the mainstem of Joseph Creek.

Today, short channel segments within Swamp, Davis, Crow, Elk, Sumac, Cougar, Chesnimnus, and Joseph Creeks as well as many other channel reaches exhibit reduced sinuosity, downcutting through fine grained valley soils (old beaver ponds and wetland meadows), the creation of terraces 2-3 feet above the current water level, altered width and depth ratios, skeletal riparian areas with few fines, conversion of riparian vegetation from diverse shrub communities to grass/forbe communities, and changes in soil and water processes.

Recent or ongoing improvement projects to protect steelhead habitat and to improve water quality have been implemented since 1983. Table 29 displays the number of projects completed from 1983-1999. Table 30 shows projects accomplished from 2000-2003.

Table 29 - Improvement Projects 1983-1999

Allotment	# of Riparian Exclosures (miles*)	# of Spring Exclosures (acres)	# of Pond Exclosures (acres)	Hand Placement of Large Wood - miles of stream
Al-Cunningham	-	1 (0.5)	-	-
Cougar Creek	11 (3.3)	11 (15.5)	9 (10)	11
Davis Creek	7 (4.6)	1 (3)	-	-
Hunting Camp	-	7 (6.5)	1 (0.75)	-
Swamp Creek	11 (2)	7 (4.4)	8 (5)	12
Table Mountain	-	2 (2)	1 (0.6)	-
Totals	29 (9.9)	29 (31.9)	19 (16.35)	23

***** Miles of stream excluded with exclosure fences

Table 30 - Improvement Projects 2000-2003

Allotment	Riparian Fence Exclosure (miles)	Spring Fence Exclosure (miles)	Pond Fence Exclosure (miles)	Trough/ spring box Installations	LWM Place-ment (miles)	Riparian Planting (miles)
2000						
Swamp Creek	0.17 new 0.60 redo	0.25	-	5	0.5	-
Cougar	0.15 new 6.9 redo	0.5	-	4	4.5	-
Davis Creek	2.5	-	-	-	-	-
Crow Creek	1.25	-	-	-	-	-

Allotment	Riparian Fence Exclosure (miles)	Spring Fence Exclosure (miles)	Pond Fence Exclosure (miles)	Trough/ spring box Installations	LWM Place-ment (miles)	Riparian Planting (miles)
2001						
Swamp Creek	1.5	-	-	-	-	-
Cougar	1.0 redo	0.7	0.4	5	-	-
Davis Creek	1.25	0.1	-	-	-	0.5
2002						
Swamp Creek	7.3 new 2.5 redo	-	-	-	-	5.0
Cougar	-	0.1 new 0.15 redo	-	3	3.5	-
Table Mountain	-	0.2 redo	-	2	-	-
2003						
Swamp Creek	2.0	-	-	-	-	3.0
TOTALS						
TOTALS	16.89 new 11.0 redo	1.65 new 0.15 redo	0.4	19	8.5	8.5

Table 31 summarizes Matrix Indicators into a Potential Risk of Grazing Effects to each subwatershed and Table 32 provides an analysis of a streams' sensitivity to disturbance and recovery potential per Rosgen channel type. Land managers can use this information to better determine areas that need protection and where to focus restoration efforts by combining 'moderate' and 'high' risk subwatersheds in Table 31 with associated streams in Table 32 with 'moderate' sensitivity to disturbance and an 'excellent' recovery potential. This exercise yields sections of Joseph, Swamp, Davis, Elk, Little Elk, Crow, and Peavine Creeks. Joseph Creek is mostly inaccessible to livestock because of topography and vegetation and would likely not need too much further protection. Restoration efforts have so far focused on Swamp, Davis, Elk, Crow and Peavine Creeks.

Refer to the later section entitled Aquatic Resources Cumulative Effects for the cumulative effects analysis on aquatic habitat.

This alternative is consistent with the Wallowa-Whitman National Forest Standards and Guidelines for Watershed (Page 4-22) and with PacFish standards for grazing management (Page C-12, 13). The goal is to maintain or enhance the unique and valuable characteristics of riparian areas and to maintain or improve water quality, stream flows, wildlife habitat, and fish habitat. With the mitigation and monitoring attached to Alternative 2 and with current and proposed restoration projects, watershed conditions are expected to be on an upward trend, and Riparian Management Objectives would be met or exceeded.

Clean Water Act – This alternative is consistent with the Clean Water Act because there would be no additional effect to the parameters for which streams in the JCRAA were placed on the ODEQ 303(d) list. As previously described, this alternative adopts standards, mitigation, and monitoring to limit the influence of livestock grazing on these parameters (sediment and temperature).

Table 31 - Matrix Indicators for Grazing Sensitive Parameters by Alternative

Subwatershed	USGS HUC 17060106	Temperature	Sediment	Bank Stability	Width/Depth Ratio	Peak/Base Flow	Riparian Reserves	Potential Risk of Grazing Effects, Alternatives 2 and 3 Modified	Potential Risk of Grazing Effects, Alternative 4
Lower Crow Creek	26A	FAR	FA	FAR	FAR	FA	FAR	Moderate	Low*
Elk Creek	26B	FAR	FAR	FAR	FAR	FA	FAR	High	Moderate*
Middle Crow	26C	FAR	FA	FAR	FA	FAR	FAR	Moderate	Moderate
Lower Chesnimnus	26E	FAUR	FA	FAR	FAR	FAR	FAR	High	High
Peavine Creek	26M	FAUR	FAR	FA	FA	FAR	FA	Moderate	Low*
Broady Creek	02D	FA	FA	FA	FA	FA	FA	Low	Low
Joseph Creek – Mile 14	02H	FAR	FA	FA	FA	FAR	FA	Low	Low
Peavine Creek	02I	FA	FA	FA	FA	FA	FA	Low	Low
Joseph Creek – Mile 27	02J	FAR	FA	FA	FAR	FAR	FA	Moderate	Moderate
Lower Swamp Creek	02K	FAR	FAR	FAR	FAR	FAR	FAR	High	Moderate*
Davis Creek	02L	FAUR	FAR	FAR	FAR	FA	FAR	High	Moderate*
Upper Swamp Creek	02M	FAR	FAR	FAR	FA	FA	FA	Moderate	Moderate
Joseph Creek – Mile 34	02N	FAR	FA	FAR	FAR	FAR	FAR	High	High
Cougar Creek	02O	FA	FA	FA	FA	FA	FA	Low	Low
Joseph Creek – Mile 41	02P	FAUR	FA	FAR	FAR	FAR	FAR	High	High

FA – Functioning Appropriately
FAR – Functioning at Risk
FAUR – Functioning at Unacceptable Risk

Potential Risk of Increased Grazing Effects to Subwatershed

Low – two or less indicators FAR
Mod – three to four indicators FAR or FAUR
High – five to six indicators FAR or FAUR

* - Additional riparian fencing, water gap closure, permittee riding, and other protection provided in Alternative 4 will allow a faster rate of recovery than Alternatives 2 and 3, but will not change the rating of any habitat indicator.

Table 32- Allotment Versus Subwatershed Concern Analysis

Subwatershed	Allotment										
	Table Mtn.	**Joseph Creek**	**Swamp Creek**	**Davis Creek**	**Elk Mtn.**	**Dobbins**	**Crow Creek**	**Al – Cunn.**	**Fine**	**Cougar**	**Hunting Camp**
Lower Crow Creek			Mod			Mod	Mod				
Elk Creek			High	High	*	*	*				
Middle Crow						*					
Lower Chesnimnus							*			*	
Peavine Creek									Mod	Mod	
Broady Creek										Low	Low
Joseph Creek – Mile 14	*										Low
Peavine Creek (Joseph Trib.)	Low										Low
Joseph Creek – Mile 27	Mod	Mod	Mod								
Lower Swamp Creek	*		High	High							
Davis Creek			High	High							
Upper Swamp Creek				*							
Joseph Creek – Mile 34	High		High								
Cougar Creek	Low									Low	*
Joseph Creek – Mile 41			High				*	High	*	High	
Overall Allotment Rating	Mod-High	Mod	High	High	Low	Mod	Mod	High	Mod	Mod-High	Low

See Table 31 for the potential risk of grazing effects for each subwatershed. The risk rating for a particular subwatershed was attached to every allotment within that subwatershed. Allotments were then rated based on the occurrence of high, moderate, low ratings.
*If acres (FS and private) within allotment comprise less than 5% of total subwatershed acres, it was not considered a major contributing factor

Table 33 - Management Interpretations by Stream Type (Rosgen, 1996 Table 8-1)

Sub watershed	Allotment(s)	Stream	Rosgen Stream Type	Sensitivity to Disturbance[a]	Recovery Potential[b]	Sediment Supply[c]	Streambank Erosion Potential	Vegetation Controlling Influence[d]
02H, J, N, P	Table Mtn. Joseph Creek Swamp Creek Cougar Al-Cunning	Joseph Creek	B3/4 C3	Low-Moderate Moderate	Excellent Good	Low-Moderate Moderate	Low Moderate	Moderate Very High
02D	Hunting Camp	West Fork Broady	B3a/4a	Low-Moderate	Excellent	Low-Moderate	Low	Moderate
02H	Hunting Camp	Brushy Creek Tamarack Creek	B3/4	Low-Moderate	Excellent	Low-Moderate	Low	Moderate
02I	Table Mtn. Hunting Camp	Peavine Creek Lupine Creek	B3/4	Low-Moderate	Excellent	Low-Moderate	Low	Moderate
02M	Swamp Creek Davis Creek	Upper Swamp Creek	B4 C4, E5	Moderate Very High	Excellent Good	Moderate Moderate-High	Low High-Very High	Moderate Very High
02K	Swamp Creek	Lower Swamp	B3/4 C3	Low-Moderate Moderate	Excellent Good	Low-Moderate Moderate	Low Moderate	Moderate Very High
02L	Swamp Creek Davis Creek	Davis Creek	B3/4 C3	Low-Moderate Moderate	Excellent Good	Low-Moderate Moderate	Low Moderate	Moderate Very High
02O	Table Mtn. Cougar	Cougar Creek	B3/4	Low-Moderate	Excellent	Low-moderate	Low	Moderate
02P	Al-Cunningham Cougar	Sumac Creek	B3/4	Low-Moderate	Excellent	Low-moderate	Low	Moderate
26A, C	Crow Creek Swamp Creek Dobbins	Crow Creek	C3/4	Moderate-Very High	Good	Moderate-high	Moderate-Very High	Very High
26B	Swamp Creek Davis Creek Elk Mountain Crow Creek	Elk Creek	C3/4	Moderate-Very High	Good	Moderate-high	Moderate-Very High	Very High
26B	Swamp Creek	Little Elk Creek	B4	Moderate	Excellent	Moderate	Low	Moderate
26M	Cougar	Peavine Creek	B4	Moderate	Excellent	Moderate	Low	Moderate

(a) includes increases in streamflow magnitude and timing and/or sediment increases;
(b) assumes natural recovery once cause of instability is corrected;
(c) includes suspended and bedload from channel derived sources and/or from stream adjacent slopes;
(d) vegetation that influences width/depth ratio stability

Alternative 3 Modified – Aquatic Habitat

In the short term (0-10 years), implementation of Alternative 3 Modified would produce the same overall effects as Alternative 2. In the long term (10-20 years) this Alternative *could* improve watershed and aquatic conditions at a faster rate than Alternative 2 due to the opportunities for managing range condition through more adaptive grazing systems. The greatest difference in Alternative 3 Modified is that it incorporates adaptive techniques for changes that may occur in resource conditions, issues, and agency direction throughout time. Potential changes that could occur include wildfire, drought, downward trends in forage conditions and Federal listing of additional species.

Alternative 3 Modified also allows for the assertion of tribal treaty rights to graze cattle and horses, if requested. Cattle or horses may be pastured in one or more allotments, depending on the tribal need and the availability of unused allotments within ceded lands. Capacity conversions would allow one horse for every two cows. The impacts of horse grazing on aquatics are assumed to be similar to livestock since horses have the same capability for destabilizing streambanks through hoof action and consuming riparian vegetation.

Habitat selectivity in horses and cattle are similar. In a study on grazing habits of feral horses, Crane, et. al. (1997), found that palatability and abundance of graminoid vegetation and proximity to preferred habitats seem to be the primary influences on habitat selection by feral horses. In this study, streamsides and bog meadows habitats were preferentially selected. The streamside and bog/meadow habitats combined accounted for slightly over 1% of the study area, but received 21% of the feral horse use. These areas had the greatest standing crop and were high in succulence. They found that mesic and aquatic species of the carex genus represent a significant proportion of the feral horse diets compared to other forage species. Salter and Hudson (1979) and Hubbard and Hansen (1976) found that Carices were the major dietary constituent of feral horses, suggesting that horses select more mesic communities in their foraging behavior if they are available. Berger (1986) also reported that meadows received the greatest use in proportion to their availability, when compared to all other habitats. Selectivity, diet, and utilization observed in these studies indicate that detrimental impacts from horse grazing would first be apparent in the streamside and bog/meadow areas. Horses would be held to the same standards and guidelines as cattle, and the effects on aquatic resources is anticipated to be the same as previously described for cattle.

Objectives of the Swamp Creek Restoration Project would have a greater chance of being met because a monitoring protocol would be adopted. By developing a monitoring process for shrub utilization and relating that to streambank stability, restoration progress would be more effectively measured. Adjustments in grazing would be made if monitoring results indicated a decline in the restoration rate.

Restoration efforts on Crow Creek have included exclosure fencing on much of the creek. A ½-mile segment within the Dorrance Pasture of the Swamp Creek Allotment remains unfenced and has been managed through the timing of livestock use and through herding. This stream segment would be fenced under Alternative 3-Modified, which would allow a natural rate of riparian recovery for this stream section.

Alternative 4 – Aquatic Habitat

In the short term (0-10 years), implementation of Alternative 4 would improve watershed and aquatic conditions at a faster rate than either Alternative 2 or Alternative 3 Modified in Swamp, Davis, Sumac, Elk, Crow, W. Fork Broady, and Peavine Creeks due to the additional protection provided by riparian exclosure fencing, closing of water gaps, and additional herding by permittees. Alternative 4 would address livestock effects to the currently unprotected stream reaches within the analysis area that are most susceptible to negative livestock impacts (primarily meadow areas). Through exclosure fencing and the closing of water gaps on Elk and Peavine creeks, chronic sediment sources would be drastically reduced or eliminated in these stream reaches. Along Joseph Creek, within the Table Mountain, Joseph Creek, Swamp Creek allotments, changing to spring grazing and additional riding by the permittees will minimize riparian disturbance and shrub browse within the Wild and Scenic River corridor. Vacating the Al-Cunningham Allotment upon the completion of the Blue Mountain Land Exchange would provide livestock protection for approximately 0.5 miles of Joseph Creek and 0.25 miles of Sumac Creek. However, the opportunity would be lost to utilize this allotment area as a grass bank that could allow resting of adjacent allotment pastures. Additional riding that moves livestock from West Fork Broady Creek in the Hunting Camp Allotment will provide additional riparian protection there. Alternative 4 would allow approximately 4.0 miles of additional stream length to be properly functioning in the long term (10-20 years). This only comprises approximately 4% of the existing stream length within the analysis area, and therefore would not necessarily change any current subwatershed-level habitat indicator ratings. Like Alternative 3, Alternative 4 allows for the assertion of tribal treaty rights to graze both horses and cattle, if requested. However, it does not allow for the adaptive management component found in Alternative 3.

The Swamp Creek Restoration Project would be the same under Alternative 4 as Alternative 3 Modified.

No summer or fall grazing along Joseph Creek in the Table Mountain, Joseph Creek, Swamp Creek, and Al-Cunningham allotments would reduce the amount of browse of deciduous riparian shrubs along Joseph Creek over other alternatives.

Overall, Alternative 4 would increase the rate of recovery of riparian areas over that of Alternatives 2 and 3 Modified, primarily by fencing an additional 4.0 miles of riparian habitat and closing a number of existing water gaps from livestock access.

Table 34 - Effects to Sensitive Indicators by Alternative

	Alternative 1	Alternative 2	Alternative 3 Modified and 4
Water Quality -Temperature -Sediment/Substrate	+ on FS lands = or – private lands	= + Swamp Creek Allotment	= or + (depending on level or rate of change)* + Swamp Creek Allotment
Channel Morphology -Width/Depth Ratio -Streambank Condition	+ on FS lands = or – private lands	= + Swamp Creek Allotment	= or + (depending on level or rate of change)* + Swamp Creek Allotment

	Alternative 1	Alternative 2	Alternative 3 Modified and 4
Peak/Base Flows	+	= + Swamp Creek Allotment	= or + (depending on level or rate of change)* + Swamp Creek Allotment
Riparian Reserves	+ on FS lands = or – private lands	= + Swamp Creek Allotment	= or + (depending on level or rate of change)* + Swamp Creek Allotment

* Under Alternative 4, fencing an additional 4.0 miles of stream and closing water gaps in Elk and Peavine Creeks would increase the level and rate of change over that of Alternative 3 Modified.

Issue 1 – Joseph Creek

Key Issue - Authorizing livestock grazing within the Joseph Creek Wild and Scenic River may degrade water quality to the point that the Outstandingly Remarkable Values of 'Fish and Water Quality' and 'Wildlife' are neither protected nor enhanced.

Table 35 - Comparison of Issue 1 Indicators by Alternative

Indicator	Alternative 1	Alternative 2	Alternative 3 Modified Alternative 4
Percent streambank stability	95	95	95
Increase in maximum summer water temperature in 10 years	0	0	0
Increase in percent cobble embeddedness in 10 years	0	0	0
Decrease in percent stream shade in 10 yearsr	0	0	0
Allowable shrub utilization in WSR	Wildlife only	30	20
Allowable forage utilization in WSR	Wildlife only	55	50

All alternatives display a similar response to the indicators for Issue 1. Whether the Wild and Scenic corridor has livestock grazing or not, the current conditions would be maintained. Alternative 2 provides for the current condition by specifying discreet grazing timing and stocking for the pastures that contain the Wild and Scenic River. Alternative 3 prepares for an adaptive management grazing system by specifying that no more than 20 percent shrub utilization and 50 percent forage utilization would be allowed. Alternative 4 would allow no summer or fall grazing (with only incidental grazing in the spring) along Joseph Creek in the Table Mountain, Joseph Creek, and Swamp Creek allotments. Currently fall grazing occurs in incidental amounts. Since livestock tend to browse shrubs more heavily during summer and fall as grass becomes less palatable, this would likely lead to a reduction in browse of deciduous shrub vegetation along Joseph Creek. No current data is available on streambank condition within this portion of Joseph Creek. However, based on the 1991 stream survey and professional judgment, Forest Plan Standards for streambank stability are being met. Because livestock tend to spend more time in riparian areas during summer/fall grazing, Alternative 4 would allow some long-term improvement over current streambank conditions because no summer/fall grazing would occur in the

above named allotments where it currently exists. Overall, Alternative 4 would allow less bank damage and riparian shrub utilization by livestock than all other alternatives except Alternative 1.

Issue 2 – Swamp Creek

Key Issue - Authorizing livestock grazing along Swamp Creek may degrade water quality before it reaches the Wild and Scenic River so that the Outstandingly Remarkable Value of 'Fish and Water Quality' is neither protected nor enhanced.

Table 36 - Comparison of Issue 2 Indicators by Alternative

Indicator	Alternative 1	Alternative 2	Alternatives 3 Modified and 4
Allowable shrub utilization in the Meadow Segment of Swamp Creek	0	Up to 30	Determined by monitoring
Anticipated streambank stability along the meadow segment of Swamp Creek in 5 to 10 years	95	75 to 85	85 to 95

Alternative 1 has the greatest rate of recovery for the Meadow Segment of Swamp Creek. Alternative 2 has the slowest rate because it does not include any additional protection or flexibility in management, and livestock use would be determined by the Forest Plan guideline for unsatisfactory range condition. This guideline uses measured greenline stubble height, which may not be the best indicator for determining when livestock use might be limiting riparian shrub recovery and streambank stabilization. Nonetheless, Alternative 2 would show improvement in conditions due to the ongoing Swamp Creek Restoration Projects. Alternatives 3 and 4 incorporate a monitoring protocol to ensure that grazing systems are not reducing the rate of recovery for riparian shrubs and streambank stability.

Alternative 1 – Aquatic Resources Evolving Condition

The analysis area has evolving conditions that contribute to the potential for a 'moderate' to 'high' risk of cumulative effects based on past and ongoing activities. Implementation of Alternative 1 could reduce, in the long term (10-20 years), the risk of 'adverse cumulative watershed effects' even when integrated with other ongoing activities. The estimate of 'adverse cumulative watershed effects' is made based on methods described in *Determining the Risk of Cumulative Watershed Effects Resulting from Multiple Activities* (USDA 1993).

Road maintenance, vegetation management and fuels reduction projects, recreation activities (including OHV use on open and closed roads), and restoration projects are ongoing activities that would still occur within the analysis area. The cumulative effect of historic landscape changes and ongoing activities is evident in the uplands, headwaters and main channel riparian zones within the analysis area:

- Changes in soil and water processes from past and current activities

- Downcutting through fine-grained valley soils from channel modifications and peak flows
- Altered channel bankfull width/depth ratios from past riparian harvest and ongoing grazing
- Altered streambank function from the loss of vegetation and direct livestock impacts
- Detrimental soil conditions (less than 15%) are found throughout the analysis area (*Lower Joseph Watershed Assessment, Lone Dog Vegetation Management Project Environmental Assessment, Wapiti Vegetation Management Project Environmental Assessment, Fire Ridge Fuels Reduction Decision Memo, Baldwin Vegetation Management Project Environmental Assessment*).

Elimination of livestock grazing would initiate faster recovery of vegetation (1 to 10 years) and channel morphology (5 to 20 years) for sections of streams in poor condition. In the short term though, adverse cumulative watershed effects would still be rated moderate to high.

Alternatives 2, 3 Modified, and 4 – Aquatic Resources Cumulative Effects

The analysis area has an evolving condition that contributes to the potential for a 'moderate' to 'high' risk of cumulative effects based on past and ongoing activities (refer to Table 14). Implementation of Alternative 2, the continuation of the current grazing program, Alternative 3, a more adaptive approach, or Alternative 4, adding more riparian protection, would not noticeably increase the risk of adverse cumulative watershed effects when integrated with other ongoing activities. See Table 37 for the potential increased risk that livestock grazing would have to the existing evolving condition. Table 37 assigns a potential cumulative risk of adverse effects to aquatic resources based on a combination of risk ratings that have been assigned to the following parameters: 1) existing condition, as modified by historic management practices; 2) future foreseeable activities that pose a risk to aquatic resources such as culvert replacements which pose a short-term risk of sediment input; 3) percentage of each subwatershed that is contained within the analysis area; and 4) potential grazing risk to aquatic resources taken from Table 31.

Livestock grazing, lack of adequate maintenance of stock watering facilities, road maintenance, vegetation management and fuels reduction projects, recreation activities (including OHV use on open and closed roads), and restoration projects are activities that would continue to occur within the analysis area (refer to the Cumulative Effects section in the Lower Grande Ronde Subbasin Multi-Species Biological Assessment (LGRBA) for a list of these activities by subwatershed). Refer also to Table 14 for actions and activities within the JCRAA.

Continuation of livestock grazing would maintain the current recovery rate of vegetation (10-20 years) and channel morphology (10-30 years) in sections of degraded stream systems that are not protected from livestock. Alternative 4 would allow for fencing of an additional 4.0 miles of stream and close a number of water gaps, increasing the rate of recovery in the analysis area stream reaches most susceptible to livestock damage. Adjusting grazing timing on Joseph Creek, additional riding by permittees, and closing of grazing in Crow Creek and Al-Cunningham allotments would provide additional riparian protection.

Cumulative effects would be rated 'moderate' to 'high' for Alternatives 2 and 3 Modified in the short term and foreseeable long term, The additional riparian protection afforded in Alternative 4 would lower the cumulative effects rating for the Elk Creek Peavine Creek, Lower Swamp Creek, and Davis Creek Subwatersheds.

Acquisition of private land within the Al-Cunningham Allotment through the proposed Blue Mountain Land Exchange would allow for restoration opportunities on a segment of Joseph Creek that has been cultivated in the past. However, vacating the allotment would not allow the opportunity for a grass bank that could rest adjacent allotment pastures.

Table 37 - Cumulative Effect Analysis by Alternative

Subwatershed	SWS	Evolving Condition (a)	Risk Rating from Future Activities (b)	Risk Rating Based on % of SWS within JCRAA (c)	Potential Risk of Grazing Effects, Alternatives 2 and 3 Modified (See Table 31)	Potential Risk of Grazing Effects , Alternative 4 (See Table 31)	Potential Increased Risk to Cumulative Effects Alternatives 2 and 3 Modified (d)	Potential Increased Risk to Cumulative Effects Alternative 4 (d)
Lower Crow Creek	26A	Moderate	Moderate	Moderate	Moderate	Low	Moderate	Moderate
Elk Creek	26B	Moderate	Moderate	High	High	Moderate	Moderate-High	Moderate
Middle Crow	26C	N/A	Low	Low	Moderate	Moderate	Low-Moderate	Low-Moderate
Lower Chesnimnus	26E	Low	Low	Low	High	High	Low-Moderate	Low-Moderate
Peavine Creek	26M	Low	Moderate	Moderate	Moderate	Low	Moderate	Low-Moderate
Broady Creek	02D	Moderate	Moderate	Low	Low	Low	Low-Moderate	Low-Moderate
Joseph Creek – Mile 14	02H	Moderate	Moderate	Low	Low	Low	Low-Moderate	Low-Moderate
Peavine Creek	02I	Low	Moderate	High	Low	Low	Moderate	Moderate
Joseph Creek – Mile 27	02J	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Lower Swamp Creek	02K	Moderate	Moderate	High	High	Moderate	Moderate-High	Moderate
Davis Creek	02L	High	Moderate	High	High	Moderate	High	Moderate-High
Upper Swamp Creek	02M	Mod-High	Moderate	Low	Moderate	Moderate	Moderate	Moderate
Joseph Creek – Mile 34	02N	Moderate	Moderate	High	High	High	Moderate-High	Moderate-High
Cougar Creek	02O	High	Moderate	High	Low	Low	Moderate-High	Moderate-High
Joseph Creek – Mile 41	02P	High	Moderate	High	High	High	High	High

(a) Evolving Condition incorporates Equivalent Clearcut Acres (ECA) calculations, risk from past harvest and fire, risk from roads, and other ongoing subwatershed activities into a single risk assessment.
(b) Rating of risk to fish habitat based on anticipated future activities (refer to LGRBA Aggregate Effects Section and Table 14). These are primarily culvert replacements, which pose a short-term moderate risk due to sediment input.
(c) Low = less than 40% of SWS within JCRAA, Moderate = 40 to 70 % of SWS within JCRAA, and High = more than 70% of the SWS within JCRAA.
(d) A composite of risk ratings is used to assign risk rating for this column as follows:

Potential Increased Risk to Cumulative Effects	Composite Risk Ratings
Low	all low
Low-Mod	2-3 lows, 1 mod or high
Moderate	all moderate or 3 mod and 1 low/high
Mod-High	2 mod or low, 2 high or Mod
High	all high or 3 high and 1 mod or low

Wildlife Resources

Existing Conditions – Big Game

Rocky Mountain elk is a Forest Plan Management Indicator Species for quality of general forest habitat diversity, the interspersion of cover and forage areas, and the security of cover. Elk are present throughout the analysis area in the spring, summer, and fall and in some areas throughout the winter. Mule deer and white-tailed deer also occur throughout the analysis area. As a management indicator species, elk will be used in this analysis as an indicator for deer as well, unless otherwise noted.

Populations - Big game management on the Wallowa-Whitman NF is a cooperative effort between the Forest Service and the Oregon Department of Fish and Wildlife (ODFW) where the Forest Service manages habitat while ODFW manages populations. The agencies cooperate by managing big game according to pre-established Management Objectives for each big game management unit. The JCRAA includes portions of the Chesnimnus and Sled Springs Big Game Management Units. Table 38 displays actual counts versus management objectives for bull to cow ratios and calf to cow ratios.

Table 38 – Elk Population Estimates and Management Objectives

Year	Elk Observed	Population	Bulls per 100 cows	Calves per 100 cows
Chesnimnus Unit				
Management Objective		**3500**	**10**	**45**
2003	2,324	2,900	8	28
2002	2,733	2,900	6	29
2001	2,123	2,400	7	21
2000	1,973	2,450	8	18
1999	2,084	2,600	7	25
1998	2,214	2,750	7	23
Sled Springs Unit				
Management Objective		**2,750**	**10**	**45**
2003	1,730	2,150	8	25
2002	1,686	2,100	8	28
2001	1,392	2,000	9	21
2000	1,469	2,100	10	21
1999	1,802	2,250	10	27
1998	1,661	2,100	6	23

Not only are bull to cow ratios below the Management Objectives, the presence of mature bulls is low. Less than 5 percent of the bulls in the Chesnimnus unit and 9 percent of the bulls in the Sled Springs unit are over 3 years old. This low rate of mature bulls, particularly in the past, is attributed to numbers of hunters, length of hunting seasons, including the rutting period in the hunting season, lack of restrictions of antler class in harvest, lack of hiding cover, and high open road densities in some areas (Wisdom and Thomas 1996, Irwin et al 1994, Schommer and Johnson 2003).

Calf to cow ratios are also below Management Objectives. Several ODFW biologists feel predation by bears, cougars, and coyotes are the main reasons for poor calf survival. Another factor affecting the low calf survival is lack of hiding cover especially in riparian areas which contributes to increased predation. An ongoing three-year study by ODFW is investigating the potential causes of calf mortality in the Sled Springs and Wenaha Big Game Units. A draft version of the report is available in the Analysis File.

Forage – Forage and grassland habitat comprises approximately 45% of the analysis area. For purposes of this analysis, forage areas include areas ranging from grasslands to forested stands with less than 40 percent canopy cover. Forage also generally applies to upland and riparian shrubs, particularly with respect to wintering deer. Shrubs such as ninebark, snowberry, seviceberry, elderberry and scouller's willow occur in the uplands. Refer to the Aquatics section of the chapter for information on riparian shrubs.

According to the Forest Plan, areas designated as Management Area 3 are to be managed to resolve conflicts between livestock and elk in favor of elk, within population levels established by Management Objectives (Page 4-62). Areas designated as Management Area 1W (Timber Emphasis within big-game winter range) are to be managed similar to Management Area 1 for commercial livestock forage production, but open road densities are to be managed at a lower density (Forest Plan Record of Decision, Page 12).

Recent livestock grazing systems have not created conflicts with elk. As described in the Range Resources section of this chapter, upland forage conditions are in satisfactory conditions, with the exception of some portions of the Sumac Pasture of the Cougar Allotment. Aerial surveys completed by ODFW have identified areas within the JCRAA that are heavily used by elk during the winter. If adequate forage within these areas is not maintained, conflicts could develop. But again, range condition information shows that forage in these areas is in satisfactory condition. Ocular review of these areas by Schommer and Johnson (2005) found the plant condition and species composition to be, in almost every case, in good to excellent condition. Based on these observations, the effects of livestock and elk grazing for the past several years is not leading us to fair or below plant condition and species composition. Therefore, overgrazing of key big-game winter ranges by all herbivores does not appear to be occurring under current management. Five separate elk winter concentration areas were identified for a total of approximately 21,300 acres within the JCRAA. Refer to Table 40 for a list of where these elk winter concentration areas occur by pasture. Many of the winter concentration areas overlay areas allocated as Management Area 3 or 1W. Table 39 displays by pasture the amount of area allocated to big-game winter range and the distribution of forage and forested area. Pastures that contain a good mix of forage and forested area and a high proportion of allocated winter range are particularly important for elk.

Table 39 – Area Allocated to Management Areas 1W and 3

Allotment	Pasture	Pasture Area (acres)	MA 3 / 1W (acres)	% in MA-3 / 1W	Forage Area (acres)	Forested Area (acres)
Al-Cunningham	South Alford	601	275	46	285	316
	Sumac	239	226	95	215	24
	North Alford	392	367	94	187	205
	Shoot Canyon	547	508	93	395	152
Cougar	Trap Canyon	724	653	90	452	272
	Breeding Pasture	693	625	90	487	206
	Sumac	1273	858	67	608	665
	Hinton Corner/Boner	383	0	0	116	267
	Cougar	5045	2754	55	1972	3073
	Peavine	4602	0	0	1371	3231
	Baldwin	2700	81	3	601	2099
	Muddy	2162	209		1020	1142
Crow Creek	North Crow Ck	386	386 [1W]	100	0	386
	South Crow Ck	99	91	92	6	93
	Crow Ck	62	62 [1W]	100	1	61
	Special Use	536	53 130 [1W]	34	304	231
	South Crow	99	99 [1W]	100	6	93
	Doe Gulch	188	139 [1W]	74	90	98
	Road Pasture	83	73 [1W]	88	14	69
Davis Creek	Hillside	393	0	0	133	260
	Elk Ck	823	0	0	330	493
	Starvation Springs	625	0	0	201	424
	Davis Creek	3468	5	0.2	1479	1989
	Davis Creek-Sheep	113	0	0	52	61
	West/Swamp Creek	36	36	100	18	18
	Bennett	516	0	0	253	262
Dobbins	Dobbins	345	154 [1W]	45	144	201
Elk Mountain	Homestead	0	0	0		
Fine	West	279	135	48	149	130
	Home Place	207	207	100	178	29
	Peavine #1	158	0	0	48	110
	Peavine #4	761	0	0	306	455
	Peavine #5	110	0	0	4	106
Hunting Camp / Table Mountain	Tamarack	3330	2477	74	2215	1115
	Kirkland	6515	1517	23	1800	4715
	Holding Pasture	384	337	88	200	184
	Vawter/Wilder	1680	514	31	1312	368
	Joseph Breaks	4319	2914	67	3293	1023
	Horse Pasture	361	264	73	76	285
	Thorn Hollow	1542	1297	84	1212	330

Allotment	Pasture	Pasture Area (acres)	MA 3 / 1W (acres)	% in MA-3 / 1W	Forage Area (acres)	Forested Area (acres)
	Horse Pasture Ridge	1443	1109	77	1367	77
	Corral Springs	2628	702	27	922	1706
	Table Mountain	2763	1116	40	1337	1426
	Dog Fight	334	8	2	110	224
Joseph Creek	Joseph Creek	1342	453	34	974	368
Swamp Creek	Lower Swamp	1327	1243	94	1102	225
	Baker Gulch	1199	1138	95	887	312
	Barney Flat	1475	1151	78	1048	427
	Red Fir	586	548	94	368	218
	Lower Davis	2836	2473	87	2133	703
	Miller Spring	2023	609	30	848	1175
	Beef Pasture	2161	1977	91	1540	621
	Swamp Creek	183	178	97	46	137
	Upper Davis	2733	2263	83	1424	1309
	Little Elk Ck	8734	476 356 [1W]	10	3090	5644
	Elk Ck	3452	227 [1W]	7	930	2522
	Dorrance	1672	492 [1W]	29	601	1071
	Holding Pasture	35	23 [1W]	66	10	26
	Horse Pasture	15	15	100	4	11
	Upper Swamp	1344	584	43	560	784
	Snake Canyon	1130	1130	100	931	199
	Bennett	1210	14	1	517	693
	Buck	2076	1513	73	1534	542

Table 40 – Elk Winter Concentration Areas by Pasture

Allotment	Pasture	Current Season of Use	Acres Within Elk Winter Concentration Areas
Miller Ridge Area			
Swamp Creek	Lower Swamp	April-May	460
Swamp Creek	Baker Gulch	April-May	600
Swamp Creek	Barney Flat	April-May	295
Swamp Creek	Snake Canyon	April-May	620
Swamp Creek	Beef Pasture	April-May, June-August, or September-October	432
Swamp Creek	Miller Spring	June-August or September-October	200
Swamp Creek	Little Elk	June-October	520
Starvation Ridge Area			
Swamp Creek	Lower Davis	April-May	990
Swamp Creek	Upper Davis	June-August	820
Swamp Creek	Upper Swamp	June-August or September-October	400
Davis Creek	Davis Ck. East	April-May, June-August, or September-October	735

Allotment	Pasture	Current Season of Use	Acres Within Elk Winter Concentration Areas
Table Mountain-Joseph Breaks Area			
Table Mountain	Joseph Breaks	April-May and September-December	3240
Table Mountain	Wilder	April-May and September-December	1175
Table Mountain	Thorn Hollow	April-May or June-August	1520
Table Mountain	Horse Pasture Ridge	June-August	1010
Hunting Camp Ridge Area			
Hunting Camp	Holding	June-August	384
Hunting Camp	Tamarack	June-August	1160
Hunting Camp	Kirkland	June-August	2280
Two Bit and Sumac Area			
Cougar	Cougar	July-August or September-October	3025
Cougar	Trap Canyon	April-May	507
Cougar	Sumac	April-May or June-August	700
Al-Cunningham.	Shoot Canyon	April-May or September-October	250

Habitat and Security - Indicators for the quality of elk habitat include amount of hiding cover, cover to forage ratio, number of security areas, and habitat effectiveness index. Hiding cover is defined as vegetation capable of hiding 90 percent of a standing elk from the view of a human at a distance of 200 feet or less. Hiding cover in the JCRAA is limited, primarily due to the ponderosa pine vegetation with limited undergrowth found throughout much of the area. Optimal forage to cover ratio is considered to be 60/40. The current forage to cover ratio is 46 percent forage, 47 percent cover, and 7 percent private land where information on conifer stands is limited. Assuming the private land mimics the mix of forage and cover on public land, the forage to cover ratio is approximately 50/50.

Security areas are defined as those blocks of cover that are at least 0.5 miles from an open road and are at least 250 acres in size (Hillis et al. 1991). The prevalence of security areas varies throughout the JCRAA. More open roads occur in gentle terrain; therefore, fewer security areas occur where the terrain is gentle. Habitat Effectiveness Index (HEI) for elk is a measure of the interspersion and juxtaposition of habitat attributes including forage, cover, open road density, and disturbance factors (Thomas et al 1988). Values range from 0 to 100, with higher values being more beneficial to elk. Forest Plan direction is to maintain an HEI of at least 50 as a goal for those lands managed by the Forest Service. A HEI score of 57 was calculated for the JCRAA.

Open road densities and the corresponding human disturbance play a key role in determining whether elk will remain in an area (Leptich and Zager 1991). The Forest Plan states that open road densities will generally not exceed 2.5 miles of road per square mile in MA-1 and 1.5 miles per square in MA-3 and MA-1W. Approximately 49 percent of the analysis area is in Management Area 1, which has an existing open road density of 3.6 miles per square mile. Another 39 percent of the analysis area is Management Area 3 which has open road density of 0.7 miles per square mile. Management Area 1W has an

open road density of 2.9 miles per square mile. Including all Management Areas, the open road density in the JCRAA is 2.2 miles per square mile.

Alternative 1 – Big Game

Forage - This alternative would increase forage plants within the analysis area without livestock grazing. Elk and cattle have a high overlap of preference for the same forage, without cattle there would be more available forage for elk, deer, and other wildlife species. Previous livestock grazing and fire suppression have both been important factors for increased canopy closure in parts of this analysis area and has likely reduced the quantity and quality of available forage within these habitats. A large portion of this analysis area is in Management Area 3 which is winter range for elk. Removing livestock would increase the amount of available forage within these areas. This could increase populations of wild ungulates, although there are other factors such as hunting, open road densities, hiding cover, and predation that would factor into survival.

Studies have confirmed that grazing by domestic livestock can provide a positive contribution to range management for elk if properly planned (Lyon and Christensen 2002, Anderson and Scherzinger 1974). Even though forage would increase in the short term (approximately 5 years) without livestock grazing, it may lose palatability and eventually quality.

This alternative would increase fine fuels from grasses and forbs. With the increase of fine fuels, wildfires and prescribed burns would carry through more of the area. Fire can improve forage quality although the effects last only 1 to 3 years. Forage conditions should remain relatively unchanged in the short to mid-term period (5-10 years). Grazing by native ungulates, wildfire events, and the weather will have the greatest potential to affect forage values.

No grazing by livestock would reduce one of the vectors for introducing and spreading noxious weeds and other exotic invasive species.

Habitat and Security – Under this alternative, no livestock management activities would occur. Available hiding cover, especially in riparian areas, will not be reduced by livestock activities. Over the next 5 to 20 years, some stands that are currently providing marginal cover will grow into hiding cover conditions, especially in the shrub layer in forested and riparian areas which is important for elk calves as well as for fawns.

Without livestock grazing, activities such as salting, moving livestock between pastures, and moving livestock off forest would not occur. This could reduce road travel and reduce human harassment to elk. This alternative will not change the HEI value or forage to cover ratios as they currently exist.

Refer to the Wildlife Specialist Report for information on effects to other species that use forage habitats.

Alternative 2 – Big Game

Forage – Livestock grazing can have both negative and positive effects on forage for elk depending upon season, duration, and intensity of use (Thomas et al 1988, Toweill and Thomas 2002). Elk and cattle often distribute themselves spatially in a manner that minimizes competition and may or may not restrict their grazing choices (Wisdom and Thomas 1996). Elk may respond to cattle grazing by moving into areas that cattle have not entered (Leege 1984, Wisdom and Thomas 1996). Based on undocumented field observations, elk will often move into a pasture shortly after the livestock leave, in order to take advantage of the succulent regrowth of vegetation, depending on the time of year (Krausman 1996, Toweill and Thomas 2002). Potential for competition is highest on winter and spring-fall ranges where either forage quantity or quality is limited and both ungulates share compressed habitats at low elevations. Potential for competition increases during late summer and fall on high-elevation summer ranges, especially in drought years (Wisdom and Thomas 1996). Competition can be high at a given time and place during one year and low or nonexistent in the place and time in subsequent years (Wisdom and Thomas 1996).

Elk and cattle often make similar dietary choices, as a result of this there is high dietary overlap (Wisdom and Thomas 1996). In the JCRAA, this overlap is discussed in the following paragraphs with respect to winter range and riparian vegetation.

Clark (1984) found there is potential for dietary competition when cattle graze cured bunchgrass on elk winter range areas during the summer and fall before the fall elk migration. Idaho fescue and bluebunch wheatgrass are two of the grass species preferred by elk in winter ranges (Thomas et al 1988) and comprise much of the winter range areas in the JCRAA.

Forage availability on winter ranges is best evaluated around October 1 for the key forage species. To allow ample forage for elk through the winter, approximately 50 to 60 percent of the plant material of key species in elk winter range should be available on October 1 (Schommer 2003, Wisdom 2003, Thomas et al 1988, Henjum 2003). If livestock grazing lowers forage availability below this, winter forage resources could be degraded, elk could move to other areas including private lands, or in extreme cases die-off could occur. South exposures and windswept ridges provide a major portion of winter forage consumed by elk and deer. Forage inside forested stands is also important to elk where deep snow covers many of the open areas (Thomas et al 1988).

As shown in the Range section, utilization standards for allotments within the JCRAA are normally met. Current utilization standards for elk winter range are the upland utilization standards prescribed by the Forest Plan, which require retention of at least 45 percent of the residual plant material. Forest Plan designated winter range (Management Area 3 and 1W) tends to be located on steep canyon slopes which are more difficult for livestock access and don't normally experience the full extent of allowable livestock utilization, so current grazing systems likely retain higher than 45 percent of the plant material. The assumption is corroborated by ODFW biologist assumptions that the current grazing system is not limiting the availability of forage for over-wintering big game in the JCRAA.

Continuation of the current grazing system in the JCRAA would maintain the current balance between livestock and elk use. As described in the previous section on range condition, if elk and deer populations were to reach Management Objectives, livestock use would be adjusted to ensure that conflicts with big game did not arise in designated Big Game Winter Range (Management Area 3). Table 41 displays pastures within the Elk Winter Concentration Areas where livestock grazing would be authorized in the fall. These pastures would be the first location where a problem with range condition could arise if deer and elk populations increased to Management Objectives.

Table 41 – Fall Livestock Use Within Elk Winter Concentration Areas

Allotment	Pasture	Season of use	Maximum Stocking (head-months)
Miller Ridge Area			
Swamp Creek	Little Elk	June-October	2500
Starvation Ridge Area			
Davis Creek	Davis Ck. East	April-May, June-August, or September-October	200
Davis Creek	Davis Ck West	April-May, June-August, or September-October	325
Table Mountain-Joseph Breaks Area			
Table Mountain	Joseph Breaks	April-May and September-December	300 spring 375 fall
Table Mountain	Wilder	April-May and September-December	300 spring 375 fall
Hunting Camp Ridge Area			
Hunting Camp	Kirkland	June-August	550
Two Bit and Sumac Area			
Cougar	Cougar	July-August or September-October	785
Al-Cunningham.	Shoot Canyon	April-May or September-October	100

Early summer grazing by livestock could improve elk forage over the winter period by removing decadent growth and allowing succulent new growth to occur. Numerous studies have demonstrated that using livestock grazing to remove dead herbate to prevent formation of wolf plants will improve the quality of forage regrowth (Thomas et al 1988). These benefits are noted, provided livestock grazing is not repeated at the same time every year to the point that range condition is compromised (Anderson et al 1990, Krausman 1996, Cook 2002).

Competition between elk and cattle for forage resources also has potential to occur in riparian areas. Cattle have grass-dominated diets but will consume forbs and shrubs if green grass is unavailable or has cured and thus provides less available protein. Research indicates that cattle preference for forage will shift as stubble heights drop below 3 inches. When stubble height reaches 3 inches, it is too short to be pulled in by the tongue of cattle. At this time cattle will shift to more quickly eaten and less palatable forage. The forage preference will also change as vegetation dries. Even if stubble height is greater than 3 inches, their preference may shift to shrubs (Halls and Bryant 1995) if grasses are drying

and loosing protein value. When other factors do not limit grazing distribution, distance from drinking water ultimately controls the limit of vegetation utilization. Cattle often heavily graze forage plants near water rather than traveling moderate to long distances to better forage. This pattern results in deterioration of forage resources near the water supply and under-utilization of forage at long distances from water. Elk use of riparian vegetation also increases in the late summer due to palatability and quality of forage available at this time (Coe et al 2001). Elk and cattle both select some of the same resources during that period (Coe et al 2001, Krausman 1996, Leege 1984, Toweill and Thomas 2002). At stubble heights below 3 inches and particularly at ¾ inch, livestock and elk together can quickly cause damage to the riparian ecosystem, often within a few days (Hall and Bryant 1995).

In some areas, palatable shrubs used by overwintering deer have been impacted from livestock grazing to the point that there is an evident browse line with regrowth and regeneration being inhibited. This competition would continue to occur in some locations with extension of the current grazing system. Historic livestock grazing is a contributing factor in the number of shrubs today. Because of past grazing, shrubs in some areas have been reduced by livestock and wild ungulates. The current situation allows for limited recovery of shrubs in some areas because the seed source is unavailable. Exclosure fencing and riparian pasture fencing along streams such as Davis Creek, Swamp Creek, Elk Creek, and Peavine Creek has reduced grazing pressure, and these areas are recovering. Utilization of riparian shrubs is limited to 30 percent. Shrubs in accessible stream reaches would continue to be grazed according to this standard.

Habitat and Security – Continuation of the current grazing system would continue to suppress the presence of understory shrub hiding cover, particularly in riparian areas. Reduction of hiding cover can affect the survival rate of elk calves and fawns from predators. Hiding cover is also a factor in hunting success because good hiding cover allows more avenues for escapement. Livestock have minimal effects on forested canopy closure, as this is not preferred or available browse.

Cumulative Effects – In addition to effects from livestock, effects on forage are also caused by wildfires, prescribed burning (refer to Table 14), the weather, and other species such as bighorn sheep. Since bighorn sheep occupy more rugged terrain than deer and elk or livestock, there is very little competition between the species and therefore no cumulative effect from livestock and deer and elk grazing. Wildfire and prescribed burning; however, can change the forage condition. Fire suppression has allowed for advanced succession of herbaceous plants, shrubs and trees. This advanced succession has reduced the carrying capacity for elk, although livestock grazing has reduced some of this succession (Thomas et al 1988).

Changes in the historic fire regime have reduced forage values over much of the landscape by increasing forested areas. When wildfires occur, the fire intensity and extent are evaluated to determine if livestock grazing should be deferred because burned bunchgrasses need recovery time to maintain plant growth. This measure protects the forage resource from the increased utilization that follows post-fire green-up of grasses.

Prescribed burning has occurred and would occur in the future associated with the Hungry

Bob, Wapiti, Bugcheck, and Lone Dog Vegetation Management Projects and the Fire Ridge Fuels Reduction Project. These projects are reducing the potential for, the extent, and intensity of wildfires. While these projects are focused on timber stands, they do burn intervening grasslands. Prescribed burning for enhancing grassland conditions often improves forage and dietary quality, although these effects typically are short-lived (Cook 2002, Leege 1968, Leege and Hickey 1971). Other studies have shown no increase in forage use, and fire may damage Idaho fescue if too hot, one of the species preferred by elk (Skovlin et al 1983). Other studies have results where burning does increase the protein content of grasses. The duration of forage enhancements is a function of the time required for the succession of plant growth to pre-fire conditions (Riggs et al 1996). In forested areas this can take decades, whereas in grassland it may be a year or less. The difficulty with prescribed fires that are conducted at such small scales is that benefits to elk tend to be spatially and temporally limited. The areas burned to produce or sustain population effects increases with the size of the herbivore population and density of the herd (Cook 2002).

Large-scale wildfires have the potential to alter cover patches so they no longer provide security for elk seeking to avoid humans or predators. The precise effects of such a fire would depend upon the magnitude, duration, and intensity of the wildfire. Within the Joseph Creek Allotment Analysis area forested and nonforested areas are interspersed throughout. Wildfires may encourage better quality forage for herbivores, but may reduce hiding cover.

Open road density is another major factor in elk remaining or leaving an area. Roads affect elk by removing plant production and by introducing a disturbance factor (vehicles), which reduces elk use adjacent to these roads (Thomas et al 1988, Toweill and Thomas 2001). Road closures have been the technique most frequently used to increase security for hunted elk populations. Reducing road density in most situations has improved the habitat effectiveness for elk during summer and may increase elk survival during hunting seasons (Leptich and Zager, 1991). Several vegetation projects have closed roads throughout this analysis area, which has reduced vehicular traffic in these areas. Currently the Forest Plan allows for nonselective outdoor activities to travel on these closed roads which reduces or negates the road closure values for wildlife.

One of the most significant trends in recent years is the growth of nonselective outdoor activities. These include hiking, cross country skiing and mountain biking, as well as activities that involve a variety of motorized off-highway vehicles (Bunnell et al 2002). OHV users are increasingly attracted to parcels of public lands where access is readily available, this in turn concentrates the use of OHV and the potential damage associated with that use (Toweill & Thomas 2002). Managing human activities to prevent elk harassment on or displacement from crucial summer and winter ranges is a concern (Bunnell etal 2002), which is being addressed through a draft National OHV policy. It has been shown that these disturbances increased home range size, altered feeding patterns and affected reproductive performance (Bunnell etal 2002).

Long hunting seasons combined with high numbers and densities of hunters contribute to cumulative effects by harassing elk and reducing the number of mature bulls, which are important to the health of elk herds. Hunting tags have been reduced in the Chesnimnus and Sled Springs Big Game Management Units which reduces this pressure High predator numbers may have an additive effect, reducing calve and recruitment locally. Off-Highway

Vehicle use can cause vulnerability of elk and deer during the archery hunting season and during deer hunting season by allowing hunters to transport their equipment far from standard roads and transport the dead prey relatively easily from areas and distances that would present barriers to those hunting on foot (Toweill & Thomas 2002). Winter activities such as snowmobiles, skiers or hikers will also impact elk on winter range by causing them to flee from human activities. This additional drain of energy may impact survival of elk (Thomas et al 1988).

One of the historic impacts from grazing is the perpetuation of noxious weeds and other exotic invasive species. Livestock grazing increases opportunities for the establishment and spread of exotic species through moving, feeding, and trailing. Where trampling of the soil crust churns the soil, weed seeds are better able to establish (Irwin et al 1994, Belsky and Blumenthal 1997, Sallabanks 2001, Vander Haegen 2001). Refer to the noxious weed section of the analysis for further discussion of the effects of livestock grazing on weed spread. Prevention strategies would be used to limit the invasion and spread of noxious weeds, and within the JCRAA, noxious weed presence consists of isolated populations that are under a treatment strategy. These populations are not limiting the availability of big-game forage.

Alternative 2 is consistent with the Forest Plan Standards and Guidelines related to big-game for all of the Management Areas in the JCRAA. The alternative avoids introducing conflicts with elk in big-game winter range.

Refer to the Wildlife Specialist Report for further information on effects to other species that use forage habitats.

Alternative 3 Modified – Big Game

Direct and Indirect Effects - Alternative 3 Modified allows for a broader grazing season within pastures while authorizing the same level of stocking for each pasture. The exception is the Swamp Creek Allotment where a three-year monitoring effort would determine if stocking should be decreased for the allotment. Because of the increased grazing season for pastures, Alternative 3 Modified adopts a specific mitigation for ensuring that adequate winter forage is available for elk in areas designated by the Forest Plan as Management Area 3. In addition, utilization monitoring would ensure that residual plant material is available during the winter for big game. Livestock would be removed from portions of pastures designated as big-game winter range so that 50 to 60 percent of the available forage is retained for over-wintering big-game. This requirement would focus on species such as Idaho fescue or bluebunch wheatgrass, ensuring that wintering elk have adequate forage for the upcoming winter.

This alternative allows for changing pasture boundaries, timing of grazing and lowers allowable utilization to provide for ample forage in elk winter range. This is especially important in areas that have late-season livestock grazing. These areas are listed in the table in Alternative 2. Forage within this analysis area has not been shown to be the limiting factor of elk reaching management objectives but is due to several factors such as roads, hiding cover, long hunting seasons, and predators. For further discussion of these

effects see Alternative 2. Timing of livestock grazing and lowering utilization, in regards to use by wintering elk and livestock will also improve or maintain the health of plants that are selected by both species for forage.

Alternative 3 Modified also has an adaptive approach for managing range condition. Where climatic, political, or biological concerns arise, the season of use for each pasture can be adjusted as long as resource protections and standards and guidelines are met. This system allows for a more rapid response to changing conditions that can be implemented through the Annual Operating Instructions. Overall improvements to range condition would be anticipated, and as a result, these improvements would be beneficial to elk. If deer and elk populations were to reach Management Objectives and increase the need for forage from the JCRAA, Alternative 3 Modified would be less likely to result in reductions in livestock grazing as the systems are more adaptive to account for changes.

The direct impacts of horse grazing in riparian and uplands are assumed to be similar to livestock since they consume similar forage (See fisheries section for impacts in riparian areas). Studies have shown that elk and horses overlap in forage choice, especially in winter and spring (Salter and Hudson 1980, 1979, Hanley and Hanley 1982, Krysl etal 1984, Mcinnis and Vavra 1987). Horses would be held to the same standards and guidelines as cattle, and the effects of this grazing would be similar to the effects discussed for cattle grazing. This alternative lowers utilization use in elk winter range which would maintain plant health and a continuing upward trend in these areas.

Cumulative Effects – Cumulative effects for Alternative 3 Modified would be the same as Alternative 2 except over the long term (over 10 years), areas such as the Starvation Springs area, ½ mile of Crow Creek would increase in diversity of vertical and ground cover at a faster pace. With a decrease in utilization, winter range would provide ample forage for elk over the long term and should provide ample forage even if elk reach management objectives.

Alternative 4 – Big Game

No summer or fall grazing along Joseph Creek in Table Mountain, Joseph Creek, Swamp Creek, and Al-Cunningham allotments would reduce the amount of browse of deciduous riparian shrubs along Joseph Creek, and forage within the pastures by livestock over other alternatives. This would also provide ample forage for other wildlife species including those areas that are within elk winter range.

This alternative does not allow for the adaptive management component found in Alternative 3 Modified. This could be a hindrance if say for instance a wildfire occurred and changes needed to be made to provide for forage in elk winter range.

Issue 6 – Big Game

Key Issue - Authorizing fall livestock grazing in areas designated as big-game winter range may not provide enough winter range for over-wintering big game.

Table 42 - Comparison of Issue 6 Indicators by Alternative

Indicator	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
	Percent Plant Material Retained at the End of Fall Grazing			
Percent available forate retained at the end of fall grazing in designed big-game winter range	Wildlife use only	45	50 to 60	50 to 60

As shown above, Alternative 1 resolves the big game issue because no livestock grazing would be authorized, and none of the areas allocated for big-game winter range would be influenced by livestock use. Alternative 2 addresses Issue 6 by retaining the current grazing system and schedule for each pasture, along with Forest Plan utilization standards. This system has been shown over time to provide for adequate winter forage for existing elk and deer populations. Alternative 3 Modified broadens the flexibility of the grazing schedule, but it also increases the level of monitoring that would occur on any pasture that contains elk winter range. Livestock would be removed in the fall so that 50 to 60 percent of available forage is retained for over-wintering big-game. Alternative 4 maintains a more restrictive grazing schedule than Alternative 3 Modified, but it also provides for livestock to be removed from big-game winter range so that 50 to 60 percent of the available forage is retained for over-wintering big game.

Existing Conditions – Riparian Habitat

Riparian areas constitute some of the richest and most valuable terrestrial wildlife habitats because of their proximity to free water (Thomas et al 1979, Johnson et al 2001). These unique areas contribute to both species and structures diversity and as travel-ways between all other habitats on the landscape. Riparian areas occupy as little as 0.5 to 2 percent of the landscape and contain more species of plant, mammal, bird, and amphibian than the surrounding uplands (Johnson et al 2001, Thomas et al 1979). Of the 381 terrestrial species known to occur in the Blue Mountains, 285 (75%) are either directly dependent on riparian zones or utilize them more than other habitats (Thomas et al. 1979, Johnson et al 2001, USGS 1998).

Riparian habitats in the analysis area include open meadow stringers; springs, seeps, bogs; created ponds; and deciduous and/or coniferous forest streams. Numerous small springs and seeps, ponds, moist meadows, and wetlands occur along ridge contours and larger creek headwaters. These springs are often less than 1/8th of an acre in size. They are important areas for providing wet microhabitats for amphibians, insects, and small mammals, while also providing forage and perhaps cover for larger wildlife. For many species dispersed habitats are “population source habitats” or the last refugia for survival. Currently, the majority of the sites (ponds and springs) are developed for livestock water and undeveloped sites are also used by cattle. Riparian zones, particularly along streams, serve as important connective corridors between forested habitats. Wildlife may use riparian zones for cover while traveling across otherwise unforested areas. Some species, especially small mammals and birds, may use such routes in dispersal from their original habitats. Riparian zones

provide cover and often provide food and water during such movements.

Refer to the aquatics resources section for information on how continuation of the current grazing system would be anticipated to affect riparian habitats.

Many hardwood plants have evolved with some browsing and for some shrub species seems to benefit their growth. Over consumption can inhibit growth and can cause mortality especially if shrubs are just establishing. Over grazing by large ungulates in a riparian hardwood plant community inhibits regeneration, resulting in a plant community with poorly represented classes of young and middle age shrubs. Riparian conditions in the Joseph Creek Analysis area vary according to whether these areas are accessible to ungulates. There are areas that due to past and current grazing of livestock have reduced or absent shrubs and vegetation or have minimal younger age classes. Browsing by native herbivores (elk and deer) has negatively affected local riparian vegetation as well. Forage competition between livestock (cattle) and elk appear to occur in moist riparian areas in late summer, as both species prefer this habitat (Leege 1984). In the JCRAA, this competition is limited to some stream segments where livestock access is not controlled by fencing.

Livestock and other ungulate grazing in riparian areas can cause loss or trampling of vegetation, accelerate bank erosion, and contaminate the water with feces and urine which may and has negatively impacted resident populations of herpetofauna (Homyack and Giuliano 2002, Bull and Hayes 2000). Vegetation structure is an important habitat component for reptiles and amphibians because it provides the site-specific conditions for temperature and moisture regulation. Studies have shown that it may take decades after periods of heavy grazing for vegetative components to again support amphibians and reptiles. Amphibians have low dispersal rates and are less mobile than some of the reptile groups which further lengthens recovery time (Homyack and Giuliano 2002).

Amphibians and reptiles are largely dependent on surface water and riparian areas. Horizontal vegetation structure determines amphibian and reptile composition more often than vertical. The importance of ground litter (fallen logs, leaves), soil, and plant root structures is also important for the survival of amphibians and reptiles (Cooperrider et al 1986). Aquatic amphibians and snakes are one of the indicators of a healthy aquatic system, as they are very sensitive to pollution and loss of aquatic habitat (Cooperrider et al 1986). Therefore these species are vulnerable to change in riparian areas. The current population levels of amphibians and reptiles are not known, but many species have been noted.

The density of riparian vegetation in the all structural stages (overstory to the herbaceous layers) is extremely important for habitat requirements of small mammals such as Preble's shrew, reptiles, amphibians and breeding birds. Breeding birds and especially ones that are migratory tend to be habitat specialists. Willows are an important component of this vegetation, as these species tends to be rich and diverse in insect fauna. The abundance of insects supplies a rich food source for insectivorous fish, amphibians, reptiles, birds and small mammals (Ohmart 1996, Johnson et al 2001). Riparian reaches within exclosures have increased the structural diversity from overstory down to shrub and herbaceous layers. Riparian areas that are not protected and have grazing pressure tend to lack this structural diversity, and this in turn reduces species diversity. This is especially common

along the larger gentler sloped creeks that have greater livestock pressure. The occurrence of willow is absent or greatly reduced from unfenced riparian sections in the reaches where it normally occurred.

The elimination of beaver has had large impacts on riparian habitats throughout the West. Beavers influence small-order streams by altering water retention, creating and maintaining wetlands, modifying nutrient cycling and decomposition dynamics, influencing the timing, rate and volume of water and sediment movement downstream, through the creation of pools and backwaters generating new fish and wildlife habitats and sediment trapping capabilities (Ohmart 1996). Beavers have occurred in this analysis area, and are still present in some areas, although their numbers are greatly reduced. Other factors besides lack of vegetation due to grazing have reduced population of beavers, some of these being trapping earlier in the century, current recreational trapping, and roads (Lower Joseph Watershed Assessment 2001).

Refer to the Aquatics Resources section of this chapter for a description of improvement project that have been initiated in the JCRAA. Upland riparian protection fences consist of approximately 42 units, which exclose about 34 acres. Within the JCRAA, approximately 191 ponds have been developed from springs or for catchment, and 93 springs have either been developed for livestock use with troughs or protected.

Other wildlife habitat projects that have occurred in the area of this EIS/assessment area over the last 27+ years include: designation and protection of live and dead wildlife trees with signing, snag creation and artificial nest/roost structures and the designation of old growth forest habitat units. There have also been past and ongoing wildlife studies that encompass some of this analysis area. Some of these studies included a blue grouse study, Rocky Mountain bighorn sheep and a current study on bird and small mammal with the effects of prescribed burning (Crawford and Pelren 1996, McIver et al ongoing, ODFW)

Alternative 1 – Riparian Habitat

The physical and biological aspects of in-stream riparian habitat is discussed in detail in the fisheries and hydrology section of the EA. Effects to terrestrial species will be discussed in this section.

Under the no grazing alternative, natural processes will continue to occur. Riparian vegetation will move into and out of the Historic Range of Variability over time as successive, vegetative communities move into climax conditions and stand replacement events occur. The most immediate effect of the removal of livestock grazing would be the regrowth of shrub and herbaceous layers within the riparian areas that are not currently fenced.

Removal of livestock grazing would improve riparian ecosystems. Livestock and especially cow/calf pairs prefer this habitat and could overgraze and browse and trample shrub and herbaceous components (Ames, 1977, Kauffman and Krueger 1984, Sedgwick and Knopf, 1987, Kauffman et al 2001). With removal of livestock the herbaceous, shrub and hardwoods would improve in growth and structure, although there may be local sites

affected by wild ungulates. This growth would add to the vertical structural diversity, increase water storage capacity, reduce bank erosion, improve water temperatures and enlarge the size of riparian areas (Kauffman et al 2001, Kauffman and Krueger 1984). This increase of vegetation and structure will increase the species diversity of these areas, which includes avifauna, amphibians, reptiles, small mammals such as Preble's shrew and will increase hiding cover that does and elk cows prefer for fawning and calving (Wisdom and Thomas 2001, Toweill and Thomas 2002 Leege 1984).

The long-term effects of removing livestock grazing would be increased shrub vegetation and herbaceous diversity, return of hardwood trees including willow, cottonwood and aspen in some areas, larger riparian zones and eventually increasing wildlife specie diversity. Streamside vegetation is important in determining the structure and function of stream ecosystems. Riparian vegetation is also important as a source of food to stream organism, providing shade and maintaining stabilization of banks which prevents excessive sedimentation, and filtering our pollutants (Ohmart and Anderson 1986). Increased vegetation along riparian areas would increase avian nesting which includes flycatchers and other migratory birds, waterfowl, red-naped sapsuckers and other nonmigratory birds. It would also increase populations of amphibians, reptiles, small mammals and provide better cover for deer and fawns, elk cows and calves against predators (Weller 1996, Kauffman et al 2001, Gardner et al 1999).

Other effects of removal of cattle grazing could be the eventual return of beaver to these systems, which enriches habitat for many other wildlife species. However, there are other factors, such as trapping, that affect the return of beavers. A healthy instream environment is vital for aquatic life forms, as well as for various human needs (Kauffman and Krueger 1984). With removal of livestock, exclosure and pasture fencing could be removed lessening hazards to avifauna, wild ungulates and other wildlife species that become entangled in the wires.

Alternative 2 – Riparian Habitat

This alternative maintains livestock grazing under the current grazing schedule. Cattle, especially cows with calves have a strong preference for riparian area (see existing conditions for further information of impacts). Riparian areas will continue to be impacted from this alternative especially in late summer when other sources of water can dry. Livestock grazing in riparian areas can reduce hiding cover, vertical diversity, bank stability, and possibly reduce prey base such as insects. This structure is important to many amphibians, reptiles and small mammals such as Preble's shrew. Exclosures built to protect parts of the stream corridors, ponds and springs would remain in place. Exclosures would continue to protect riparian habitats, but they could be breached on occasion, and the investment in the riparian habitat might be diminished or lost.

Riparian vegetation is an important habitat for many wildlife species for movement or dispersal, nesting, fawning and calving, foraging and cover. Refer to the aquatics resources section for a description of this alternative's impact of livestock grazing on aquatic habitat.

Livestock grazing practices that affect microclimates of forest floors may affect amphibians.

For salamanders in particular, temperature and moisture conditions on the forest floors influence abundance and above ground activity (Heatwole, 1962, Heatwole and Lim 1961). Forest management and grazing activities that reduce canopy coverage, the density of understory vegetation, ground litter, surface moisture, and downed logs would negatively effect forest amphibians habitat anywhere from 3-20+ years depending on the amount of time for the areas to recover (Schommer 1999). A variety of conditions exist within the JCRAA depending on topography, vegetation, and fencing. Within exclosures, riparian vegetation is ungrazed by livestock. Within water gaps, livestock use is concentrated and the vegetation is highly altered.

Cumulative Effects - The healthy condition of some riparian zones in the analysis area has been reduced by past timber practices, road construction, livestock grazing, and wildfires (See Fisheries and Hydrologist Reports). Over browsing by native herbivores can have short term, negative effects on a local scale on riparian vegetation. Past livestock over grazing has occurred in many riparian areas. While some areas are fenced and have ample riparian vegetation, some areas continue to experience a lack of some riparian shrubs, which would continue under this alternative. Recreational activities, such as camping along streams, have had negative effects on some riparian areas. These impacts would include trampling of vegetation, disruption to animal migration, and possible harassment to wildlife use of the area. Refer to Table 14 for activities and actions that are occurring or are reasonably foreseeable within the JCRAA.

The greatest threat to that portion of the riparian habitat that terrestrial species depend on under this alternative will continue to be large-scale wildfires. Although the size and intensity of wildfires cannot be predicted, fires are part of the ecosystem and can be assumed to influence future conditions. In many parts of the planning area, forested habitats adjacent to riparian zones are dense and overstocked. These dense stands increase the potential for wildfires to burn through riparian areas that historically were resistant to large-scale wildfire. One of the most serious losses when this occurs is the loss of connecting habitat and travel corridors between various forest habitats. It can require decades for these riparian zones to recover and reach conditions necessary for many species to use them again. This can reduce or prevent the successful dispersal of juvenile animals and the movement of individuals necessary for healthy intra-specific genetic exchange.

Alternative 3 Modified – Riparian Habitat

Direct and Indirect Effects - Effects of this alternative would be the same as Alternative 2 with some changes. The Swamp Creek Restoration project would achieve improved riparian conditions sooner than Alternative 2. An increase in shrubs would benefit wildlife species as described above. Alternative 3 Modified also offers more flexibility in the period during which pastures are grazed. Where utilization of shrubs or riparian forage is noted to be above standards, the timing of grazing could be changed to reduce summertime browsing of shrubs.

Other areas affected would be riparian and hardwood stands. Movement of fences and timing of grazing would further improve these habitats by providing better quality habitats for wildlife species that depend on these areas. Restoration projects are still ongoing in

Swamp Creek. This project has developed a riparian fencing system that will protect the creek and vegetation from grazing pressures. Other elements of this project include planting of shrubs and hardwood trees and development of water sources outside of the riparian area. The riparian pasture may include a limited grazing season. Timing and close monitoring of utilization standards will be implemented to protect or reduce grazing on shrubs and hardwoods and maintain a higher stubble length within these pastures. Riparian vegetation will also benefit many avian and wildlife species. Many of migratory landbirds use riparian areas for nesting and foraging.

Cumulative Effects – Cumulative effects would be the same as Alternative 2 except increasing diversity of cover and forage species over the long term will maintain health of the plants and maintain forage for many wildlife species. This diversity in cover especially in riparian areas is important in conjunction with other projects that have occurred within this analysis area (vegetation, prescribed fire, fuel reduction) for example, as it will maintain more hiding cover in riparian areas allowing new avenues for escapement and movement of wildlife species.

Alternative 4 – Riparian Habitat

Direct and Indirect Effects - Implementation of Alternative 4 would improve watershed and aquatic conditions at a faster rate than either Alternative 2 or 3 Modified in Swamp, Davis, Sumac, Elk, Crow, W. Fork Broady and Peavine Creeks. These streams and associated riparian habitat have either additional proposed fencing, different season of use, increased riding to move livestock away from riparian areas or closing of water gaps. No summer or fall grazing along Joseph Creek in Table Mountain, Joseph Creek, Swamp Creek, and Al-Cunningham allotments would reduce the amount of browse of deciduous riparian shrubs along Joseph Creek, and forage within the pastures by livestock over other alternatives. This would also provide ample forage for other wildlife species including those areas that are within elk winter range.

Overall Alternative 4 would increase the rate of recovery of riparian areas over that of Alternatives 2 and 3 Modified. These riparian reaches would increase in riparian vegetation (forbs, shrubs, hardwoods). Reducing grazing in these areas would also increase the diversity of ground and vertical cover. These areas will improve habitat not only for fish but for amphibians, mammals, reptiles and avian species.

Cumulative Effects - Many of the cumulative effects are the same as Alternative 2. The difference between this alternative as compared to the other alternatives is that over the long term (greater than 10 years) the diversity of cover within riparian reaches listed above would increase providing more habitat for wildlife species that use these areas. Other projects have removed vegetation (fuels, vegetation management, prescribed fire) which reduces hiding cover within the analysis area. Increased growth within riparian reaches will allow more options for wildlife movement and escapement corridors over the long term.

Existing Conditions – Unique Habitats

Special habitats within the project area include cliffs, talus slopes, rock outcrops, wet meadows, scabs, and aspen stands. This discussion focuses on aspen stands because of the potential adverse effects that livestock grazing can have on this unique habitat. Refer to the Wildlife Specialist Report in the analysis file for discussion of effects on other unique habitats.

It is generally accepted that aspen stands in the Blue Mountains and northern Great Basin are in an ongoing state of decline (Wall et al 1999, Erickson et al 2002). Aspen stands in the Blue Mountains occur typically as isolated stands in the uplands where soil and moisture conditions are favorable, which often involve perched water tables, some riparian areas and stringers along stream corridors (Cobb and Vavra 2003, Johnson et al 2001). The aspen ecosystems are rich in number and species of wildlife, especially in comparison to associated conifer forest types (Debyle 1985). In the Blue Mountains, aspen stands are used by 73 vertebrate species for reproduction and 115 species for feeding, (Thomas et. al. 1979, Sallabanks et al 2003).

Unlike other deciduous tree species and conifers, aspen overstories do not persist for long periods of time (DeByle 1985, Johnson et al 2001). The majority of aspen trees bored in the Blue Mountains show the overstory trees to average 80-120 years old with the oldest trees being less than 200 years old. If this overstory dies out and root suckers are not able to reach above browse height, underground aspen clones that may be more than 1,000 years old can die in a few short years.

Within the JCRAA, there are seven known aspen stands. These stands typically occur as small units of one to five stems and less than one acre in size (Cobb and Vavra 2003). The majority of these known aspen stands are protected from livestock grazing by fencing. Because of the small size of these stands, it is likely that additional stands occur within the JCRAA, but have not been inventoried or provided any protection from livestock grazing.

Alternative 1 – Unique Habitats

Livestock grazing would be eliminated under this alternative, reducing browsing and trampling to the unfenced known aspen stands and any uninventoried aspen stands that occur within the JCRAA. Wild ungulates would still contribute to browsing in all of the stands. Conifer encroachment and fire suppression would also continue to contribute to the decline of aspen survival. Refer to Alternative 2 for further description of those factors on aspen.

Alternatives 2, 3 Modified, and 4 – Unique Habitats

Direct and Indirect Effects - Aspen stands have been and continue to be heavily impacted from livestock grazing, some of the stands have only a few stems left with very few (less than 10

stems) trees remaining. The aspen stands that have been fenced have shown improvement in stand vigor. These stands where browsing or trampling have been eliminated are regenerating new age classes of aspen. In the long term(10+ years) these aspen stands will provide a unique habitat to wildlife that is currently underrepresented from historical conditions.

Young aspen is nutritious and when abundant, will make up a substantial portion of livestock and wild ungulate diets (Cobb and Vavra 2003). Livestock grazing can occur during the peak of growing season for aspen and reduce the suckering growth of aspen (DeByle 1985). The effects of livestock and native ungulates grazing, browsing, and trampling limits the regeneration and could lead to the elimination of aspen stands if repeated overbrowsing occurs (Jones et al 1985, Cobb and Vavra 2003). Small aspen stands within grassland areas tend to be even more heavily affected as livestock use these areas for shade, which further affects these clones by compaction and erosion (DeByle 1985).

Cumulative Effects - The past and current cumulative effects of fire suppression, conifer invasion, and browsing by native and domestic ungulates has reduced aspen habitat to a few isolated clones consisting of a decadent overstory with little or no healthy reproduction occurring from either seeding or root suckering.

Although aspen are sensitive to fire because the bark is thin and green (Jones & DeByle 1985), aspen forest do not burn readily because the areas these stands inhabit will usually cause slow spread of fire (Jones & DeByle 1985). Studies of aspen stands show that occasional fires usually increase the sprouting of aspen which increases the size of the stands if protected from browsing. Fire suppression discourages aspen reproduction in two ways. If no disturbance occurs while roots are healthy enough to sprout, then the trees maintain apical dominance over the root system, suppressing suckering. Secondly, aspen seems to require a mineral seedbed for successful seedlings or promotion of suckering, elimination of fire might reduce the area available for seedling establishment and the amount of solar radiation that reaches the ground (DeByle 1985, Wall et al 1999). Intense fires that kill aspen overstories will stimulate abundant suckering and even light fires stimulate suckering. If burning occurred yearly it could have a negative effect in destroying the aspen clones (DeByle 1985, Wall et al 1999). Natural fires in the Wallowas occur over a longer time span, so this would not be a major contributing factor in aspen decline as would grazing and conifer encroachment.

Conifer encroachment is another factor in causing reduction of aspen stands. Conifers compete for moisture and nutrients and increases their susceptibility to fire, by ladder effects which allows fire into the canopies and increases the intensity of fire (Jones & DeByle 1985).

Heavy grazing during the first half the 20th century caused long term changes in many of the aspen clones (DeByle 1985, Wall et al 1999). Herbivory by livestock, elk, and deer has been implicated as a primary factor in aspen decline (Wall, Vavra and Miller 1999). Past livestock grazing because of the numbers of animals grazed has caused major declines or extinction of many of the aspen clones.

Wild ungulates will seasonally use aspen stands primarily during fall and winter months.

Deer browse can be heavy during fall and winter months as their average diets include 74% trees and shrubs, while during the summer months their diet is mainly herbaceous (DeByle 1985). Elk can further impact aspen by barking mature aspen stems. Barking is the process of gnawing or stripping the bark for food. Elk are the primary barkers, but rabbits, mice, voles and porcupine also contribute (DeByle 1985). Beavers may also impact aspen stands that reside within riparian zones by removing stems and this has occurred along Swamp Creek. Beaver use of aspen stems often stimulated suckering and regeneration within these areas. Insects and diseases also impact aspen clones although this usually is site specific (Schmitt 1996).

The cumulative effects of fire suppression, conifer invasion, and browsing by native ungulates will continue to have detrimental effects on aspen stands by reducing the clone size and even the loss of some stands. The majority of the aspen stands in the analysis area could be lost within the next 50 years, if they are not treated by active management such as fencing, prescribed fire, removal of conifers or naturally occurring fires.

Plant inventories are prescribed at different levels for Alternatives 2 and 3. Wildlife inventories associated with various proposals are conducted throughout the year. As these inventories identify remnant aspen stands, these stands would be inventoried and protected through fencing as funding allows. However, the threat from conifer encroachment and wildfire suppression may continue to cause these stands to decline. Forest Plan standards and guidelines state that no management actions would be authorized to detrimentally alter unique habitats (Page 4-46). This alternative would be consistent because eventual protection of aspen stands from livestock grazing would occur as stands are identified. However, the decline in aspen stands from lack of management actions (removing conifers) would continue.

Existing Conditions - Old Growth Associated Species

This section summarizes existing conditions for (1) old-growth and late and old structure and (2) management indicator species associated with old growth or snags and downed wood.

Old-Growth and Late and Old Structure - Designated old growth is 4 percent (3,261acres) of the analysis area, located in 28 separate blocks. The majority of the old growth areas occur in moist stream bottoms, drainage heads, north facing slopes and/or some plateau areas. Compared to the Historic Range of Variability, late and old structural stage stands are low in the cool/dry plant associations and just slightly low in the warm/dry plant associations.

Late and old successional stage habitat (LOS) is limited in the analysis area, with all of it within the multi-strata with large trees (MSLT) structural stage category. Completely missing is the single stratum with large tree (SSLT) component, which historically comprised as much as 15-55% of all LOS in the analysis area.

Historical timber harvest that focused on large tree removal played a major role in reducing the amount and distribution of old growth habitat and late and old structural stages. To a lesser degree, ongoing livestock grazing has also reduced the number of large trees and

large snags. Grazing has reduced the competition of grass versus tree seedlings especially in ponderosa and mixed conifer stands. The increase in pine seedling competition reduces the growth of the trees which then increases the time for trees to reach a larger diameter.

Livestock and wild ungulates influence forests by selectively suppressing plant taxa and by accelerating the cycling of nutrients. This occurs when herbivores change the trajectory of succession, thereby changing the seral and climax vegetation. Secondly herbivores can suppress the forest's carrying capacity for fauna linked to shrubs in forest understories. For example predicting avifauna composition would be more difficult since many birds typically nest on the ground and in shrub canopies, rather than in forest overstories (Sallabanks 2001). The forest understory throughout old growth areas has been impacted from past and current grazing.

All of the old growth areas contain some riparian habitat (streams, springs and ephemeral draws) most of which has been impacted by grazing in the past and currently. Small meadows within old growth areas have also been impacted from grazing.

Management Indicator Species - Old growth management indicator species that reside in the analysis area are pileated woodpecker, northern goshawk, and some of the primary cavity excavators. All of the primary cavity excavators are associated with snags and downed wood. While American marten are an indicator of old growth, no American sightings have been recorded within nearly 50 miles of the analysis area (Verts and Carraway, 1998, Marshall et al., 1996). They are not reasonably expected to occur here perhaps because the forested land occurs as fragmented islands surrounded by grasslands.

Pileated woodpeckers are found throughout the JCRAA (Personal Observations, D. Knox, C. Miller, R. Anderson, J.Hohman, J. Martinez, S. Borgerding). Pileated woodpecker were noted or sighted in the majority of old growth stands. These woodpeckers were selected as a management indicator species because they represent species dependent on large diameter snags and downed trees in mature and old growth forest in dense canopies. As previously described, ongoing grazing has contributed to intra-tree competition and the resulting delay in achieving larger diameter trees, which pileated woodpeckers prefer for nesting. (Thomas et al 1979, Sallabanks et al 2001).

Northern goshawks are present within the project area (Anderson 2000, Minta et al. 1993). There are more than 15 nesting records, 15 historic nesting locations and approximately 20 different territories overlapping within the analysis area. The northern portion of the analysis area had protocol level surveys to reconfirm occupancy and use of nest stands in spring/summer of 2000. No nests were located, although several aerial observations were noted. Goshawks build large stick nests below the upper canopy that are supported by limbs of one of the larger trees within a stand. Foraging occurs within forests with open understories and along small openings (Bull and Hohman 1994, Marshall 1992). Northern goshawks feed on birds and small mammals (Ehrlich et al 1988). Loss of nesting habitat for small birds or forage for small mammals in turn affects the nesting success of northern goshawk since these species make up their prey base (Cooperrider et al 1986). Past and current grazing has reduced the shrub and herbaceous layer of this analysis area, especially in riparian areas which reduces potential habitat for nesting birds and small mammals.

Primary cavity excavators are a good representative for all species dependent on snag and down tree habitats and therefore are management indicator species. Viable populations of primary excavators are essential for maintaining secondary cavity user populations. The primary excavators consist of

northern 3-toed woodpecker	yellow-bellied sapsucker	mountain chickadee
pileated woodpecker	Williamson's sapsucker	black-capped chickadee
black-backed woodpecker	hairy woodpecker	white-breasted nuthatch
northern flicker	downy woodpecker	red-breasted nuthatch
Lewis woodpecker	white-headed woodpecker	pygmy nuthatch

Approximately 3,315 acres within or adjacent to the analysis area were surveyed for snag levels in the last decade, resulting in an estimated 2.3 snags per acre. Desired densities for 100 percent of potential woodpecker habitat are 4 snags per acre.

Surveys for large woody debris have been completed in some of the analysis area. All units surveyed were warm/dry sites. Results from walk through survey counts were variable, dependent on slope and unit location. Pieces per acre varied from 0 to 12.9, with an average of 5.6 pieces per acre. Desired levels for warm/dray sites are 3 to 6 pieces per acre.

Past and current grazing has affected these habitats, by reduction of hardwoods in riparian areas and aspen stands. The loss of snags and recruits of additional deciduous trees will negatively affect populations of primary excavators most closely associated with this type of habitat (Krausman 1996, Johnson & O'Neil 2001, Cooperrider 1986).

All of the primary cavity excavators, and 179 additional species of wildlife are dependent on downed wood for cover, feeding and/or reproduction. Lack of down and woody material varies due to previous wildfire, prescribed burning and timber management. Grazing by livestock and wildlife herbivores can contribute to availability of future dead and down material because removing grasses can increase survival of ponderosa pine seedlings, which in turn leads to competition of conifers and reduced tree growth rates.

Alternative 1 – Old Growth Associated Species

Old Growth and LOS – Under the no grazing alternative, vegetation including grasses, shrubs and forbs would increase in the understory and small openings within these old growth areas. Natural processes will continue to occur outside of HRV. Dense, multi-storied stands will continue to increase in density. Most stands will decline in vigor, and mortality will increase due to increased competition for water and insect activity. Second growth stands that have some LOS characteristics will take longer to move into old growth conditions because of competition for water and nutrients. Habitat for species most dependent on MSLT should remain stable until stand replacement events begin to occur. These species that would be affected include pileated woodpeckers, black-backed and three-toed woodpeckers, American marten, and goshawks. Species dependent upon SSLT habitat such as white-headed woodpeckers and flammulated owls will most likely continue to

decrease.

Single story large tree common that commonly occurs in ponderosa pine forest types and occurs within this project area should improve with the no grazing alternative. Grazing especially heavy grazing of the past has contributed to pine seedlings becoming thick patches within these stands. Currently these are dense stands of pine which are prone to disease, insect infestations, and stand replacement fires. As grasses and forbs are allowed to grow they would out compete and reduce the number of pine seedlings and eventually allow for more of the open canopied, older pine stands, which avian species such as the white-headed woodpecker depend on (Sallabanks 2001, Blair and Servheen 1993). With continuity of understory vegetation, natural occurring fire would be able to carry through these stands in their normal patterns across the landscape (Sallabanks 2001). The increase of forbs and shrubs in the forest understory, should provide for better structural diversity and lead to wildlife specie diversity within many of the LOS and designated old growth areas.

The greatest threat to LOS habitat will be that from large scale or stand replacement wildfires, which could alter the remaining LOS stands so that they would not support the species dependent on that habitat type for the short to long term.

Management Indicator Species - Direct and indirect effects of the no grazing alternative on pileated woodpecker are minimal, since this species depend on snags and dead and down wood for foraging and nesting. Considering cumulative actions, current levels of snags would remain, in the short to mid term, with an increase in smaller diameter snags (for example, from competition). No livestock grazing would increase the fine fuels which would carry wildfires across more of the landscape. As the risk of wildfire increases, with higher fuel loads, much of the existing snags and logs could be consumed, or the surrounding habitat may not provide other habitat elements (such as larger snags for nesting) needed by these species. Also, consumption in a fire, or loss of growth by suppressed trees could have a long-term effect on the number of large snags and log recruits. Removal of livestock grazing may reduce the number of tree seedlings, as grasses and shrubs may out compete tree seedlings, thus allowing for growth of larger trees in shorter time span (Sallabanks et al 2001). Pileated woodpeckers prefer larger size (>21" dbh) snags for nesting and roosting and downed wood to that is at least 4" diameter (Bull and Holthausen, 1993). Other primary excavators prefer burned areas, for example black-backed woodpeckers. Burned areas and no grazing could result in more ponderosa pine habitats, increasing habitat in the long term for such species as white-headed woodpeckers and bats. Habitat use and population numbers should not be altered by this alternative in the short to long (20+ years) term. If large fires or insect infestations occur it will alter habitat use by pileated woodpeckers both in the short and long term. Whether the effect is positive or negative to the species is difficult to predict.

Northern goshawks prefer stands that are mature or late seral stage with relatively high canopy closure for nesting and post-fledging areas (DeStefano et al. 1994, Martin et al. 1998, Reynolds et al. 1983). This alternative does not complete any activities within the analysis area that would maintain or increase LOS areas in the short to mid tern (5-20 years). Removal of livestock grazing does increase the shrub and herbaceous layer which in turn can increase small mammal and avian populations. This increase of species will

benefit goshawks by providing more prey base. Habitat quality for goshawks will remain static in the short to mid term period. The potential to lose dense nesting stands to stand replacement wildfire will remain high. Over-all avian diversity should improve with this alternative; possibly increasing the abundance of potential prey species.

With respect to primary cavity excavators, this alternative would not impact forested primary excavators. Those species that prefer hardwood habitat would see increases in this type of vegetation, as there would be no grazing or browsing of seedlings. Hardwood habitats including aspen, cottonwood, and willow are important to several PCE's. Most of the sapsuckers, downy and hairy woodpeckers, northern flicker, blackcapped chickadees and white and red breasted nuthatches prefer these habitats for foraging and nesting. Livestock grazing is one of the major factors in reducing this habitat in the past. Under this alternative, these hardwood habitats would improve. As more of this habitat returns, it would provide for higher population levels of the PCE's that are closely associated with this type of habitat than what was available historically.

Past management activities, livestock grazing, fire suppression and particularly timber harvest and planting site prep have reduced the number and distribution of snags and down woody debris across the landscape. Firewood cutting along roads has further reduced these habitat components. Future management activities and firewood cutting will continue to affect levels of these habitat components. The greatest threat to primary cavity excavators under this alternative is the risk of stand replacement wildfires, which may alter preferred habitats over large areas, making them unsuitable for many species. There is potential that such an event would have a long-term negative effect to snag habitat by consuming snags and large woody debris and altering the micro-habitats around snags left standing.

The current levels of snag and down woody material in the mixed conifer ecotypes are below guidelines that are listed in the Eastside Screens (Regional Forester's Forest Plan Amendment #2). The current snag and down woody debris levels would be maintained in the short to potentially mid term period (5-20 years). The majority of snags will be small diameter that will provide some foraging substrate but do not provide nesting habitat especially for larger primary and secondary excavators. Increased stand densities and the resultant tree mortality will increase fuel loadings, which would increase the risk for stand replacement wildfires. Such fires have the potential for long-term negative effects to habitat for PCE's by consuming snags and large woody debris and altering the micro-habitats around snags left standing.

Alternatives 2, 3 Modified, and 4 – Old Growth Associated Species

Direct and Indirect Effects - Livestock grazing has and continues to impact the shrub and forb layers of these stands by browsing, grazing, and trampling which can limit wildlife fauna that prefer this type of habitat. Riparian areas within old growth stands are also impacted from livestock grazing due to the same reasons as listed above.

Other factors have caused declines in old growth habitat such as logging, recreational activities, and wildfire. Historical logging has reduced many possible old growth stands.

Previous fire suppression has lead to more intense fires which has destroyed acres of existing old growth areas. Recreational activities have also impacted some of the old growth. Activities such as OHV's, firewood cutting, and mushroom gathering have impacted some of the old growth areas.

Livestock grazing would cause few to no direct impacts on pileated woodpeckers. Livestock grazing would indirectly affect forested stands, especially in ponderosa pine stands. Grazing of grasses and other forbs reduces competition to pine seedlings and hoof action of livestock can also increase the amount of seeds from ponderosa pine into the ground. Pine seedlings and saplings can occur in thick patches in as little as 7-15 years when forbs and grasses are reduced by livestock grazing. This increase of thick patches of pine stands are at a greater risk to fire, insects and reduction of growth due to competition. Mixed conifer is not as susceptible to these livestock pressures because they do not contain as much forage as ponderosa pine stands.

The effects of livestock grazing on northern goshawk mainly involve grazing of prey habitat. If grazing removes major portions of shrubs and low vegetation cover, it could affect reproduction of small mammal and avian nesting. Livestock grazing is likely to alter the prey base and its availability for goshawks.

Other factors that affect goshawk populations include logging, recreational activities, prescribed and wild fires. Goshawks have been recorded both attacking intruders and failing to successfully reproduce when the disturbances are within their nesting groves (Desteffano and Meslow, 1994; Reynolds and Wight 1978). When goshawks are paying attention to human intrusion, it could cause predation of young or eggs by great horned owls, ravens or other raptors. Past logging and wildfires have reduced the availability of nesting trees, or abandonment of nests, loss of prey and cover for this species. Prescribed fires if conducted in spring will impact nesting goshawks if it occurs in close proximity of nests by causing abandonment or injury to nestlings.

With respect to primary cavity nesters, the effect would be minimal as there would be no adverse effect on existing snags and dead and downed wood and virtually no effect on foraging habitat. The major impacts of livestock grazing are in the hardwood component and ponderosa pine habitats in the analysis area. These impacts include grazing, browsing and trampling which have reduced many of the hardwood habitats and contributed to dense stands in ponderosa pine forests. There are several species such as downy woodpeckers and red-naped sapsuckers that prefer hardwood stands, and whiteheaded woodpeckers prefer larger diameter ponderosa pine forests.

Cumulative Effects Past timber harvest, prescribed fire and fuelwood cutting have reduced snag levels in the analysis area to below 100% snag levels (4 snags per acre). Current fuelwood gathering and past timber harvest methods have resulted in snag levels of less than 50% for potential woodpecker populations. According to research (Bull & Holthausen 1993) this is below the recommendation of at least 4 trees per acre up to 6-8 per acre for optimum woodpecker populations.

There is current research, which suggests that low intensity fires are necessary for the long-term maintenance of snags. Pitch increases within the bole during fires and

"preserves" and strengthens the bole so underburning may improve snag habitat. Moisture, amount of downed wood, winds, slope, and aspect all factor into the amount of dead and downed wood that would be retained or added to the forest floor during a burn.

In the long-term current logging practices are anticipated to increase the diameter of existing trees, which would result in larger snags. However, this will likely be a long-term effect requiring at least 20+ years.

Alternative 2 is not expected to have a significant effect to current snag and LWD levels in the short to mid-term. The greatest impacts would be to hardwood components that several of the primary excavators prefer for foraging and nesting.

Among the most significant and declining wildlife habitat resources in the Pacific Northwest United States are residual stands of late and old successional stage structure (LOS) or old growth habitat. Old-growth stands contain mature and overmature trees in the overstory and usually contain a multi-layered canopy with trees of several age classes (Forest Plan). These areas have great value as places for recreation, nature study, and scientific research. Most importantly, they provide crucial habitat for a number of wildlife species. In the Blue Mountains, it is recognized that late and old growth habitat is now limited and well below historic levels (RFA #2 Screens, Silvicultural Report). Populations of species associated with late and old successional stages are also limited. Past timber harvest, road building and stand replacement fires have significantly reduced the amount and effectiveness of old growth habitat. Fire and insects are acting at higher rates than predicted in the Forest Plan (Forest Plan monitoring reports) and are further reducing old growth areas.

Existing Conditions – Migratory and Other Landbirds

Migratory landbirds are those that breed in the U.S or Canada and winter south of the border in Central and South America or the United States. Many well-known passerine songbirds, hawks, and shorebirds fall in this category. Approximately 150 different migratory and nonmigratory landbird species are either known or suspected to use the JCRAA for feeding, reproduction, or migratory habitat (Andelman and Stock 1994, Sallabanks 1996, Evanich 1992, Conley 1995, Altman 2000, Oregon Breeding Bird Atlas Project 2000 Oregon Birds Record Committee).

Migratory landbirds have experienced nationwide declines in population. Historic changes (last 100 years) in this landscape included loss of beaver and associated wetlands; wildfire and fire suppression; heavy grazing by livestock including cattle, sheep and hogs; agriculture and associated activities; timber harvest and associated activities (roads etc); and pesticide use has affected many of these avian species.

Grazing by livestock or wild ungulates can either directly or indirectly favor populations of some avian species while depressing others. Grazing alters abiotic and biotic relationships within and among local bird species (Knopf 1996, Owens and Myres 1972). Increased vegetation and structural diversity usually has a larger diversity of avian species (Bull et al 2001, Knopf et al 1988,, Knopf 1996, Taylor 1986).

Cattle grazing impacts the variety of vegetation types differently. Forest canopies have little impact from grazing. In shrub and grass habitats the effects can be major and immediate by removal of vegetation and structural diversity. Such changes affect the avian species guild, or reduce species diversity (Knopf et al 1988). Historical heavy grazing has removed or greatly reduced the shrub component from riparian areas throughout the west and in some segments within this analysis area (Knopf 1996, Bull and Skovlin 1982, Sedgwick and Knopf 1987). Other effects of grazing is the increase of brown-headed cowbirds which are nest parasites, higher predation rates by other species due to lack of vegetation or isolation of nesting habitat which reduces the search time for predators (Kauffman et al 2001. Knopf 1996). The response of bird species changes varies with the amount of vegetation removed. The most susceptible to these changes are rare avian species which can become extirpated with lack of nesting habitat. Lack of vegetation will shift to species that are more generalists within these areas (Knopf 1996). Impacts of grazing on gamebirds seems to be variable with positive or negative influences being noted as to the amount of vegetation removed (Knopf 1996).

Alternative 1 – Migratory and Other Landbirds

This alternative would remove livestock grazing within this analysis area which would impact many different plant communities. Growth of the hardwoods, shrub and herbaceous plants, would increase, eventually providing for more nesting habitat for many avian species. Forested areas would have increases in shrub and herbaceous communities. Forbs, grasses and shrubs would out compete some of the tree seedlings, thus reducing density in some forested habitats. In the long term (20+ years) stand types such as ponderosa pine would increase in size and supply more habitat for species associated with these habitats.

Past timber management, livestock grazing, wildfire suppression, wildfires and other management activities, and natural processes, have altered the quantity, quality, and juxtaposition of habitat for many species of migratory landbirds. Various portions of the landscape now support different species of birds than historically. Management activities and natural processes will continue to affect bird species abundance and distribution over time.

More species are found in some forest types than others, but the greatest diversity of forest avifauna requires everything from early successional sapling stands to old growth forest. Each species has its own special habitat needs. Some migratory landbird species utilizing the analysis area will experience both negative and positive effects from implementation of any of the alternatives described. The analysis area currently provides a variety of successional stages in each plant community across the landscape. Over the long term, these vegetative communities will move into and out of the historic range of variability, favoring different species over others for varying periods of time as forest stands and steppe habitats change.

Habitat for migratory landbirds is not expected to change significantly in the short to mid-term under this alternative. The greatest potential risk to long-term habitat conditions for

migratory landbirds under this alternative is from large scale, stand replacement wildfires and further loss of LOS. Such wildfires have the potential to eliminate habitat structures that many migratory and other landbird species depend on. Particularly at risk are those species that depend on late and old structure and closed canopy forest stands such as the brown creeper, Townsend's warbler, and red-breasted nuthatch. Species that depend on open areas and early successional vegetation might experience population increases in the analysis areas when such fire events occur. However, overall avian biodiversity would decrease as a result of a large-scale wildfire event for the mid to long-term period.

Alternatives 2, 3 Modified, and 4 – Migratory and Other Landbirds

Direct and Indirect Effects - Livestock grazing is a widespread and important influence on migratory and other landbirds. Different species have different responses to grazing from positive to negative effects. Those species that are negatively influenced by grazing are those that are dependent on herbaceous ground cover for nesting and/or foraging. These populations are at risk and are most likely below historic population levels (Bock et al 1993, Taylor 1986).

Livestock grazing, especially the season of grazing affects avian species that prefer riparian, upland or forested landscapes. Direct effects of grazing in riparian areas is reduction of herbaceous, shrub and hardwood components, reduction of cover and width of the riparian zone which further fragments this limited habitat and reduces important nesting habitat (Bock et al 199, Sedgwick and Knopf 1987, Knopf et al 1988). In forested habitats avian species most affected by livestock grazing are those that are dependent on the herbaceous and shrub ground cover for nesting and foraging within the forest canopy.

Livestock grazing has positive influences on those avian species that prefer more open habitat. Avian species such as killdeers, house wrens, golden eagles and brown-headed cowbirds respond to more open grazed areas. The brown-headed cowbird is directly attracted to livestock, which is detrimental to other avian species because of brood parasite activities. The reduction of riparian habitat decreases the search time for brown-headed cowbirds to find nests and lay their eggs. Brown-headed cowbirds have had serious effects on some avian populations by reducing nesting success of these avian species (Bock et al 1993, Kauffman et al 2001).

Cumulative Effects - Many activities contribute to cumulative impacts on nesting and foraging habitats (refer to Table 14). Past logging, livestock grazing, fires, and fire suppression have all contributed to degradation of habitat for some of the avian species and have improved habitat for others. Some of these activities have positive effects for those avian species that prefer more open habitat, this type of habitat is not lacking across the analysis area. Habitats that have been reduced by these activities are woodlands, riparian areas, and shrub steppe and grassland areas (Johnson et al 2001, Bock et al 1993, Thomas et al 1979).

Past fire suppression, grazing, and logging have contributed to the loss of most fire-maintained old-growth forests and woodlands. Warm/dry habitat forest types have been more heavily impacted by these factors as compared to other eastside forest types. Today the greatest immediate threats for future viability of warm/dry forest types are high-

severity fire occurrences and increased site-specific competition for nutrients and moisture that result in reduced growth in ponderosa pine regeneration and increase mortality over the long-term (Sallabanks etal 2001). If these forest types were to burn under a high-severity fire it could eliminate what little old-growth remaining and would take >200 years, before any restoration options were available (Sallabanks etal. 2001). These habitats have specific and generalist avian species associated with them. Wildfires would reduce possible nesting and foraging habitat for many of these species if the wildfires are large in size.

Existing Conditions – Bats

Several species of bats occur within and adjacent to the analysis area that are listed by the USDI Fish and Wildlife Service as species of concern: the small-footed, long-eared, long-legged, and Yuma myotis. Several other species of bats occur within and adjacent to the analysis area: big brown bat, hoary bat, silver haired bat, California bat, little brown bat, and western pipistrelle. Except for western pipistrelle, all of these species have been recorded within and adjacent to the project area during mist net surveys conducted from 1992 to 1995 (Perkins 1992,1993,1994,1995 & 2000).

Bats will use a variety of habitats for day roosts such as rock crevices, snags, old growth and decadent trees, cliffs, caves and various other sites if they provide cover, and are dry (Nagorsen and Brigham 1993, Perkins, 1992-1993). These habitat features exist throughout the analysis area, although there are no known hibernacula or maternity colonies. There are historical records of Townsend's big-eared bats in Joseph Canyon. Bat activity occurs at lower elevations such as in Joseph Canyon, in Swamp Creek, and the surrounding areas (Erickson and Adams 2003).

Several species of bats that inhabit upland aspen and old-growth ponderosa pine are more at risk because of loss of this type of habitat. The quality and availability of roost sites are considered to be critical factors influencing population size and distribution of some of the bat species. Proximity to forage and clean drinking water may limit bat populations (Johnson and O'Neil 2001). Clean water and healthy riparian areas are essential in providing abundant insect prey and for providing open flight corridors (Kauffman 2001). Livestock grazing has affected these habitat values in the past and in some areas currently. Aspen stands which are important habitat for several species of bats are particularly at risk because of browsing and clean water is scarce in many of these areas especially in upland ponds due to livestock use.

Alternative 1 – Bats

Bat species use a variety of successional forest habitats for different stages in their life histories. There will be no reduction of the current snag density for roosting under this alternative. No livestock grazing would improve hardwood habitats which some of the bat species prefer. Water sources would remain cleaner without the presence of livestock use which in turn increases some of the prey insect populations which bats feed upon.

Past management practices and natural processes have altered the quantity, quality, and spatial arrangement of habitat for some species of forest bats. These activities and processes will continue to affect the landscape, favoring some species over others through time. One example of change with the removal of livestock grazing would be the increase of hardwood stands such as aspen, over time these should increase in size and provide more habitat for bats. Hardwood stands may still be impacted from wild ungulate foraging which increase recovery time for some of these stands.

Some species of bats use rocky habitats, crevices and caves. Most of the natural rocky habitats would remain unchanged for the short to long-term. Adverse changes to the microhabitats around rocky areas could occur with stand replacement wildfires. Such fires could also destroy day roost habitat found under loose bark on larger dead and dying trees. This alternative will not reduce the risk of wildfires, or accelerate stands toward LOS for the potential of larger snags being available in the mid to long term.

The most significant threat to habitat for forest bats over the long term will be from large-scale wildfires, which could reduce the availability of larger snags for roosting sites and prey availability.

Alternatives 2, 3 Modified, and 4 – Bats

Direct and Indirect Effects - Livestock grazing impacts some of the habitat needs for bats. Clean water is important for bats for drinking and maintaining insect populations. Livestock impact these areas by muddying and contaminating the water with their feces. Past and present livestock grazing has also impacted and reduced hardwood and riparian habitats by browsing, trampling, and grazing which bats rely on for feeding and roosting. These habitats are important for some species of bats for feeding, movement and roosting. Several exclosures have been installed along riparian areas, ponds and hardwood habitats which will improve and increase these habitats, providing that they are maintained and prevent livestock grazing.

Cumulative Effects - Critical factors influencing population size and distribution of some bat species is the availability and quality of roost sites (Sallabanks et al. 2001). High levels of bat activity in mature and old-growth forests are thought to be partially due to availability of older trees for roosting in these stands (Sallabanks et al 2001). Past logging, fuelwood cutting and fires have reduced the availability of these larger sized trees throughout the forested areas, which impacts bat population. In the long term (20+years) current timber management would provide for larger trees which would provide more roosting areas.

Other factors that affect bat populations include human disturbance, mine closures, eradication of bats, vegetation conversion, and pesticide spraying that reduce lepidopteran species which is an important food source for bats. Human disturbance at maternity or roosting sites will often cause bats to abandon these areas and can cause major declines in some bat species. Pesticide spraying for various moths will reduce many of the lepidopteran species, which may affect bat populations in the areas treated.

Existing Conditions – PETS

The following proposed, endangered, threatened, sensitive species (PETS) or species of concern of wildlife are known to occur, or have potential or historic habitat, on the Wallowa Valley Ranger District. Habitat for these species is shown below for the JCRAA. The Regional Forester's Sensitive Animal list was updated as of November, 2000. The PET and SoC are from the USDI Fish and Wildlife Service and are updated every 6 months. A description of habitat and species for PETS is analyzed in the Biological Assessment.

Table 43– PETS Species Known or With Potential to Occur on the Wallowa Valley Ranger District

Animal Species	Listing	Habitat
Canada Lynx	Threatened	No known habitat
Northern bald eagle	Threatened	Potential habitat
Gray Wolf	Endangered	Historic and potential habitat
Spotted bat	Sensitive	Potential habitat
California wolverine	Sensitive	Potential habitat
Pacific Fisher	Sensitive	No known habitat
Preble's shrew	Species of Concern	Potential habitat
Small-footed myotis	Species of Concern	Known habitat
Long-eared myotis	Species of Concern	Known habitat
Long-legged myotis	Species of Concern	Known habitat
Yuma myotis	Species of Concern	Potential habitat
Townsends big-eared bat	Species of Concern	Potential habitat
Fringed myotis	Species of Concern	No known habitat
Rocky Mountain bighorn sheep	Sensitive	Known and potential habitat
Columbia sharp-tailed grouse	Sensitive	No known, but historic habitat
Greater sage grouse	Species of Concern	No known habitat
Upland sandpiper	Sensitive	Historic habitat
Greater yellowlegs	Sensitive	No known habitat
Gray flycatcher	Sensitive	No known but possible historic habitat
Tricolored blackbird	Sensitive	No known habitat
Yellow-billed cuckoo	Candidate	No known habitat
Bobolink	Sensitive	No known but possible historic habitat
Peregrine falcon	Sensitive	Known habitat
Horned grebe	Sensitive	No known habitat
Bufflehead	Sensitive	No known habitat
Painted turtle	Sensitive	No known habitat
Columbia spotted frog	Candidate and Sensitive	Potential habitat
Northern Leopard frog	Sensitive	Potential habitat
Blue Mountain Cryptochia caddisfly	Species of Concern	Potential habitat

Alternative 1 – PETS

Previous sections of the wildlife resources section address effects to PETS. For Preble's shrew, Columbia spotted frog, and northern leopard frog, refer to the Riparian Habitat section. For Rocky Mountain bighorn sheep, refer to the Big-Game section. For Ferruginous hawk, olive-sided flycatcher, and peregrine falcon, refer to the Migratory Bird section. For the bat species, refer to the Bat section. Wolves and California wolverine tend to be forest generalists and descriptions of habitat for all species would apply. In general,

all PETS species with known habitat in the JCRAA would observe an improvement in habitat conditions from implementing this alternative.

Alternatives 2, 3 Modified, and 4 – PETS

Determinations of effect from implementing Alternative 2, 3 Modified, or 4 on PETS species are provided below for those species with historic, potential, or known habitat within the project area

Table 44 – Determination of Effect to PETS Wildlife Species

Animal Species	Habitat	Alternatives 2, 3 Modified, and 4	Rationale
Canada Lynx	N	NE	Will not adversely impact lynx habitat, is not considered a viable LAU
Northern bald eagle	P	NE	Potential foraging only, no nesting anticipated
Gray Wolf	H & P	NE	Historic range, will not impact potential habitat. Predator control of State of Oregon listed species is prohibited.
Spotted bat	P	MIIH	Habitat in common in watering areas, prey base may be affected
California wolverine	P	MIIH	Travel corridors and prey base may be affected, not denning habitat
Pacific Fisher	N	NI	No recorded sightings, no habitat
Preble's shrew	P	MIIH	Potential habitat, no recorded sightings within analysis area, historical sighting in Sled Springs which is adjacent to analysis area. potential to impact habitat
Small-footed myotis	K	MIIH	Habitat in common in watering areas, prey base may be affected
Long-eared myotis	K	MIIH	Habitat in common in watering areas, prey base may be affected
Long-legged myotis	K	MIIH	Habitat in common in watering areas, prey base may be affected
Yuma myotis	P	MIIH	Habitat in common in watering areas, prey base may be affected
Townsends big-eared bat	P	MIIH	Habitat in common in watering areas, prey base may be affected
Fringed myotis	N	NI	No habitat
Rocky Mountain Bighorn sheep	K & P	MIIH	Potential overlap of water and habitat
Columbia sharp-tailed grouse	H & N	NI	No current occurrence on allotment
Greater Sage grouse (SoC)	N	NI	No potential habitat, no records of sightings in Wallowa Co
Upland sandpiper (S)	H	NI	Suspected historic habitat
Greater yellowlegs (S)	N	NI	No habitat
Gray flycatcher (S)	H? & N	NI	Possible migrant occurrence, possible historic occurrence
Tricolored blackbird (S)	N	NI	No potential habitat, possible winter foraging only
Yellow-billed cuckoo (C)	N	NI	No recorded sightings
Bobolink (S)	N & H?	NI	No records, possible historic habitat
Ferruginous hawk (SoC)	K	NI	Foraging recorded in analysis area
Olive-sided flycatcher (SoC)	K	NI	Habitat present, and have been recorded within analysis area. No impacts from livestock grazing are anticipated.
Harlequin duck (SoC)	N	NI	No habitat or recorded sightings

Animal Species	Habitat	Alternatives 2, 3 Modified, and 4	Rationale
Western burrowing owl (SoC)	N	NI	No nesting habitat or recorded sightings of this species
Peregrine falcon (S)	K	NI	Foraging habitat only, no nesting records
Horned grebe (S)	N	NI	No recorded sightings, no habitat
Bufflehead (S)	N	NI	No recorded sightings, no habitat
Painted turtle (S)	N	NI	No habitat
Columbia spotted frog (C) & (S)	P	NLAA	Potential habitat, no recorded sightings, very aquatic restricted
Northern Leopard frog (S)	P	NI	Potential habitat, no recorded sightings, very aquatic restricted
Blue Mountain Cryptochia caddisfly (SoC)	P	MIIH	Larval stage is aquatic, and species has been recorded adjacent to analysis area. May be impacted from livestock use in creeks.

C= Candidate species, S= Sensitive species, LE= Listed Endangered species, LT= Listed Threatened species. K= Known Habitat, P = Potential Habitat, H = Historic, NE = No Effect, NI= No Impact, MIIH= May impact individuals or habitat, but will not likely contribute towards Federal Listing or cause a Loss of viability to the population or species.

Refer to the Botanical Biological Evaluation for further information regarding Sensitive species and anticipated direct, indirect, and cumulative effects. The Forest Plan (Page 4-30) requires that all actions and programs be reviewed to determine their potential effects on threatened, endangered, and sensitive species. This evaluation has been prepared and therefore complies with the Forest Plan.

Recreation Resources

Existing Conditions - Recreation

The Oregon State Highway 3 corridor passes north/south along the western edge of the project area and includes the Joseph Canyon Viewpoint Unit of the Nez Perce National Historic Park. The entire length of the corridor has been designated as a section of the Nez Perce (Nee Mee Poo) National Historic Trail. In addition, much of the land to the east of the corridor has been designated as a level 1 critical viewshed. Traffic counts taken by the Oregon Department of Transportation at the Oregon/Washington state line show a 36% increase in traffic on Highway 3 from 1991-1996. Observations made by Forest Service personnel during the same period indicate a substantial decrease in commercial traffic that is more than offset by an increase in recreation traffic.

The Joseph Canyon Viewpoint has been recently constructed and includes restroom facilities, an interpretive trail, and a viewing area. This site's location adjacent to Highway 3 makes it an unlikely location for livestock to congregate, and there are few livestock related conflicts at this site.

The roadless areas of Joseph, Swamp, and Davis Creeks are accessed via a system of non-motorized trails. Recreation use of the trails and the area is presently quite low, with the bulk of the use occurring from April to June, and during big game hunting seasons. Most access originates at the Chico Trailhead immediately adjacent to the range planning area on Highway 3. Virtually all of this area is included in the Highway 3 Corridor viewshed area and also includes the Wild and Scenic portion of Joseph Creek.

With respect to Recreation Opportunity Spectrum (ROS), the unroaded portion of the analysis area is primarily designated semi-primitive motorized or semi-primitive non-motorized. The roaded portion of the JCRAA is primarily designated Roaded Natural.

The uplands comprise the remainder of the land base within the range planning area and provide the widest range of recreational opportunities. Currently, hunting is the most popular activity, although continued declines in available big game tags are decreasing its significance. As a result, many popular dispersed campsites are no longer used. Current trends show an increasing interest in mountain bike, OHV, and snowmobile based activities in the area. OHV use is encouraged on the Peavine Trail (#1657) and is becoming increasingly popular.

Two developed recreation sites are located within this portion of the project area: Red Hill Lookout and Coyote Campground. Red Hill offers a restroom, picnic facilities, and a panoramic view within an exclosure surrounding Red Hill Lookout. Coyote Campground includes 9 defined campsites and a large group area. It is fenced from livestock use.

Alternative 1 – Recreation

Recreation opportunities within the JCRAA would not shift between Recreation Opportunity Spectrum categories with elimination of livestock grazing. Because the ROS designations tend to reflect the roaded nature and primitive influence of the experience, the presence or absence of livestock grazing would not necessarily influence the ROS setting. However, within the setting indicators themselves, the elimination of grazing would tend to increase the primitive influence of the experience. As described below under scenery, a more natural setting would emerge as vegetation changes from the elimination of livestock grazing. More hardwoods and improved range conditions would tend to increase the primitive nature of the recreation opportunity setting.

Alternative 2 – Recreation

Direct and Indirect Effects - With respect to Recreation Opportunity Spectrum (ROS), the unroaded portion of the analysis area is primarily designated semi-primitive motorized or semi-primitive non-motorized. The roaded portion of the JCRAA is primarily designated Roaded Natural. Similar to Alternative 1, the presence or absence of livestock within the JCRAA is not enough of a change to cause a shift in ROS settings. Within the roaded natural, semi-primitive motorized, and semi-primitive non-motorized settings, the continuation of livestock grazing would cause each area to continue to provide the level of recreation opportunities they currently provide. The Joseph Creek Wild and Scenic River receives relatively light grazing use, which places it on the more primitive end of the scale of a semi-primitive motorized experience. This situation would continue, since Alternative 2 would continue with the current grazing schedule.

Cumulative Effects – Recreation opportunities within the JCRAA are expected to be influenced by the Draft National Off-Road Vehicle Policy, assuming it develops into a final rule. This policy would require managers to establish open routes for off-road vehicle travel, closing the remainder of the area to such travel. Other ongoing or foreseeable future actions consist of prescribed burning proposals and road closures for watershed improvement (refer to Table 14). In general, there is a trend to reduce motorized access on the National Forest, which would cause recreation experiences in the JCRAA to become more primitive and less roaded. However, livestock grazing would not necessarily influence that trend.

Alternatives 3 Modified and 4 – Recreation

Effects on ROS would be the same as described for Alternative 2 because changes in grazing systems among these alternatives would be subtle with respect to ROS setting.

Scenic Resources

Existing Conditions - Scenery

The area is part of the 20,000 acre Highway 3 Level 1 Viewshed Corridor and is managed to protect the natural landscape of the areas as viewed from the highway. The Oregon State Highway 3 corridor is located on the rim of Joseph Canyon and includes Joseph Canyon Viewpoint, which was included in the Nez Perce National Historic Park in Sept. 1997. The Visual Management System defines Sensitivity Level 1 as the highest sensitivity and includes all seen areas from primary travel routes, such as Highway 3. The entire length of the travel corridor has been designated as a section of the Nez Perce National Historic Auto Tour.

Because of the long-term grazing history of this area, the presence of livestock in the area does not necessarily detract from the view. It may even seem a normal part of the landscape by some viewers.

Landscape prescriptions by classification are as follows:

- Preservation/very high rating allows ecological changes only. Management activities, except for very low visual-impact recreation facilities, are prohibited. Because Joseph Creek is designated Wild, areas within the Wild and Scenic River corridor are designated preservation/very high.

- Retention/high rating refers to landscapes where the valued landscape character "appears" intact. Deviations may be present but must repeat form, line, color, texture and pattern common to the character so completely that they are not evident.

- Partial retention/moderate refers to landscapes where the valued landscape character "appears slightly altered." Noticeable deviations must remain visually subordinate to the landscape character being viewed. Road 46 corridor falls within this partial retention/moderate ratings as does a transition area adjacent to the Wild and Scenic River.

- Modification/low refers to landscapes where the valued landscape character "appears moderately altered." Deviations begin to dominate the valued landscape character being viewed but they borrow valued attributes such as size, shape, edge effect and pattern of natural openings, vegetative type changes outside the landscape being viewed. They should be compatible or complementary to the landscape character. The majority of the Joseph AMP, primarily at higher elevations, is located within this classification.

The larger-sized range allotments have the following VQO/SMS ratings:

Table 45 – VQO and Scenery Management System Ratings

Allotment	Visual Classifications Allotment-wide		Visual Classifications Excepted Locations	
	VQO	SMS	VQO	SMS
Cougar Creek	Modification	Low	Partial Retention for Road 46 and Peavine Creek	Moderate for Road 46 and Peavine Creek
Crow Creek	Modification	Low	Partial Retention for Road 46 and Elk Creek	Moderate for Road 46 and Elk Creek
Hunting Camp	Modification	Low	Partial Retention for steeper slopes on the east and west allotment boundaries	Partial Retention for steeper slopes on the east and west allotment boundaries
Joseph Creek	Retention	High	Primitive within W&S River	Very High within W&S River
Swamp Creek	Modified	Low	Retention within W&S River and Partial Retention within Road 46 corridor	High within W&S River and Moderate within Road 46 corridor
Table Mountain	Modified	Low	Retention within W&S River and Partial Retention adjacent to W&S River corridor	High within W&S River and Moderate adjacent to W&S River corridor

Alternative 1 – Scenery

Livestock related impacts to scenery would diminish immediately as the first growing season would display taller grasses, and existing livestock developments such as fences and water developments would be removed. Over a 20-year period, the elimination of livestock grazing would allow an increase in hardwoods and native forage species.

Alternative 2 – Scenery

Direct and Indirect Effects - Effects on scenery are discussed below with respect to general forestland, the Joseph Creek Wild and Scenic River corridor, the Road 46 and Highway 3 corridor, and other exclusions of specially protected areas within general forestland.

General forestland within the JCRAA refers to those areas designated as 'modification' under the visual management system and 'low' under the scenery management system. These areas would receive various levels of livestock grazing. The presence of livestock, including developments such as fences, stock ponds, troughs, and corrals are part of the general forest area. Continuation of these conditions would be consistent with 'modification' and 'low'

The Highway 3 corridor is isolated from livestock grazing associated with the JCRAA because those allotments along the highway are fenced to prevent livestock from reaching the corridor. This situation would continue, and scenic values associated with the corridor would not be altered by livestock. The Road 46 corridor, is designated 'partial retention'

and 'moderate'. The evidence of livestock use from the road would continue, so long as corrals and stock ponds are not constructed in the foreground view. Recent restoration of the McCarty Reservoir has improved the scenic integrity of the road's foreground view. Current grazing systems would continue which have been consistent with the designation for Road 46.

The Joseph Creek Wild and Scenic River corridor has scenery designations of 'preservation' and 'very high'. Current grazing systems operate within these designations because no inconsistent livestock developments exist within the corridor, use of the trail by livestock is completed so that the trail does not become overly braided or eroded, and forage condition is managed in a good to excellent condition – except where annual grasses are a relic of the homesteading era. Continuation of this grazing system would be consistent with visual standards for this area.

Cumulative Effects - Areas within the general forestland that are designated 'moderate' and 'partial retention' tend to relate to anadromous fisheries such as Peavine Creek. Restoration efforts, such as fencing, instream habitat improvements, and hardwood planting for many of these streams have virtually eliminated the visual effect of livestock grazing. Continuation of the current grazing system would be consistent with visual standards for these areas because these fish-bearing streams are under a strategy for restoration. The other ongoing or foreseeable future activities listed in Table 14 would be implemented with protections for scenic integrity and would not contribute to cumulative effects on the scenic resource.

Alternative 3 Modified – Scenery

Effects on scenery from Alternative 3 would be similar to Alternative 2. Despite the flexibility in grazing schedules associated with Alternative 3 Modified, it also provides specific protections for special areas such as the Joseph Creek Wild and Scenic River corridor, big-game winter range, and the riparian conditions along Swamp Creek. Livestock grazing would remain an influence on the scenery, but as described for Alternative 2, these impacts would be managed consistent with the scenic integrity designated throughout the JCRAA.

Alternative 4 – Scenery

Alternative 4 would be the same as Alternative 2 for general forestland and the Highway 3 and Road 46 corridors because grazing systems in these areas would be the same. In the Wild and Scenic River corridor and along riparian areas, a greater rate of recovery of riparian shrubs and native forage species would occur. The improvements noted from 4.5 miles of riparian fencing would occur over about 15 years as vegetation grows in and makes the exclosure fencing a subordinate landscape feature.

Specially Designated Areas

Existing Conditions - Joseph Creek Wild and Scenic River

The 2750-acre Joseph Creek Wild and Scenic River corridor is allocated to Management Area 7 by the Forest Plan. The corridor also overlaps 150 acres of the Haystack Rock Potential Research Natural Area (Management Area 12), 8 acres of old-growth (Management Area 15), and 275 acres of private land, which is zoned to maintain farm and forest use. Where dual management area designations exist, the more restrictive guidelines apply. The entire wild and scenic river corridor falls within the Joseph Creek Rangeland Analysis Area. The corridor is within the Swamp Creek, Table Mountain, and Joseph Creek Allotments.

The Wild and Scenic Rivers Act requires that a river be free flowing and possess one or more "outstanding remarkable values." The Omnibus Oregon Wild and Scenic River Act of 1988 designated 8.6 miles of Joseph Creek as 'Wild' within the Wild and Scenic River System. The Congressional Records indicated that Joseph Creek's Scenic, Recreational, Biological, Fisheries, and Cultural values qualified as outstandingly remarkable (OR). The Joseph Creek Wild and Scenic River Management Plan confirmed these OR values, added the OR of Wildlife, and clarified the Cultural value as Cultural (Historic). The Plan also provided for the continuation of domestic grazing if it is consistent with the management objectives of the river corridor, protects or enhances the OR values, and protects water quality. Any adverse impacts to OR values, water quality, or free-flow, even though within Forest Plan Standards and Guidelines, will be corrected immediately.

Within the wild and scenic river corridor, rangeland vegetation is in good to excellent condition with the exception of several benches that have been converted to annual grasses due to past homesteading and grazing activities. However, in 1988 when Joseph Creek was designated a Wild and Scenic River no homesteading activities were occurring. Evidence of this era still exists in the form of abandoned farm implements, idle fields with introduced species (private land), cheat grass benches, and man made structures. The corridor includes 275 acres of private property. At the time that the W&S River Management Plan was written there were 225 animal unit months (AUM's) of livestock grazing (cattle and some horses) within the 2750-acre river corridor. The riparian zone was considered to be in excellent condition although some localized impacts to riparian vegetation were noted.

Vegetation within Joseph Canyon is dominated by shrub-steppe communities, particularly on south facing aspects and at the lowest elevations. Plant communities include bluebunch wheatgrass-Idaho fescue/arrowleaf balsamroot, Sandberg's bluegrass/narrow-leaved skullcap, and Talus garland types. The river corridor contains about 100 acres of the 400 acre proposed Haystack Rock Natural Areas which is to be managed to preserve expels of these plant communities.

Other vegetation types include the Douglas-fir and ponderosa pine that dominate the north aspects and steep side drainages. A few wet meadows exist along the river and are comprised of grasses, sedges, rushes, and forbs. The narrow riparian zone along Joseph Creek consists of willow, Rocky Mountain maple, mock orange, hawthorns, and other

water-loving shrubs grasses, sedges, and rushes. Brief descriptions of the OR values and their relationship to livestock grazing follow.

Scenic - Rivers with and OR value for scenery are selected for landscape elements of landform, vegetation, water, color and related factors that result in notable or exemplary visual features and/or attractions within the geographic region. Additional factors such as seasonal variations in vegetation, scale of cultural modifications, and the length of time negative intrusions are viewed are also considered.

Joseph Canyon is a spectacular example of the steep rimrock-exposed canyons found in Northeast Oregon. Commonly viewed from the rim, Joseph Canyon is dominated by grassy, open slopes and benches. Generally, Joseph Creek lies in an arid, steppe vegetation canyon. Large expanses of grass and grass like elk sedge and pine grass communities can be found throughout Joseph Canyon. In many places, stringers of trees, grow in the side drainages. The narrow riparian zone along Joseph Creek is a greenbelt of vegetation, even in the driest seasons.

Seasonal variations in Joseph Canyon highlight the ruggedness of this landscape. Snow on the rim is plentiful but melts out early in the spring leaving behind slopes of lush green grass. Summer temperatures are high and grasses on the slope dry out by midsummer. Evidence of human intrusion is light, consisting of isolated cabins, farm implements, old hay fields, fences, and cattle trails. Highway 3 located on the rim of Joseph Canyon is not seen from the river corridor.

Due to the steepness of the canyon walls much of the views from Highway 3 and especially from Joseph Canyon Overlook are of the east side of Joseph Creek. The Overlook looks directly across into the Table Allotment where views of Table Mountain, Haystack Rock Research Natural Area, canyon rims, and old hayfields can be observed. Occasionally, domestic and wild animals can be observed grazing on the hillsides. A few fences separate the cattle allotments, and grazing occurs during the more “hospitable” months. Cattle trails crisscross the slopes but are not wide or obtrusive. Some Forest Service trails are also present but receive little use and are not highly evident.

Evidence of the 1986 Joseph Creek/Starvation Ridge Fire can still be observed. Silver snags can be viewed throughout the western slopes of Joseph Creek. However, generally the vegetation has regenerated and appears in a healthy state.

The Joseph Creek Wild and Scenic River Management Plan states that-range management structures will be visually compatible with the visual classification of Preservation.

Recreational - A combination of recreational opportunities exist including big game hunting, hiking, fishing, dispersed camping, sightseeing, wildlife viewing, boating, kayaking, motorized and mountain biking, and horseback riding.

The criteria for recreational OR value include recreational opportunities that are unique enough to attract visitors from outside of the geographic region. In addition, interpretive opportunities may be of exceptional value. The river itself may provide or potentially provide settings for national or regional usage or competitive events.

Joseph Canyon and creek are named for young Chief Joseph. Joseph Creek is included within the ceded boundaries of the Nez Perce Tribe. Traditionally it supported numerous Indian villages and camps and is still used for hunting, fishing, and gathering purposes.

Joseph Canyon provides a limited range of recreational opportunities due to the topography, remoteness, climatic conditions, and lack of easy motorized access to the river itself. The area is unroaded and only accessible by trail. The upstream termini of the Wild and Scenic River is located on private land with no established right of way. This entrance is limited to foot and horseback traffic with permission via private landowners.

Two trails lead to the canyon bottom, both are steep and difficult. A third trail parallels Joseph Creek above the riparian vegetation and on the canyon sideslopes. Views from the trail are overlooking the creek and up to the breaks at the canyon rim. The majority of use includes foot, horseback traffic in spring and early summer and again during fall hunting season. There is also incidental fishing use in association with the above stated use. In addition, the private landowner has a special use permit from the Forest Service to conduct outfitting and guiding operations within the Joseph Creek Canyon.

Joseph Canyon Overlook is located on the canyon rim along Highway 3. It provides spectacular views of the Wild and Scenic River and adjacent country. This site has recently been included in the Nez Perce National Historic Park. It provides outstanding opportunities to interpret the Native American role in this canyon.

Joseph Creek is not considered a "floatable" river. Only one known rafting/kayak party in the past 20 years has been recorded attempting to float this creek.

Although difficult to access, the adventurous visitor will be rewarded with a quality recreational experience. Hiking, horsepacking, birdwatching, wildlife viewing, fishing, hunting, and photography can be enjoyed in a solitary manner in a spectacular setting. This qualifies recreation as an outstanding remarkable value.

Geologic – The geologic criteria for OR value requires that the river or the area within the river corridor contains an examples(s) of a geologic feature, process, or phenomena that is rare, unusual, one of a kind, or unique to the geographic region. The feature(s) may be in an unusually active stage of development, represent a "textbook" example and/or represent a unique or rare combination of geologic features (erosional, volcanic, glacial, and other geologic structures).

Joseph Canyon represents the Miocene Epoch, 15-30 million years ago, when widespread volcanism layered much of Northeast Oregon with Columbia River basalts. The series of small buttes are actually basalt cinder cones, or old volcanoes from which some of the lava poured through the basalt dikes in Joseph Canyon. This is one of the few places in which volcanic vents have been recognized in NE Oregon and are known as Elk Mountain, Roberts, Greenwood, Haskins, and Findley Buttes.

As a result of erosion and down cutting of rivers and creeks the depth and layers of basalt are evident. It reveals stacked layers of basalt lava flows and columnar basalt 10-200 feet

thick.

Joseph Creek is an excellent example of the NE Oregon geology typified by Columbia River basalt canyons, exposed by the down cutting of river. The canyon is virtually unmodified and its spectacular details can be easily viewed from the canyon rim. Therefore, geology qualifies as an Outstanding Remarkable Value.

Joseph Creek flows over a gentle gradient through the basalt canyon, carving "s" turns where the water speeds up and slows to form deep pools. The surrounding rugged landscape with basalt rims and timbered draws makes for an impressive view.

Fisheries and Water Quality - The river corridor provides high quality habitat to wild steelhead and trout populations. The criteria for evaluating fisheries for an OR value relates to the relative merits of either fish populations, habitat, or Native American cultural use – or a combination of these river-related conditions.

The water quality of Joseph Creek is below state of Oregon standards, primarily due to high summer temperatures and sediment. Under the Wild and Scenic River Act, no human caused action may be undertaken which will result in a measurable reduction of existing water quality or that will prevent the meeting of State water quality standards (Joseph Creek Wild and Scenic River Management Plan 1993). Since 1988, many projects have occurred in the headwaters and tributaries of Joseph Creek that would help to reduce sediment (riparian exclosures, road decommissioning, culvert removal, upland water development repair, and more restrictive vegetation management practices) and water temperatures (riparian exclosures, and riparian planting). Within the Wild and Scenic River, habitat conditions are favorable. Streambanks are stable (90%), with minor bank damage occurring on shallow banks of alluvial fans. Riparian vegetation is diverse and in good quantity. Tributaries flowing directly into the Wild and Scenic River portion are in excellent condition.

A more in depth discussion for each of the standards and guidelines for Water Quality and Fisheries can be found in the analysis file.

Joseph Creek is recognized as an important wild steelhead and wild rainbow trout fishery and is a significant tributary to the Grande Ronde and Snake River system Therefore fisheries qualifies as an OR value.

Wildlife - Joseph Creek provides opportunities to view a wide variety of wildlife, including Rocky Mountain elk, Rocky Mountain bighorn sheep, river otter, black bear, cougar, and several Protected, Endangered, Threatened, and Sensitive species such as peregrine falcons and bald eagles.

Wildlife values can be eligible as an OR value based on the relative merits of either wildlife populations, habitat, or Native American cultural use – or a combination of these conditions.

Joseph Canyon supports a healthy and diverse population of wildlife. Rocky Mountain bighorn sheep were indigenous to the area and presently there is a resident herd

established in the area. Black bear frequent the riparian areas while Rocky Mountain Elk and mule deer are common on the canyon breaks. Healthy snake populations also exist in this canyon. Numerous bird populations can be found throughout the canyon. In particular, Bald eagles (USFWS listed as threatened) winter in Joseph Canyon and Peregrine falcons have been re-introduced to lower Joseph Canyon.

Habitat in Joseph Canyon is quite varied due to the dry, upland slopes and contrasting riparian area in the canyon bottom. The winter range present to support Rocky Mountain elk and mule deer is in very good condition and consists of bluebunch wheatgrass, Idaho fescue, and grass like elk sedge. Canyon benches of cheatgrass are relics of historic homesteading in the area. This habitat is in poor condition, but is a remnant of a previous era which could only be changed through active grassland restoration.

Excellent nesting habitat occurs just downstream of the designated stretch of Joseph Creek. Sightings of peregrine falcons in Joseph Canyon indicate they use the area for post-nesting dispersal and late season migration.

There is a long history of livestock grazing on the grassy slopes of Joseph Canyon but otherwise, human use is minimal.

The diversity of wildlife and the significance of the federally-listed species qualify wildlife as an OR value.

Cultural – Throughout the corridor there are Euro-American historical sites and locations vital to Nez Perce tribal history.

Criteria for OR values includes the river or area within the river corridor that contains a site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare, unusual or one of a kind in the region.

The significance of Joseph Creek is a vital part of Nez Perce tribal history. The area near the mouth of Joseph Creek, downstream of the W&S River designation, was a meeting place for the Nez Perce tribe. It is certain that tribal members traveled upstream to hunt, fish, and gather.

There are two significant homesteads located on Joseph Creek. The Wilder Homestead consists of cabin remnants, outbuildings, and rusty farm implements. The Vawter Homestead is located at the mouth of Swamp Creek and consists of a cabin and rusty farm implements. This cabin is located on private land and still used by the private landowner. The areas surrounding these homesteads were used for grazing, gardening, and other homesteading activities. The upper benches were farmed with cereal rye grass. According to one local homesteader the yield was not measured by tons per acre but by gallons per acre! In the early 1900s the homesteaders raised sheep. The sheep were sold in 1943 due to the high predation/coyote kills. Cattle followed shortly there after. Farming also ended about that same time.

The significance of the Nez Perce tribal history as well as the historic contributions qualify history as an OR value.

The criteria for OR rating is that the river or area within the river corridor contains a site(s) where there is evidence of occupation or use by Native Americans. Sites must be rare, one of a kind, have unusual characteristics or exceptional human interest value(s).

Joseph Creek is included within the ceded boundaries of the Nez Perce Tribe. The area was used in prehistoric and historic times for fishing, hunting, and gathering. Although there has been no extensive cultural resource inventory, there is much interest in establishing the special cultural values associated with their history and present day activities. This is especially true for the Nez Perce Tribe due to the proximity of Chief Joseph's activities to Joseph Canyon.

Alternative 1 – Joseph Creek Wild and Scenic River

Scenic – The immediate difference to scenic values would be the relatively high stand of grass that would develop after the first growing season. This appearance within the Wild and Scenic River corridor would be consistent with the 'preservation standard for scenery. Refer to the previous section on Scenic Resources.

Recreational – Refer to the previous section on Recreation Resources.

Geologic – There would be no effect on the components that resulted in the designation of geological as an OR value.

Fisheries and Water Quality – Refer to the previous section on Aquatic Resources.

Wildlife – Refer to the previous section on Wildlife Resources.

Cultural – This alternative would have no effect on any prehistoric or historic components relating to the OR value for Joseph Creek. The historic homesteads are on private land, and are not portions that are waived to the Forest Service for grazing management. The potential birthplace of Chief Joseph occurs in Joseph Canyon which has received light grazing use in the recent past. Discontinuation of grazing would not change the current situation.

Alternatives 2 and 3 Modified – Joseph Creek Wild and Scenic River

Scenic –Alternatives 2 and 3 Modified would continue grazing in the corridor. While grasslands would appear grazed, much of the corridor has good to excellent forage conditions (except for the cheatgrass benches that were converted during the homesteading era). These conditions have been maintained under the current grazing schedule by relatively light use of the corridor. Alternative 2 would continue this approach. Alternative 3 Modified would allow for greater flexibility in grazing schedules, but sets a standard for maintaining forage in a good or excellent condition within the corridor. Both alternatives would protect the scenic values of the corridor.

Recreational - Recreational activities such as hiking, horsepacking, birdwatching, wildlife viewing, fishing, hunting, and photography would not be adversely altered by these alternatives. Grazing under the current management scheme is relatively light and has not contributed to adverse effects on the riparian conditions along Joseph Creek (refer to the analysis of Issue 1 on Page 179). Recreationists can encounter livestock along the trail under the current grazing schedule, particularly in fall when hunting seasons overlap with use of the Wilder Pasture of the Table Mountain Allotment. However, riparian utilization standards ensure that riders will move livestock up the slopes, rather than having the livestock congregate along the river corridor and the trail. Alternative 3 Modified allows for increased flexibility in grazing schedules, but it also recognizes a level of residual forage that must be maintained for big –game winter forage and specifies that livestock browse of hardwoods will be minimized. In addition, livestock operators are instructed to herd livestock away from the trail to minimize conflicts with recreationists. Both of these alternatives protect recreation opportunities along the Wild and Scenic River corridor.

Geologic – The geologic ORV would not be affected by these alternatives because none of the alternatives involve activities that would alter the geological landform of the area.

Fisheries and Water Quality – The analysis of Issue 1 related to grazing effects on Joseph Creek and its fishery ORV is provided in the Aquatics section. Neither of these alternatives would increase the effects on this value over livestock related effects that were occurring in 1988 at the time of the river's designation as Wild and Scenic. The analysis of Issue 2 is also provided in the Aquatics section. This issue addresses concerns with water quality from tributaries to Joseph Creek. Issue 2 also shows that no increase in effects on this value are anticipated. The monitoring protocol for the Meadow Segment of Swamp Creek prescribed by Alternative 3 Modified would improve the effectiveness of a grazing system that is already improving conditions on this tributary. With increased hardwoods and streambank stability, water quality contributions from Swamp Creek would improve over time.

Wildlife – Effects on Rocky Mountain elk, Rocky Mountain bighorn sheep, river otter, black bear, cougar, and Endangered, Threatened, and Sensitive species such as peregrine falcons and bald eagles are addressed in the Wildlife section. Alternative 2 prescribes a grazing schedule that has provided adequate big game winter range for elk over time. Alternative 3 Modified increases the amount of flexibility associated with grazing schedules, but also controls the amount of fall forage utilization that can occur in big-game winter range. Neither alternative would adversely affect the Wildlife OR value.

Cultural – Effects on cultural resources within the river corridor are related to livestock presence in areas where evidence of American Indian use of Joseph Creek still occurs. Because livestock use of the corridor is light under Alternative 2 (135 am for the Joseph Creek Allotment, 400 am for the Buck Pasture of the Swamp Creek Allotment, and 675 am for the Wilder Pasture of the Table Mountain Allotment), there is little opportunity for livestock congregation in the corridor. In addition, riparian utilization standards encourage riders to move these livestock onto the canyon slopes rather than allowing them to concentrate in the canyon bottom. Alternative 3 Modified allows more flexibility of grazing schedules than Alternative 2, but it also prescribes that grazing regimes allow no more than 40 to 50 percent forage and 20 percent shrub utilization in the corridor. With this

level of control on grazing to maintain forage condition, Alternative 3 Modified would also protect any cultural resources in the corridor.

Cumulative Effects – The activities listed in Table 14 would not contribute toward cumulative effects on any of the ORVs for the Wild and Scenic River Corridor because any activities conducted within the corridor would be designed for consistency with the Joseph Creek Wild and Scenic River Management Plan.

Alternative 4 – Joseph Creek Wild and Scenic River

Scenic –Refer to the previous section on Scenic Resources.

Recreational – Refer to the previous section on Recreation Resources.

Geologic – There would be no effect on the components that resulted in the designation of geological as an OR value.

Fisheries and Water Quality – Refer to the previous section on Aquatic Resources.

Wildlife – Refer to the previous section on Wildlife Resources.

Cultural – Effects would be the same as those described for Alternatives 2 and 3 Modified.

Cumulative Effects – Cumulative effects would be the same as Alternatives 2 and 3 Modified except for the beneficial contribution of this alternative to additional protection of the Fisheries and Water Quality and Wildlife ORVs.

Existing Conditions - Potential Research Natural Areas

The Table Mountain Allotment contains two potential Research Natural Areas, Haystack Rock and Horse Pasture Ridge. Designated by the Forest Plan, these areas were considered for their potential for preserving examples of all significant natural ecosystems for comparison with those influenced by humans, providing educational and research areas for ecological studies, and preserving gene pools for typical and endangered plants and animals. Refer to Figure 1 in Chapter 1 for a map of these areas, which are designated Management Area 12.

Research Natural Areas typify important ecosystems such as forest, shrubland, grassland, alpine, and aquatic; geologic types, and other natural situations that have unique characteristics of scientific interest. The Haystack Rock Potential RNA is approximately 400 acres in size, all of which are located in Wallowa Valley Ranger District. The area is dominated by shrub-steppe communities such as bluebunch wheatgrass/Idaho fescue/arrowleaf balsamroot; bluebunch wheatgrass/Sandberg's bluegrass/narrow-leaved skullcap; and Talus garland types. The condition of the Haystack Rock Potential RNA was

evaluated in 2001 by the Blue Mountain Area Ecologist for a 15-year re-evaluation after the 1986 Joseph Creek Fire. He noted that the area was lightly used by cattle coming upslope from Joseph Creek. Because there is no water in the area, use is very light. Although a formal evaluation had not been completed, his professional judgment indicated that the forage condition was good and stable (Johnson 1992).

The Horse Pasture Ridge potential RNA is approximately 250 acres in size. This area is representative of Idaho fescue/prairie junegrass ridgetop communities, Idaho fescus/bluebunch wheatgrass ridgetop communities, and Idaho fescue/bluebunch wheatgrass/arrowleaf balasmroot communities. The condition of this area was evaluated in 2003 by the Wallowa Mountains Office range manager and botanist. It was determined that plant communities were in good to excellent condition and basically ungrazed by domestic livestock with the exception of the northeastern boundary where livestock were once salted near the potential RNA perimeter.

Before either potential RNA is established, an establishment report is prepared. This report will determine area boundaries. Potential RNAs are protected from uses that would reduce their suitability for RNA designation. Both areas receive incidental cattle use which has not reduced their suitability for RNA designation. Activities in RNAs are limited to research, study, observations, monitoring, educational functions, and actions that are non-destructive and non-manipulative.

Alternative 1 – Potential Research Natural Areas

The Haystack Rock and Horse Pasture Ridge potential Research Natural Areas would be unaffected by livestock grazing. Forage in these areas would remain in good to excellent condition, unless another influence such as noxious weed invasion changed the condition.

Alternative 2 – Potential Research Natural Areas

Direct and Indirect Effects - Livestock grazing of the Wilder Pasture of the Table Mountain Allotment would continue similar to current grazing systems. The Haystack Rock potential RNA is in good to excellent forage condition. This condition would continue because spring and fall grazing of this 1680-acre pasture would be limited to 300 animal months for less than 45 days in the spring and 375 animal-months for less than 60 days in the fall. The Haystack Rock proposed RNA is approximately 400 acres in size and is in a relatively steep portion of the pasture that receives only incidental use.

Livestock grazing of the Horse Pasture Ridge Pasture of the Table Mountain Allotment would continue similar to current grazing systems. The Horse Pasture Ridge potential RNA is in good to excellent forage condition. This condition would continue because summer grazing of this 1443-acre pasture would be limited to 360 animal-months for 30 days or less in the summer. The Horse Pasture Ridge proposed RNA is approximately 250 acres in size and is in a relatively isolated portion of the pasture that receives only incidental use. Salting near the proposed RNA perimeter has encouraged some livestock use that would otherwise not occur. Salting would no longer be permitted in this vicinity.

Cumulative Effects - Noxious weed invasion in both potential RNAs is a threat, but with the presence of livestock operators in the area each year, it is likely that any infestations would be identified early. The other activities listed in Table 14 occur outside of the influence of the Potential Research Natural areas and would not contribute to cumulative effects.

Alternative 3 Modified – Potential Research Natural Areas

The Haystack Rock and Horse Pasture Ridge potential RNAs would be placed under flexible grazing schedules under this alternative, although the stocking level for each allotment would remain the same as Alternative 2. A utilization standard of no more than 10 percent would be established for both areas. Consequently, forage conditions would remain in good to excellent condition. Noxious weed invasion in both potential RNAs is a threat, but with the presence of livestock operators in the area each year, it is likely that any infestations would be identified early.

Alternative 4 – Potential Research Natural Areas

Alternative 4 allows only spring grazing in the Joseph Breaks Pasture rather than the spring and fall schedule for Alternative 2 and the open-ended schedule associated with Alternative 3 Modified. Eliminating fall use of this pasture would not affect the Haystack Rock potential RNA because the area is already represented by late-seral plant communities The Horse Pasture Ridge Pasture would be managed the same as Alternative 2; therefore, the effects on the Horse Pasture Ridge potential RNA would be the same.

Issue 3 – Potential Research Natural Areas

Key Issue - Authorizing livestock grazing as proposed may not preserve options for establishing Research Natural Areas for the Haystack Rock and Horse Pasture Ridge potential Research Natural Areas.

Table 46 - Comparison of Issue 3 Indicators by Alternative

Indicator	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative4
	Area Maintained in Late Seral Plant Communities (acres)			
Haystack Rock potential RNA	250	250	250	250
Horse Pasture Ridge potential RNA	400	400	400	400

As shown above, all of the alternatives preserve options for future designation of the Haystack Rock and Horse Pasture Ridge potential Research Natural Areas. Alternative 1 resolves the potential RNA issue because no livestock grazing would be authorized, and there would be no influence from livestock use. Alternative 2 addresses Issue 3 by

retaining the current grazing system and schedule for these pastures. This system has been shown over time to provide for only incidental use of the potential RNAs. Alternative 3 Modified broadens the flexibility of the grazing schedule, but it also increases the level of control on livestock grazing by specifying that no more than 10 percent of the forage may be utilized within the potential RNAs. Alternative 4 allows only spring grazing in the Joseph Breaks Pasture; but it would provide no additional protection to the Haystack Rock potential RNA. Alternative 4 retains the current grazing system and schedule for the Horse Pasture Ridge pasture, and it addresses Issue 3 the same as Alternative 2.

Existing Conditions - Joseph Canyon Inventoried Roadless Area

This roadless area of approximately 23,602 acres lies adjacent to State Highway 3 on the northern boundary of the Forest, 20 miles north of Enterprise. It contains the upper reaches of the Joseph Creek drainage, including the tributaries Swamp Creek, Peavine Creek, Rush Creek, and Davis Creek. Fifteen miles north of the roadless area Joseph Creek empties into the Grande Ronde River. The roadless area was inventoried during the first Roadless Area Review and Evaluation, and allocated to nonwilderness uses through the Wallowa Valley Planning Unit EIS (Land Management Plan), dated November 3, 1975. In this plan the commitment was made to retain the essentially roadless character of this area. The roadless area is included in the November 2000 Roadless Area Conservation Final Environmental Impact Statement. Refer to Figure 6 for the roadless area location.

The Roadless Area Conservation FEIS sets out roadless characteristics of soil, water, and air; sources of public drinking water, diversity of plant and animal communities, habitat for threatened, endangered, proposed, candidate, sensitive, and other species; primitive, semi-primitive, non-motorized, and semi-primitive motorized recreation opportunities; reference landscapes; landscape character and scenic integrity; traditional cultural properties and sacred sites; and other locally identified unique characteristics. These roadless characteristics are either discussed in previous sections of this chapter, or further information is provided below.

Because of its relatively small size, irregular configuration, and many miles of boundary, manageability as wilderness would be difficult. Adjustments of the boundary to shield a sizable portion of the area from the sounds of vehicles on State Highway 3 would not be possible. In addition there are multiple examples of human evidence in the area. Old railroad grades and skid trails in the lower reaches of Davis and Swamp Creeks witnessed logging activities that occurred in the 1920s and 1930s. Abandoned fields and remains of buildings occur within the isolated private land parcels that occur along Joseph Creek. In 1986, wildfire swept through most of the roadless area. Thereafter, a salvage sale resulted in more than 30 MMBF of timber being removed. Logging was done by helicopter; therefore, the primary effect on the roadless area was the addition of many new stumps.

There are two small parcels of private land within the area totaling 401 acres. These parcels lie within the heart of the canyon, immediately below the Joseph Canyon viewpoint on the State Highway. The lands are not occupied and are used for grazing purposes. Six miles of jeep trail access these private lands. There are approximately 50 livestock watering facilities and 30 miles of fence found within the area.

Approximately 1,600 acres of the area is within the roaded natural component of the Recreation Opportunity Spectrum (ROS) while 12,600 acres are considered semi primitive-motorized, and 9,400 acres are in the semi primitive nonmotorized component.

Reserve this page for Figure 6 – Roadless Area

The roadless designation benefits the area wildlife that includes virtually every species that inhabits northeast Oregon. Sightings of peregrine falcons and bald eagles are reported. Elk and deer use most of the land for winter range. The major streams provide quality habitat to both anadromous and native fish species. No threatened and endangered plants are known to exist within the area. Refer to the previous sections on aquatic resources and wildlife for further information on this area.

Nez Perce Indians used the area as evidenced by stone implements and examples of lithic scatter. The primary canyon and creek were named for Joseph, who was Chief at the time of settlement of Wallowa Valley and the surrounding area by non-Indians. There is speculation that Chief Joseph was born within what is now the roadless area, but this has not been verified. If the canyon is his birthplace, it is more likely that he was born in one of several caves near the mouth of Joseph Creek, well north of the roadless area in the State of Washington.

Regardless of Chief Joseph's birthplace, the roadless area does have potential archaeological significance. The Senate Committee on Energy and Natural Resources recognized this in a May 18, 1984 report that accompanied the Oregon Wilderness Act of 1984 (HR –1149). This legislation directed the Forest Service to "inventory all archaeological and historic sites in the drainage and determine their eligibility for the National Register of Historic Places. Prior to activities that may affect such prehistoric, historic or cultural sites, the Forest Service shall follow the procedures in 36 CFR 800 which implement the Natural Historic Preservation Act, as amended, in order to fully consider and protect the important values of such sites."

At the present, Nez Perce Indians occasionally exercise their treaty rights to hunt and fish in the area, but use is thought to be low within the Roadless Area itself since there is an abundance of more accessible land nearby.

Alternative 1 – Joseph Canyon Roadless Area

Alternative 1 would preserve all of the roadless characteristics by eliminating livestock grazing from the JCRAA.

Alternative 2 – Joseph Canyon Roadless Area

Alternative 2 would perpetuate current conditions within the roadless area by prescribing continuation of current grazing management systems. Refer to previous sections of this chapter which address effects on these characteristics. The current level of impacts on these resources would be no more than impacts that were in place at the time the Joseph Canyon Roadless Area was first considered for Wilderness designation under RARE I. These impacts have also been found consistent with Forest Plan direction for the Joseph Canyon Roadless Area. Continuation of current grazing systems would not change the characteristics that have been in place over the last 30 years as wilderness eligibility has been under consideration. The activities and actions listed in Table 14 would not contribute to cumulative effects on the roadless characteristics of Joseph Canyon because they

primarily occur outside of the roadless area and have relatively minor contributions to either the benefit or detriment of existing roadless characteristics.

Alternative 3 Modified – Joseph Canyon Roadless Area

Alternative 3 Modified would increase flexibility for grazing systems within the roadless area, but prescribes specific protections for areas within the roadless area boundary. For example, protections related to the Haystack Rock potential Research Natural Area, the Joseph Creek Wild and Scenic River, and big-game winter range for the Joseph Breaks area would ensure that grazing is consistent with resource management goals for these areas. Protection of the Haystack Rock potential Research Natural Area speaks to plant diversity characteristics of the roadless area. Setting standards for and monitoring big-game winter range speaks to continued protection of a locally important wildlife habitat need. Establishing a monitoring protocol for the Meadow Segment of Swamp Creek provides for a greater assurance that livestock controls would result in improved riparian condition which would benefit the overall system of steelhead habitat within the roadless area. An inventory schedule to search greater areas for undiscovered Spalding's catchfly occurrences is also part of this alternative. Alternative 3 Modified provides protections for roadless characteristics at a higher level than Alternative 2.

Alternative 4 – Joseph Canyon Roadless Area

Alternative 4 allows only spring grazing in the heart of the Joseph Canyon Roadless Area. Portions of the roadless area that are higher in elevation would continue to be grazed in a manner similar to Alternative 2. Riparian areas within the roadless area would see an acceleration in recovery rates as described in the Aquatics Section of this chapter. Big-game winter range would be monitored as described for Alternative 3 Modified. Alternative 4 provides protections for roadless characteristics at a higher level than Alternative 2 or 3 Modified.

Specifically Required Disclosures

This section contains disclosures of effects that are required by federal law, regulation, policy, or Executive Order.

Economic Efficiency Analysis

A comprehensive economic efficiency analysis requires that all economic benefits and costs be identified and compared. In lieu of a comprehensive analysis, a financial analysis based on identifiable and quantifiable economic benefits and costs can be done. Only actual dollar flows are used in this type of analysis for costs and benefits which have an associated cash price or fee. Difficulty in specification and measurement in no way diminishes the absolute or comparative importance of nonquantifiable economic benefits. However, precisely because these impacts are difficult to quantify, they are typically not included in efficiency or financial analyses. This may create an inherent bias since cost and budget information is typically more readily available than economic benefit information. Economic indicators are summarized at the conclusion of this analysis as a basis for comparison among the alternatives.

Authorized AUMs - Changing the authorized level of use could affect the economic viability of the associated permittees' operations depending on the minimum number of AUMs necessary for the permittees to remain in business. The intensity of effects would depend entirely upon several factors including options available to each permittee, the size of their total operations, debt structure, access to and availability of private land for grazing, availability and costs of replacement forage, business goals and objectives, and the market for cattle.

The following table shows the number of authourized AUMs by alternative. Assuming a direct relationship between herd size and total sales, the percentage decreases in AUMs noted for each alternative provide estimates of changes in gross sales. The duration evaluated under this analysis is a 10-year period.

Table 47 - Authorized Animal Unit Months by Alternative

	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Head-Months	0	12,866	12,866	11,919
AUM's	0	16,983	16,983	15,733
Percent Change	**-100%**	**0%**	**0%**	**- 7%**

Under Alternative 1, commercial livestock grazing would be eliminated from the JCRAA. Gross sales associated with 16,983 AUMs would be eliminated. Whether or not the permittees would continue to maintain their business in a reduced form would depend entirely upon other factors. Alternatives 2 and 3 Modified would not reduce authorized AUMs, while Alternative 4 would reduce authorized AUMs by approximately 7%. This may affect the current economic viability of the permittees' operations, particularly those permits associated with the Table Mountain, Hunting Camp, Joseph Creek, Al-

Cunningham, and Crow Creek Allotments as reductions in authorized numbers occur within those allotments.

Forage Value - Using the FY 2005 Animal Value Coefficient memo issued by the Washington Office on February 28, 2005, for a forage value of $8.09 per AUM, the ten-year present value of ancitipated permitted AUMS was calculated. Alternative 1, the No Grazing Alternative, would not provide any forage value associated with domestic livestock grazing over the next 10 years. Alternatives 2 and 3 Modified are expected to provide $1,114,376 of present value forage over the 10 year analysis period, while Alternative 4 is expected to provide $1,032,355 of present value forage over the same period of time.

Variable Costs of Activities - The number and kind of activities associated with the management of the allotment varies by alternative. These activities include costs to the Forest Service and the permittee for structural improvements, monitoring, administration, and mitigation. Structural improvements include fence and water development construction and reconstruction or replacement. Monitoring includes those items described in the monitoring section in Chapter 2. General administration activities include those necessary for the Forest Service to administer the permit process. Mitigation includes measures included in the mitigation section in Chapter 2.

The following table shows the present value of the variable activities costs for all alternatives from 2005 to 2015.

Table 48 - Variable Costs and Activities by Alternative

	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Forest Service				
Improvements	820,000	0	3,500	31,500
Mitigation	0	7,500	36,694	36,694
Monitoring	0	169,266	225,787	256,852
Administration	0	8,110	8,110	8,110
Subtotal	820,000	184,876	274,091	333,156
% change from current	+343%	0	+48%	+80%
Permittees				
Improvements	0	279,826	284,543	323,492
Operating Costs	0	322,408	413,875	459,280
Mitigation	0	40,346	38,522	40,346
Monitoring	0	0	6,083	6,083
Subtotal	0	642,580	743,023	829,201
% change from current	-100%	0	+16%	+29%
Total				
TOTAL	820,000	827,456	1,017,114	1,162,357
% change from current	-3%	0	+23%	+40%

Total annual costs from 2005 to 2015 discounted to 2005.

Alternative 1 represents a high initial cost to the Forest Service related to removing fences associated with the 11 allotments, although no future costs would be incurred. Alternative 2 represents the current situation, and costs to the Forest Service and permittees would remain similar to those recently incurred in administering and operating the allotment. Alternative 3 Modified shows increased costs to both the Forest Service and permittees as compared to Alternative 2. These costs are related to fence construction along Crow Creek, mitigation and monitoring for known and potential Spalding's catcfly sites, monitoring for streambank and shrub conditions along Swamp Creek, and mitigation and monitoring for archaeological sites. Alternative 4 shows an even greater increase from Alternative 2 because it includes additional streamside fencing.

Present Net Value - The two basic evaluation criteria for efficiency analysis are Present Net Value (PNV) and a Benefit-Cost ratio (B/C). Present net value is defined as the present (discounted) Value of Project Benefits (PVB) minus the present (discounted) Value of Project Costs (PVC), or PNV = PVB – PVC. A benefit cost ratio is the ratio of PVB to PVC (FSH 1909.17, Chapter 10, section 15). Using the present discounted value of benefits and costs is a method for comparing economic values which occur at different times in the future. PVB is the present value of the expected future benefits derived from project implementation, which is the present forage value previously described. PVC is the present value of expected future costs due to project implementation, which is the variable activity costs previously described. PNV is one measure of net return on investment (cost). A positive PNV and a B/C greater than 1 both indicate that the identifiable and quantifiable project benefits are greater than the identifiable and quantifiable project costs.

Both PNV and B/C can be used to identify the most economically efficient alternative (from a given set of alternatives) in the sense that the project or alternative with the highest PNV or B/C is the project or alternative that is comparatively the most efficient at achieving a given output at minimum cost or obtaining the most output for a given cost. The choice between using PNV or B/C as the efficiency criterion depends on the context of the analysis. PNV is more appropriate for ranking alternatives when land and productive activities are limiting, for example, when comparing alternatives for an environmental analysis or environmental impact statement. B/C is more appropriate when investment capital is limiting, for example when considering budget allocation among a number of different projects.

For illustration purposes, both PNV and B/C are shown as a summary comparison of the alternatives in the following table.

Table 49 Comparison of PNV and B/C by Alternative

	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Present Value Benefits	0	1,114,376	1,114,376	1,032,355
Present Value Costs	820,000	827,456	1,017,114	1,162,357
Present Net Value	- $820,000	+ $286,920	+ $97,262	- $130,002
Benefit to Cost Ratio	0	1.35	1.10	0.89

Total annual costs from 2005 to 2015 discounted to 2005.

The table illustrates that Alternative 2 is the most economically efficient alternative based

upon the identifiable and quantifiable benefits and costs. Of the action alternatives, Alternative 3 Modified is next in economic efficiency, with Alternative 4 displaying the lowest Benefit to Cost ratio and Present Net Value. Alternative 1 shows no benefits and $820,000 in costs, resulting in a Benefit to Cost Ratio of 0.

Alternative Sources of Forage - Under Alternative 1, eliminating cattle from the allotments could also affect the economic viability of the livestock operations because of cumulative costs associated with securing additional range or buying supplemental feed to accommodate herd sizes consistent with current permitted numbers, fencing and establishing water on the additional range, increased trucking costs, and labor costs associated with moving cattle.

The permittees may choose to graze the cattle displaced from the allotment on their own properties if the operations have enough land, they may find other private land at a fee, or use alternative sources of feeding, or they may even sell the cattle to avoid the additional costs. In Wallowa County, available pasture for grazing use is limited to dispersed blocks of pasture at $20 per head-month, and may not be available depending upon the season of use. Under Alternative 1, alternative feeding sources would be required for displaced cattle all year. Under Alternatives 2 and 3 Modified, the need for alternative feeding sources would not be expected. Alternative 4 would require alternative feeding for 947 head-months.

Table 50 - Number of Displaced Head-Months by Alternative

Allotment	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Al-Cunningham	321	0	0	321
Cougar Creek	2702	0	0	0
Crow Creek	262	0	0	30
Davis Creek	631	0	0	0
Dobbins	378	0	0	0
Elk Mountain	179	0	0	0
Fine	253	0	0	0
Hunting Camp / Table Mountain	3104	0	0	556
Joseph Creek	135	0	0	40
Swamp Creek	4901	0	0	0
Total	**12,866**	**0**	**0**	**947**

The following table illustrates the present value of the cost of grazing the displaced permitted AMs on private land from 2005 to 2015 under each alternative at $20 per head-month (includes fencing and water developments). Although these additional costs do not account for the costs of transporting cattle to various locations, hiring additional employees, or other administrative costs (indirect magnitude) that may occur as a result of changing established grazing routines, they provide a relative comparison of the alternative effects to the economic viability of the associated permittee's operations (direct magnitude). In order to provide the amount of forage presently permitted, the amounts and costs (intensity) of private land forage displayed in the following table would be incurred by the permittees.

Table 51 - Present Value of Private Land Grazing for Displaced Head-Months

	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Diaplaced head-months	12,866	0	0	947
Additional cost/year	$257,320	0	0	$18,940
Present Value [1]	$2,087,097	0	0	$153,620

[1] Total annual costs from 2005 to 2015 discounted to 2005.

Grazing Revenues - The following table shows annual and total present value revenue from grazing fees for the 10-year analysis period, by alternative. Total fees are based on Forest Service fees of $1.79 per head month for cattle.

Table 52 - Present Value of Total Grazing Fees

	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Annual grazing fees	$0	$23,030	$23,030	$21,335
Present Value for 10 years of fees [1]	$0	$186,794	$186,794	$173,046
% Change from Current	-100%	0%	0%	-7%

[1] Total annual costs from 2005 to 2015 discounted to 2005.

As shown in the table, no revenue would be made from domestic livestock grazing under Alternative 1. Alternatives 2 and 3 Modified would remain the same as currently authorized present value grazing revenues with $186,794. Alternative 4 would show a 7 percent reduction from the current situation with the present value of grazing fees being $173,046.

Employment - The major effect of the alternatives on employment and annual income would come from the change in the level of grazing allowed. Grazing reductions would affect employment and annual income in several ways: (1) direct effects attributable to employment associated with the ranches, (2) indirect effects attributable to industries that supply materials, equipment, and services to the ranches, and (3) induced effects attributable to personal spending by the ranch owners, employees, families, and related industries.

The following table shows the annual estimated job and income impacts by alternative. These estimates were provided by Green (2005), using an Input Output Model developed for Wallowa County. These estimates are for grazing related activities only, and they do not include the employment and income impacts of the alternatives with respect to restoration projects, mitigation, or other activities.

Table 53 - Change in Annual Employment and Income from Current

	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Jobs	-26	0	0	-2
Annual Income	$ -356,874	0	0	$ 40,000
% Change	-100%	0%	0%	-8%

Changes in jobs and personal income would result in changes in the economic activity of the communities where the permittees base their operations, hire employees, and buy equipment, supplies, and services. Under all alternatives, these job and income effects would be attributable primarily to Wallowa County. Alternative 1 would result in less than 1 percent and Alternative 4 less than 0.1 percent of employment in Wallowa County (Green 2005). Trends in employment indicate static or increased employment in this county overall, primarily in construction, services, and trade (Oregon Employment Department 2005).

The following table summarizes the indicators in this economic efficiency analysis and displays the differences between alternatives.

Table 54 – Summary of Economic Indicators by Alternative

Indicators	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Authorized Head-Months	0	12,866	12,866	11,919
Authorized Animal Unit Months	0	16,983	16,983	15,733
Forage Value or Present Value Benefits ($)	0	1,114,376	1,114,376	1,032,355
Variable Costs or Present Value Costs ($)	820,000	827,456	1,017,114	1,162,357
Present Net Value ($)	- 820,000	+ 286,920	+ 97,262	- 130,002
B/C Ratio	0	1.35	1.10	0.89
Alternative Forage Costs ($)	2,087,097	0	0	153,620
Annual Jobs	0	26	26	24
Annual Income ($)	0	356,874	356,874	316,874
Grazing Revenues ($)	0	186,794	186,794	173,046

Other Specifically Required Disclosures

Cultural Resources – Cultural resource inventories within the JCRAA have identified 279 cultural resource sites and 74 isolated occurrences. Analysis of ongoing and potential future livestock-related impacts on cultural resources was completed. This analysis was documented in a report sent to the Oregon State Historic Preservation Office. A finding of "historic properties affected" was made by the Forest Service on prehistoric and historic sites, accompanied by a mitigation and monitoring plan for addressing livestock related

impacts to these sites. A Memorandum of Agreement was drafted between the Forest Service and the Oregon State Historic Preservation Office regarding the JCRA. A decision to implement any of the action alternatives would not be made without both parties to the agreement signing a final version.

Probable Adverse Environmental Impacts that Cannot Be Avoided - Grazing by any large ungulate, including deer, elk. or domestic livestock can cause some degree of damage to forage or browse plants or to soil structure. Most, but not all of these impacts can be mitigated for use by livestock through implementation of the Forest Plan utilization standards and guidelines and riparian standards. In addition, intensification of management can ensure that impacts are kept to acceptable levels. Impacts to riparian areas through the existence of current and past roads and structures in the riparian zones would continue. These impacts would limit recovery potentials and, in places, would prevent the reaching of desired future condition objectives.

Some recreationists object to sharing the public lands with commodity users. The National Forests provide for grazing by domestic livestock where it can be done in a manner compatible with the objectives of the act. However, as with any land management activity, some conflicts are unavoidable.

Relationship Between Short-Term Use and Long-Term Productivity - Forage harvest is a short term use of the resources that is permitted over a ten year period but is managed on an annual basis. The action alternatives promote long term use and management of the range vegetative and related resources under management standards that are designed to promote long term health of the resources on the allotment.

Irreversible and Irretrievable Commitment of Resources - There are no irreversible or irretrievable commitments of resources associated with implementing the alternatives that are not already identified in the FEIS for the Forest Plan.

Potential Conflicts with Plans and Policies of Other Agencies - Implementation of Alternatives 2, 3 Modified, or 4 would not result in conflicts between the provisions of the proposed activities and any goals or objectives developed for other government entities. All alternatives are consistent with water quality objectives for the area that have been identified in draft versions of the Wallowa County Total Maximum Daily Load analysis currently being prepared by the Oregon Department of Environmental Quality.

Implementation of Alternative 1 would not be consistent with the Wallowa County – Nez Perce Tribe Salmon Habitat Recovery Plan because the plan allows for livestock use of forage so long as salmon habitat recovery is being accomplished. Eliminating grazing from the JCRAA would not be consistent with the plan's goal for resource management.

Tribal Treaty Rights - Certain rights and privileges are afforded members of the Nez Perce Tribe and the Confederated Tribes of the Umatilla by virtue of the treaties of 1855. These treaties resulted in cession by the Indians to the United States of a large territory which includes approximately two-thirds of what is now the Wallowa-Whitman National Forest. The JCRAA is within ceded territory for the Nez Perce Tribe and is within territory traditionally used by the Confederated Tribes of the Umatilla. The treaties provide that

the Indians will retain the rights of taking fish in streams running through and bordering the reservations and at all other usual and accustomed stations in common with other citizens of the United States and of erecting suitable buildings for fish curing; the privilege of hunting, gathering roots and berries, and pasturing stock on unclaimed lands.

All of the alternatives provide the opportunity for Indian tribes to assert their rights for the pasturing of stock. When approached by a tribe for assertion of those rights, the Forest Service would work with existing livestock permittees to establish an area that would serve tribal needs. Alternatives 1 and 2 do not provide a mechanism to accommodate such a need without initiating further environmental analysis. Alternatives 3 Modified and 4 do provide such a mechanism. These alternatives prescribes limits on allotment and pasture stocking while leaving individual permits the flexibility to graze either cattle or horses. Under this scenario, tribal assertion of treaty rights related to pasturing of stock could be accommodated without further environmental analysis.

Alternatives 3 Modified and 4 provide greater assurance that livestock grazing controls in the Meadow Segment of Swamp Creek would result in true restoration. Swamp Creek is a steelhead fishery, and an improvement in condition could contribute to recovery of fish stocks. All alternatives strive for restoration of Swamp Creek, but Alternatives 3 Modified and 4 may accomplish restoration more efficiently. Alternative 4 also provides for enhanced steelhead habitat protection through fencing and herding. As described in the aquatics section, Alternative 4 would improve watershed and aquatic conditions at a faster rate than either Alternative 2 or Alternative 3 Modified in Swamp, Davis, Sumac, Elk, Crow, W. Fork Broady, and Peavine Creeks due to the additional protection provided by riparian exclosure fencing, closing of water gaps, and additional herding by permittees.

Issue 5 – Adaptive Management

Key Issue - Authorizing livestock grazing as proposed throughout the Joseph Creek Rangeland Analysis Area may not be adaptive enough to allow a timely or effective response to changing conditions.

Table 55 - Comparison of Issue 5 Indicators by Alternative

Indicator	Alternative 1	Alternative 2	Alternative 3 Modified	Alternative 4
Can tribal treaty rights for pasturing of horses be asserted without a new analysis?	No	No	Yes	Yes

As shown above, Alternative 3 Modified and 4 complete the analysis of effects from horse grazing in this Environmental Impact Statement, while Alternatives 1 and 2 do not. Alternative 2 would accommodate requests for tribal cattle grazing, but requests for tribal horse grazing would need to be analyzed separately.

Prime Farmland, Rangeland, and Forestland - Adverse effects on prime farmland, rangeland and forestland not already identified in the FEIS for the Forest Plan are not expected from implementing the action alternatives.

Energy Requirements - There would be no unusual energy requirements for implementing any of the alternatives.

Wetlands and Floodplains - Refer to the analysis of effects on aquatic resources. Jurisdictional wetlands and floodplains occur within the JCRAA. As displayed in Table 34, the effects of implementing Alternatives 2, 3 Modified, or 4 would not increase effects on wetlands or floodplains beyond the existing situation. Alternatives 3 Modified and 4 implement riparian grazing standards for Swamp Creek which allow for more rapid recovery of the shrub component and an increase in streambank stability. These standards would allow for increased protection or restoration of the Swamp Creek floodplain and its associated wetlands. Alternative 4 would improve watershed and aquatic conditions at a faster rate than either Alternative 2 or Alternative 3 Modified in Swamp, Davis, Sumac, Elk, Crow, West Fork Broady, and Peavine Creeks due to the additional protection provided by riparian exclosure fencing, closing of water gaps, and additional herding by permittees.

Civil Rights, Women, Minorities, and Environmental Justice - Executive Order 12898 directs each Federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. The President also signed a memorandum on the same day, emphasizing the need to consider these types of effects during NEPA analysis.

On March 24, 1995, the Department of Agriculture completed an implementation strategy for the executive order. Where Forest Service proposals have the potential to disproportionately adversely affect minority or low-income populations, these effects must be considered and disclosed (and mitigated to the degree possible) through the NEPA analysis and documentation.

Effects of alternatives on the human environment (including minority and low-income populations) are disclosed in the Economic analysis of this document. The current unemployment rate for Wallowa County is 8.2 percent (as disclosed by the Oregon Employment Department in their June 2005 newsletter). Alternative 1 contributes to an increase in the unemployment rate by eliminating approximately 26 jobs, which is less than 1 percent of employment in Wallowa County. Loss of these jobs is not expected to disproportionately affect particular nationalities, genders, or races. Alternatives 2 and 3 Modified, however, result in no change in employment from the current situation. Alternative 4 contributes to an increase in the unemployment rate by eliminating approximately 2 jobs, which is less than 0.1 percent of employment in Wallowa County. Again, this reduction would not disproportionately affect particular nationalities, genders, or races.

Incomplete or Unavailable Information – The Council on Environmental Quality regulations for implementing the procedural provision of NEPA (40 CFR 1502.22) require that a federal agency identify relevant information that may be incomplete or unavailable for an

evaluation of reasonably foreseeable significant adverse effects in an EIS. If the information is essential to a reasoned choice among alternatives, it must be included or addressed in the EIS.

Knowledge is, and always will be, incomplete regarding many aspects of terrestrial and aquatic species and their habitats, geology of specific areas, and the economy. However, the JCRAA has been studied for many years, and a substantial amount of credible information is known. The alternatives were evaluated using the best available information. No missing information was deemed to be essential to a reasoned choice among alternatives being considered.

Chapter 4 – Agencies and Persons Consulted

Recipients of the Draft EIS

The following list contains the recipients of the Joseph Creek Rangeland Analysis Area Draft Environmental Impact Statement. The list includes those who requested copies, responded to the scoping efforts; permittees affected by the proposal, and required agencies.

Agencies
Advisory Council on Historic Preservation
Department of Environemental Quality
Department of Land Conservation and Development
Economic and Community Develpment
Environmental Protection Agency, Region 10
FAA, Northwest Mountain Region
Federal Highway Administration
National Marine Fisheries Service, Habitat Conservationists Division
Natural Resources Conservation Service
NOAA Office of Policy and Strategic Planning
Northwest Power Planning Council
Oregon Department of Fish and Wildlife
Oregon Department of Forestry
Oregon State Economist
Oregon State Governor's Natural Resource Policy Director
USDA APHIS PPD/EAD
USDA National Agricultural Library
USDA Office of Civil Rights
USDI Office of Environmental Policy and Compliance
U.S. Army Engineer, Northwest Division
U.S. Coast Guard, Marine Environmental and Protection Division
U.S. Department of Energy, Office of NEPA Policy and Compliance
U.S. Navy, Office of Chief of Navy Operations, Environmental Protection Division

Organizations
Alliance for the Wild Rockies
Friends of Oregon Living Waters
Grant County Conservationists
Hells Canyon Preservation Council
Idaho Sporting Congress
Oregon Natural Desert Association
Wildlife Management Institute

Individuals
Mack Birkmaier
Tom Birkmaier
Bob Casey
Rod Childers
Lerinna Collins
Chris Cunningham
Douglas Finch
Ken Fitch
Mike Haberman
Jack McClaran
Scott McClaran
John Meadows
Mary O'Brien
J. Wesley and Rowena Patton
Erik Ryberg
Paul Yost

Tribes
Scott Althouse, Nez Perce Tribe
Michael Farrow, Confederated Tribes of the Umatilla Indian Reservation
Hal Shepard, Confederated Tribes of the Umatilla Indian Reservation
Terry Shephard, Confederated Tribes of the Umatilla Indian Reservation
Angela Sondenaa, Nez Perce Tribe
Jack Yearout, Nez Perce Tribe

Preparers

The following agency personnel participated in the preparation of the Final Environmental Impact Statement. All personnel are or were former employees at the Wallowa Mountains Office of the Wallowa-Whitman National Forest.

Ken Bronec – Fisheries Biologist
BS Biology; 28 years Forest Service Employment. Reviewed Aquatic Resources Specialist Report.

Leigh Dawson – Developed Recreation Coordinator
BS Forest Recreation, Oregon State University; 25 years Forest Service employment. Provided Wild and Scenic River recreation input.

Alicia Glassford – Interdisciplinary Planner
BS Civil Engineering; 22 years Forest Service employment. Led team and provided environmental policy guidance.

Jerry Hustafa –Botanist
BA Botany, BA Biology, University of Montana; 19 years Forest Service Experience.

Prepared Botanical Resources Specialist Report.

Diane Knox – Wildlife Biologist
BS Entomology and Integrated Pest Management; 20 years Forest Service experience, 14 years employment as Resource Specialist. Prepared Wildlife Resources Specialist Report.

Megan Lucas – Hydrologist/Fisheries Biologist
MS Zoology; 11 years Forest Service employment. Prepared Aquatic Resources Specialist Report.

Meg Mitchell – Former Wallowa Valley District Ranger
BS Forestry, MS Landscape Architecture; 16 years Forest Service employment. Served as line officer.

Teresa Smergut – Range Management Specialist
MS Range Land Management; 10 years Forest Service/BLM employment. Prepared Range Resources Specialist Report.

Barbara Walker – Wallowa Valley District Ranger
BS Forestry, 20 years Forest Service employment. Served as deciding official.

Appendix A – Issue Tracking Sheet

Issues were considered by the Interdisciplinary Team and characterized as key issues or other issues. Key issues are listed in Chapter 1 of the analysis, and other issues are listed below. The following tracking sheet shows where in the Environmental Impact Statement the other issues were addressed or why a particular issue was not addressed.

Issue Statement	Source(s) of Issue	Response
-Concerned about healthy functioning wetland plant communities. -Need to address the effects of grazing on all plant associations present in the area.	Douglas Finch, Boise, Idaho, 2/9/1999, letter	Discussed in Aquatic and Botanical Resources sections in Chapter 3
-A full discussion of the "historic use" is particularly relevant and should be addressed in the plan. -Tribal concerns should be presented in the Draft document. -What is the effect of grazing on archaeological and paleontological resources? -Are there provisions for changes in the level of grazing based on climatological/ environmental factors, such as drought, etc.? -What are the relating factors of grazing to fire suppression/control? -Are there wildlife/domestic livestock interactions with reference to any diseases?	Ken Fitch, New York, NY, 3/1999, letter	Addressed in the Range Resources section, Chapter 3 Tribal concerns addressed in Specifically Required Disclosure section, Chapter 3 Addressed in Joseph Canyon Inventoried Roadless Section, Chapter 3 Adaptive management strategies addressed in Alternatives, Chapter 2 Addressed in Botanical Resources and Wildlife Resources sections, Chapter 3 No interactions are known between cattle, horses, and wild ungulates
-We urge you to consider the effects of livestock use on the roadless values that exist there. -Improvements of "resource conditions" must be quantified and given perspective. -There should be a grassland rehabilitation, or livestock-exclusion alternative. -The EIS must examine the past effects of livestock grazing and thoroughly examine the benefits of changing livestock use and practices, including the exclusion of livestock	Ric Bailey, Executive Director, HCPC, 3/25/1999, letter	Addressed in Specially Designated Areas section, Chapter 3 Addressed in Range Resources section, Chapter 3 Addressed in Alternatives, Chapter 2 Purpose and Need for Action addressed in Chapter 1. Effects of authorizing livestock grazing in conjunction with

Issue Statement	Source(s) of Issue	Response
temporarily or permanently, to restore ecosystem function. -An alternative could include a proposal for buy-out of existing permittees. -We urge that full, detailed extent of monitoring be displayed in the EIS. -A primary consideration in this analysis should be the suitability of this area for livestock use. -The impacts of livestock on the natural fire patterns of this area should receive serious consideration. -The impacts of livestock on microbiotic crusts must be fully examined. -The role of livestock in facilitating the spread of noxious weeds and inhibiting the land's natural ability to resist them must be examined. -The Columbia Basin bunchgrass communities are unique. Any remnants of these that could be restored should be examined in this regional context. -The EIS must provide special management direction for the stream, and for the corridor of land that is included within the designated portion of Joseph Creek Wild and Scenic River.		effects of historic grazing addressed in Chapter 3 Covered by analysis of Alternative 1 Addressed in Monitoring, Chapter 2 Addressed in the Range Resources section, Chapter 3 Addressed in Botanical and Wildlife Resources section, Chapter 3 Addressed in the Aquatic Resources section, Chapter 3 Addressed in Range, Botanical, and Wildlife Resources sections, Chapter 3 Addressed in Research Natural Areas in Specially Designated Areas section, Chapter 3 Addressed in Specially Designated Areas section, Chapter 3
-If this grazing allotment were to be vacated with so much standing dead grass, combined with the heavy timber and growing understory of lodgepole pine, there would be a catastrophic forest fire. -If grazing were to be eliminated on our Davis Creek Allotment, we would not be able to continue to make our livelihood by raising cattle.	J. Wesley Patton and Rowena Patton (land owners), 4/8/1999, letter	Addressed in Specifically Required Disclosures section, Chapter 3 for Alternative 1
-The proposed EIS should consider the need for predator control to protect livestock, human health and safety, and natural resources.	David E. Williams, State Director, USDA Animal and Plant Health Inspection Service, 5/24/2000, letter	Coyote and bear control is authorized through APHIS-ADC. Wolf control is specifically excluded from livestock operations by the State of Oregon Endangered Species Act and Wolf Management Plan.

Issue Statement	Source(s) of Issue	Response
-Characterizations of the condition of the range and trends in that condition should be supported by current data.	Robert P. Davison, Northwest Field Representative, Wildlife Management Institute, 5/28/2000, letter	Addressed in the Range Resources section, Chapter 3
-The DEIS should address and provide data on the effects of livestock grazing on riparian conditions, soil productivity, threatened and endangered species, and big game winter range.		Addressed in Botanical Resources, Aquatic, and Wildlife Resources sections, Chapter 3
-The DEIS should address noxious weeds and provide current, reviewable data on the extent of exotic undesirable plant invasion, the current rate of spread of these plants, and the effects of livestock grazing on their establishment and spread.		Addressed in Range Resource section, Chapter 3
-The DEIS should address how grazing intensities will be adjusted in response to moderate or severe drought.		Adaptive management strategies addressed in Alternatives, Chapter 2
-The DEIS should estimate the amount of forage that needs to be left on the ground for ground nesting birds.		Ground nesting birds discussed in Wildlife Resources section, Chapter 3
-The DEIS should identify all known areas in which there are conflicts between grazing and other uses, such as big game, anglers, wilderness and wild and scenic values.		Addressed in Chapter 3
-The DEIS should identify measures that would be implemented to monitor the effects of grazing.		Monitoring protocol addressed in Alternatives, Chapter 2
-What specific sensitive, threatened, and endangered plant and animal species are known to exist in the Joseph Creek Watershed and more specifically within the AMP project area?	Lisa Dix, Ecosystem Defense Coordinator, HCPC, 4/3/2002, letter	Addressed in Botanical, Aquatics, and Wildlife Resources sections, Chapter 3
-Are surveys conducted yearly for sensitive, threatened, and endangered species in the Joseph Creek Watershed?		Surveys are conducted as needed for site-specific proposals such as the JCRA.
-Does this watershed have ecology plots?		Yes, refer to Range Resources section, Chapter 3
-Does the Wallowa Valley Ranger District have data on the species types, population sizes and locations and trends of native plants in the allotment areas?		Botanical and range condition inventories have gathered this data, and the information was used in the JCRAA.
-Does the Wallowa Valley Ranger District have data on the species types, population		Botanical and range condition inventories have gathered this

Issue Statement	Source(s) of Issue	Response
sizes and locations and trends of invasive species?		data, and the information was used in the JCRAA.
-What MIS exist in the watershed?		Addressed in the Wildlife Resources section, Chapter 3
-How many cow/calf pairs exist in the allotments? How many permittees?		Described in the Alternatives, Chapter 2
-Did the FS make a formal determination that the allotment lands are "suitable" for livestock grazing?		Addressed in the Range Resources section, Chapter 3
-Please describe the differences between past and present livestock numbers.		Addressed in Alternatives Considered but not Analyzed in Detail, Chapter 2
-Have pastures, allotments or any areas within the planning area ever been rested from livestock grazing?		Addressed in Alternatives, Chapter 2
-Can the District provide data on forage levels, forage health, and competition between livestock and wildlife?		Addressed in Range and Wildlife Resources section, Chapter 3
-What, if any, livestock restoration work has been done on the allotments?		Addressed in Aquatics and Wildlife Resources sections, Chapter 3
-What are the riparian conditions in the allotments?		Addressed in Aquatics Resources section, Chapter 3
-What surveys have been conducted for microbiotic crusts? How have the surveys been applied/or how are they being figured into the allotment planning process?		Addressed in Aquatics Resources section, Chapter 3
-Is there any fencing within the allotment? Is there riparian fencing, and are pastures separated by fences.		Addressed in Activities Common to Alternatives 2 and 3, Chapter 3
-The EIS must adequately explain the current conditions of the project area.	Michael Farrow, Director, Confederated Tribes of the Umatilla Indian Reservation, Department of Natural Resources, 11/4/2002, letter	Existing conditions addressed in Chapter 3
-Concerned with watershed conditions, disturbance levels and trends; range conditions; riparian conditions; water quality; fish populations and habitat; wildlife habitat; monitoring; and soils.		All addressed in analysis
-Would like to see an option that is consistent with CTUIR's fish restoration plan.		Information regarding the impacts on fisheries from

Issue Statement	Source(s) of Issue	Response
		Alternatives 2 and 3 is provided in Aquatics Resources section, Chapter 3. Finding on consistency would be within the purview of the CTUIR. Please advise
-Expect that subsistence and environmental values will be evaluated on an equal footing with economic values.		Refer to Economics analysis, in Specifically Required Disclosures, Chapter 3
-The analysis of effects must also be analyzed for consistency with treaty rights, rebuilding efforts, regional goals and policies, and legal mandates.		Refer to Specifically Required Disclosures, Chapter 3
-CTUIR is especially concerned with effects on anadromous fish habitats.		Addressed in Aquatic Resources section, Chapter 3
-CTUIR urges the Forest Service to protect cultural resources and access rights to the Forests to maintain and exercise treaty rights.		Addressed in Specifically Required Disclosures, Chapter 3
-Ensure that all potential impacts from the preferred alternative on Threatened, Endangered, or Sensitive fish species will be fully analyzed and considered.		Addressed in Aquatic Resources section, Chapter 3
-The areas of highest concerns should be those with a PFC rating of "not properly functioning" and Oregon State Water Quality Standard 303(d) listed streams.		Addressed in Aquatic Resources section, Chapter 3
-The agency should consider the need to maintain riparian conditions that are currently functioning properly.		Addressed in Aquatic Resources section, Chapter 3
-The Forest Service should evaluate the conditions of soils and microbiotic crusts.		Addressed in Aquatic Resources section, Chapter 3
-The Forest Service must satisfy the National Forest Management Act's requirement of determining the suitability and capability of national forest lands for forage and production, and for providing habitat for management indicator species.		Addressed in the Range Resources section, Chapter 3
-Concerned with quality of fisheries habitat, especially bull trout.	Ryan Shaffer, Ecosystem Defense Director, Alliance for the Wild Rockies, 8/28/2002, telephone conversation.	Addressed in Aquatic Resources section, Chapter 3
-Concerned with effects on lands within 'Wildland Project' and protection of their status.		Addressed in Specially Designated Areas, Chapter 3

Issue Statement	Source(s) of Issue	Response
-It is required that management of the allotments that effect the Joseph Creek corridor are in compliance with the comprehensive river management plan developed pursuant to the WSRA.	Joe Serres, Co-Director, Friends of Living Oregon Waters, 3/3/2003, letter	Addressed in the Specially Designated Areas section, Chapter 3
-If grazing trends are damaging the corridor's outstandingly remarkable values, then significant considerations should be given to alternatives that do not allow grazing within the Joseph Creek Wild and Scenic River corridor.		Addressed in Alternatives, Chapter 2
-The DEIS should have a clear assessment of the effects of the allotments on water quality and fisheries.		Addressed in Aquatic Resources section, Chapter 3
-The DEIS and impacts of the proposed action should support a number of key hydrological factors. Including management indicator species; key riparian vegetation; riparian habitat improvements activities; rate of recovery in riparian areas; non-stream associated riparian areas; Oregon State Water Quality standards; stream bank stability and fish capability.		Addressed in Aquatic Resources section, Chapter 3
-Joseph Creek is below state standards for high summer temperature and sedimentation.		Addressed in Aquatic Resources section, Chapter 3
-The Forest Service is required, pursuant to Section 7 of the ESA, to consult with the U.S. Fish and Wildlife Service to determine whether federally permitted grazing activities may affect listed species.		Process has been initiated and concurrence with USFWS and NOAA – Fisheries has been received. Both agencies will be kept informed as to changes that occur between the DEIS and FEIS
-The Forest Service should work towards setting clear standards that dictate when livestock must be moved off a particular allotment or pasture. Such as forage utilization; stream bank stability; and shrub use.		Refer to Issue 2 with respect to use of the Meadow Segment of Swamp Creek. All streams are subject to utilization standards for forage and shrub utilization and for streambank stability – refer to Activities Common to Alternatives 2 and 3, Chapter 2
Analysis should address Nez Perce Tribe treaty rights for pasturing of horses	Scott Althouse, Jack Yearout, Nez Perce Tribe Fisheries 10/22/02 Meeting with Meg Mitchell, District Ranger	Refer to adaptive management features associated with Alternative 3 as compared to Alternatives 1 and 2 (Issue 5) and Specifically Required Disclosures, Chapter 3

Appendix B – Comments and Responses

Categories and Subcategories Identified in the Comment Letters

Category Number	Category	Subcategory Number	Subcategory
1	Economics	1a	Economic Impacts to Permittees
		1b	Compensation to Permittees
		1c	Economic Impacts - General
2	Livestock Management	2a	Range Improvements
		2b	Permit Terms / Compliance / Grazing Impacts
		2c	Grazing Systems
		2d	Capability / Suitability
3	Wildlife	3a	Wildlife – General
		3b	Wildlife – Big Game
		3c	Management Indicator Species
4	Fisheries	4a	Fisheries - General
		4b	Fisheries – Threatened and Endangered
5	Vegetation	5a	Vegetation Impacts
		5b	Forage Utilization
		5c	Proposed Research Natural Areas
		5d	Riparian and Wetlands
		5e	Aspen
		5f	Noxious Weeds
6	Botanical	6a	Botanical – Threatened and Endangered
		6b	Botanical - Sensitive
7	Soils / Water	7a	Soil Erosion
		7b	Soil Productivity
		7c	Water Quality / Hydrology
8	Roadless and Roads		
9	Wild and Scenic Rivers	9a	Outstandingly Remarkable Values
10	NEPA Process	10a	Purpose and Need
		10b	Issues
		10c	Proposed Action and Alternatives
		10d	No-Grazing Alternative
		10e	Monitoring
		10f	Effects
		10g	Compliance with Laws and Regulations
11	Treaty Rights		
12	Miscellaneous		
99	Support of Alternatives		

1. Economics

1a. Economic Impacts to Permittees

1a.1 Table 41 on Page 187 seems unrealistic. **(permittees)**

We changed the economic indicators in the table and added information describing the assumptions behind the analysis. Please refer to the economic analysis in the FEIS.

1c. Economic Impacts - General

1c.1 Alternative 3 would require $40,000 for monitoring over a ten year period. *DEIS 187.* This amount is $14,000 more than if the current system were continued. *Id.* In a time of reduced budgets and personnel, we find it difficult to believe there will be additional money to be allocated for monitoring. Moreover, this amount averages out to just $4,000 per year, which is an absurdly low amount and does not reflect the true cost of this livestock grazing program to the Forest Service (and therefore to the American public). The economic estimates also show a decreased cost to the permittees for administration and operating costs (not including structures) under Alternative 3. We find this especially curious given the approach of Alternative 3: increased monitoring and adaptive management. If the permittees will be doing less administration, and the Forest Service has only $1,400 per year more to do administration and monitoring, it is quite clear that the entire premise of Alternative 3 is nothing but a tower of cards awaiting a slight wind before collapsing. **(HCPC)**

We changed the economic analysis and added information describing the assumptions behind the analysis.

1c.2 It is imperative to making a reasonable decision as required by the NEPA that both the public and the decision-maker have all the pertinent information concerning the consequences and responsibilities inherent in the decision for this grazing allotment proposal. As allotment management and resultant restoration efforts require financial expenditures, these must be disclosed and assessed. The best interests of the public, the wildlife, and natural resource heritage of us all must be weighed against the often considerable financial and ecological costs of what has so aptly been termed “welfare ranching”—which too often benefits a few individual ranchers at the expense of the land, public and government. The analysis must explore alternatives which ensure the costs of managing, maintaining, and restoring this allotment are not borne by the public or federal treasury, but by the individual permittees who run commercial livestock operations. The continued use of public lands by permittees must honor ecological conservation goals. The use of public lands must not become abuse. Livestock grazing is a privilege, not a right. It is the duty of the USFS, entrusted with “caring for the land and serving the people,” to uphold federal conservation goals, the needs of the land, and the best interests of the greater public. Wherever these interests, goals and objectives conflict and cannot be otherwise resolved, it is the responsibility of the agency to revoke or terminate livestock grazing allotment permits. The NEPA document for this process must address this responsibility. **(HCPC)**

While we appreciate our charge as land stewards, we also recognize that the trade-offs between commodity use and resource protection cannot always be quantified in an economic sense. Please refer to the decision rationale in the Record of Decision for a

discussion of how the deciding official balanced varying interests in making an alternative selection.

1c.3 By law, the Forest Service must maximize the net social and economic benefits of its management programs for all Americans and fully account for the benefits of ungrazed forests and the costs of grazing in its grazing permit program decisions. If the Forest Service took ecosystem service values and externalities into account, it is likely that few, if any, grazing allotments could be justified on National Forest lands. **(HCPC)**

Refer to response to comment 1c.13.

1c.4 According to 16 U.S.C. § 1606: "It is the policy of the United States (a) forests and rangeland, in all ownerships, should be managed to maximize their net social and economic contributions to the Nation's well being, in an environmentally sound manner." It is also the policy of Congress that all national forest lands shall be managed "to secure maximum benefits of multiple use sustained yield management." *16 U.S.C. § 1606 (d)(1).* **(HCPC)**

Refer to response to comment 1c.13.

1c.5 Congress passed the Multiple Use and Sustained Yield Act ("MUSYA") (*16 U.S.C. § 528-531*) to establish the principle of multiple use on national forest lands, authorizing the Forest Service to administer national forests for a variety of uses including outdoor recreation, range, timber, watershed, wildlife, and fish purposes. The MUSYA requires that decisions regarding appropriate land uses be based upon an analysis of the "relative values" of particular forest areas for these various uses (*16 U.S.C. § 529*) and that the combination of uses chosen "best meet the needs of the American people." *16 U.S.C. § 531.* Under MUSYA the Forest Service must complete a relative values analysis which demonstrates that grazing is the highest and best use of a particular forest area before issuing a grazing permit. Further, such an analysis gives "equal consideration" to the various uses and values: "One of the basic concepts of multiple use is that all of these resources in general are entitled to equal consideration." *H.R. Rep. No. 1551, 86th Congress, 2nd Session, (1960), reprinted in 1960 U.S.C.C.A.N. 2377, 2379.* **(HCPC)**

Refer to response to comment 1c.13.

1c.6 The National Forest Management Act (NFMA) requires management of national forest system lands in a manner that "maximizes long term net public benefits." *36 C.F.R. § 219.1(a).* This requirement is found in the Forest and Rangeland Renewable Resources Planning Act ("RPA"), as well. The Forest Service's planning regulations have defined the term "net public benefits" as the "overall value of positive effects (benefits) less all associated inputs and negative effects (costs)." The NFMA requires a sophisticated consideration of benefits and costs, including use of both market and non-market methods of determining existing and future resource values, methods to determine opportunity costs, and use of best available quantitative and qualitative techniques. *36 C.F.R. § 219.12(e), 219.12(f)2, 219.1(b)12.* Costs and benefits must be assessed not only from the perspective of the Forest Service, but also from the perspective of "all other private and public" interests. *36 C.F.R. § 219.12(g)(3)(i).* **(HCPC)**

Refer to response to comment 1c.13.

1c.7 In preparing this DEIS, the Forest Service must meet the substantive requirements regarding economic analysis set forth in the NFMA. Specifically, the Forest Service must incorporate a wide range of external economic costs that will be passed on to public agencies,

private landowners, business owners, and others adversely affected by proposed grazing in the area in combination with other livestock grazing ongoing and planned across the forest, Region 3, and the national forest system as a whole. **(HCPC)**

Refer to response to comment 1c.13.

1c.8 The DEIS must address "the economic and environmental consequences and the alternative uses foregone" of each different alternative, as the regulations require. *36 C.F.R. § 219.3.* The Forest Service must examine the cost of continued grazing on the allotment and the costs that might be incurred, or the income that might be generated, by devoting the allotment to alternative uses. A failure to conduct this type of cost/benefit analysis not only undermines the scope of this DEIS, but also violates your NFMA mandate to identify the alternative that comes nearest to maximizing public benefit. **(HCPC)**

Refer to response to comment 1c.13.

1c.9 Our review of the literature shows that, in many areas, public lands livestock grazing – from strictly an economic efficiency standpoint – does not serve the broader public interest. This is particularly true when livestock grazing occurs in deer and elk habitat, and valuable fisheries habitat, which is the case for this allotment. According to Loomis et. al. (1991), "the incremental benefits of deer hunting gained under the 2-years-off, 1-year-on grazing system is greater than the lost net economic value of the forage to the rancher as computed by USDA economic research." Other research also shows that the net-income to local communities produced by allocating public forage exclusively to native game is much more valuable than forage allocated to beef cattle. *See Loomis et. al. 1989; Cory and Martin 1985.* **(HCPC)**

Refer to response to comment 1c.13.

1c.10 The economic impact of the grazing allotments, in terms of public expense, is poorly detailed. The DEIS should be more explicit in describing the economic realities of the WWNF's public lands grazing program. The WWNF should explicitly state that the grazing fees do not cover the basic expenses of the grazing program, and the grazing fees represent a figure that is a small fraction of the market value of the cattle produced on the allotments. As a general policy, it may be unfair for the government to subsidize public lands graziers, granting them a competitive advantage over graziers who lack access to public allotments, at public expense. **(FLOW)**

Refer to response to comment 1c.13.

1c.11 According to 16 U.S.C. § 1606: "It is the policy of the United States (a) forests and rangeland, in all ownerships, should be managed to maximize their net social and economic contributions to the Nation's well being, in an environmentally sound manner." It is also the policy of Congress that all national forest lands shall be managed "to secure maximum benefits of multiple use sustained yield management." (16 U.S.C. § 1606 (d)(1)) **(FLOW)**

Refer to response to comment 1c.13.

1c.12 Congress passed the Multiple Use and Sustained Yield Act (MUSYA) (16 U.S.C. § 528-531) to establish the principle of multiple use on national forest lands, authorizing the Forest Service to administer national forests for a variety of uses including outdoor recreation, range, timber, watershed, wildlife, and fish purposes. The MUSYA requires that decisions regarding appropriate land uses be based upon an analysis of the "relative values" of particular forest areas for these

various uses (16 U.S.C. § 529) and that the combination of uses chosen "best meet the needs of the American people." (16 U.S.C. § 531) Under MUSYA the Forest Service must complete a relative values analysis which demonstrates that grazing is the highest and best use of a particular forest area before issuing a grazing permit. Further, such an analysis gives "equal consideration" to the various uses and values: "One of the basic concepts of multiple use is that all of these resources in general are entitled to equal consideration." (H.R. Rep. No. 1551, 86th Congress, 2nd Session, (1960), reprinted in 1960 U.S.C.C.A.N. 2377, 2379). **(FLOW)**

Refer to response to comment 1c.13.

1c.13 NEPA also directs the Forest Service, and other federal agencies, to develop environmental analysis procedures which "insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical considerations." (42 U.S.C. § 4332 (B)). **(FLOW)**

Developing Forest Service procedures and determining whether grazing is an appropriate activity on the National Forest are done at the policy level and Forest Planning level rather than the project-specific level. We analyzed the alternatives consistent with Forest Service environmental analysis procedures contained in Forest Service Handbooks and Manuals, and the alternatives are consistent with Forest Plan standards and guidelines. As described in the Purpose of and Need for Action, there is a need for forage allocation for commercial livestock grazing in the JCRAA. The alternatives reflect different approaches for meeting this purpose of and need for action.

1c.14 Additionally, we noted that, in the costs of the Preferred Alternative, there is no money allocated for mitigation. The catch-all of "adaptive management" does not ensure that damage will not occur from cattle grazing, and further measures may be needed to maintain and improve the quality of the range, the water, and riparian areas. Indeed, given the poor track record of "monitoring" as a strategy for reducing cattle damage, particularly to unfenced riparian areas, the DEIS does not offer a believable strategy for reducing impacts of livestock grazing. **(FLOW)**

We changed the economic analysis and added information describing the assumptions behind the analysis.

2. Livestock management

2a. Range Improvements

2a.1 Please provide a map (or maps) of existing range improvements including fences, corrals, and water developments for each allotment. Tribal staff needs a better understanding of the frequency with which these facilities will be maintained. Range improvements that are not maintained may become detrimental to desired conditions or pose unacceptable hazards to wildlife. For example, abandoned fences can create entanglement risks for big game animals, and poorly maintained spring developments can degrade water quality and pose drowning hazards to birds, small mammals, and bats. The Forest needs to clearly identify its proposed action, as well as clearly analyze the impacts of these range improvements under each alternative. **(NPTEC)**

A map has been included in Appendix D of the FEIS with the range improvement layer for the 11 range allotments. Maintenance for range allotments is scheduled annually and is incorporated into the grazing permit and annual operating instructions. Page 45 of the DEIS discusses range improvement responsibility.

2b. Permit Terms / Compliance / Grazing Impacts

2b.1 In several places in the EIS it states that an option or proposed action would be to "eliminate grazing." This is an inappropriate option in an EIS which is written to set the parameters for grazing. If issues of concern are being addressed in the appropriate manner then elimination of grazing will not be necessary. If they are not being appropriately addressed it is a USFS issue where the permittee should not be penalized. Permittees request all statements of "eliminate grazing" be taken out of EIS. **(permittees)**

The term "eliminate grazing", as used on Pages 35, 53, and 72 of the DEIS, was intended to reflect deferment of grazing or resting the pasture. We replaced "eliminating grazing" with language to show that the areas of concern will be protected from grazing.

2b.2 Consider adding to Alternative 2 on Page 25 a voluntary reduction statement such as "At each annual operating plan meeting, the permittees would need to agree upon an approach for stocking and meeting utilization standards." **(permittees)**

Because Alternative 2 reflects current management and the Swamp Creek Allotment permittees currently coordinate each year on stocking, we agree with your suggestion and added the statement.

2b.3 Regarding private land term grazing permit, believe that EIS should reflect that Joseph creek allotments will follow court outcome. On Page 45, it is inappropriate to require range condition on private land to get private land term permits reissued. The law and the USFS doesn't allow it:

1.) Public Law 104-19, Seo-. 504(b) states in part: "...term grazing permits, which expire or are waived before the NEPA analysis and decision pursuant to the schedule developed by individual Forest Service System units, shall be issued on the same terms and conditions and for the full term of the expired or waived permit."

2.) FSH 2209.13 chapter 10 11.1 states: "Kinds of Grazing Permits With Term Status. There are four kinds of permits (sec11.11-11.14) which provide term status. 11.13 - Term Private Land Grazing Permit."

3.) FSM 2231.02(9) states: "Do not reduce a permit solely because it is being waived to the United States in connection with the sale of base property and for livestock. Stocking adjustments needed for resource protection must be carried out as planned without relation to reissuance of grazing permits.)

This is in contention on Lewis sale at present. Permittees request the Joseph Creek EIS state that these permits will comply with the outcome of the appeal/lawsuit of the Lewis sale. **(permittees)**

We agree that further interpretation on this issue will be forthcoming. We do not feel that the paragraph you object to provides relevant information about the differences

between the alternatives. Therefore, we have eliminated the paragraph from the FEIS. We will interpret and administer Forest Service grazing policies regardless of the alternative selected for implementation in the JCRAA.

2b.4 On the Table on Page 61, Snake canyon pasture, no one grazed that pasture in 2001, should not have been monitoring. **(permittees)**

Our schedule shows the Snake Canyon pasture was grazed in spring (May 16-June 16) and then again in the fall.

2b.5 The Kirkland pasture met standards in 2001 and is shown incorrectly on Page 61. **(permittees)**

We added information to the FEIS to show that the 2001 sample in the Kirkland pasture was taken in an inappropriate sampling area (riparian data was taken in a non-riparian area).

2b.6 The C& T plot is located in the SW not SE part of the Sumac pasture as shown on page 62. **(permittees)**

We agree, and have changed the FEIS accordingly.

2b.7 The stocking levels within each allotment under current guidelines and under each alternative needs to be clearly illustrated in a table or chart so that comparisons can be made. It is not clear which numbers are being proposed or used in the analysis. For example, page 65 of the DEIS states that 5045 head-months are authorized for the Swamp Creek Allotment but stocking levels are currently at 78%, but the table on page 30 indicates 4901 head-months are the maximum allowed. Since both the permittees and the Forest Service have voluntarily stocked this allotment at 78% for the last 15 years it would seem appropriate to officially reduce maximum stocking levels to at least this level under the proposed action. **(NPTEC)**

The permitted stocking rate for Swamp Creek allotment totals 4901 head months. This includes 232 private land numbers. Permitted numbers of livestock total 842 head, which includes 35 head of private land numbers. If the permittees elect to stock at full numbers, they will be given the opportunity to meet grazing standards. If standards can not be met at full numbers, changes will be considered in order to do so. These changes may include reduction in numbers, season, or duration of livestock grazing.

2b.8 Additionally, the predictable result of cattle entering exclosures is not even mentioned in the DEIS. In 2003, there were at least 3 instances of cattle entering exclosures or entering pastures prior to the allowable date. Because the placement of cattle is so reliant on fence lines that are miles and miles long and impossible to fully monitor, it is inevitable that cattle will enter exclosures or the wrong pastures at times. **(HCPC)**

On Page 151 of the DEIS, we acknowledge that exclosures can be breached on occasion. However, on the whole, investments in exclosures have resulted in large benefits to riparian conditions within the JCRAA. Refer to Page 128 of the DEIS for a listing of exclosures that have been completed since 1983. With respect to cattle entering a pasture before the scheduled date, livestock management is not an exacting science, and there will be some degree of variation in the system. The 65 pastures within the JCRAA are grazed under rest-rotation strategies that require frequent movement of livestock that

relies on range readiness and resource protection measures. Early placement of livestock in a pasture can be authorized as stated on Page 26 of the DEIS. However, permittees understand that early placement will result in early removal if grazing is reaching the utilization standard for that pasture.

2c. Grazing Systems

2c.1 The reduction of 15 days off the Table Mountain/Hunting Camp permit was done in 1994 or 1995. **(permittees)**

We changed the FEIS to show that the reduction was made in the mid 1990s.

2c.2 Add the Bennett Pasture of the Davis Allotment to Page 53. **(permittees)**

We added the Bennett Pasture of the Davis Creek Allotment to the list of pastures for which shrub utilization and streambank stability monitoring protocols will be developed and monitored.

2c.3 On Page 146, this is the only place that the DEIS identifies a 346 head cut. This statement should be taken out. **(permittees)**

Refer to the response to comment 2b.7

2c.4 Sumac is a "pasture of concern ", not a pasture in unsatisfactory condition. It is presently stocked disproportionately. Since the listing of the steelhead that requires non use in pastures with redds present, the Sumac pasture has had to carry a larger portion of the AUM's than was originally allocated. Possible solution: Using the adaptive methods we suggest the following: Early exit date (10 days to peavine pasture by eliminating the July j turn on date. The grazing management of Sumac, peavine and associated pastures would be better served if the July 1 non-grazing requirement was adjusted for the peavine pasture. This would allow an early off date for Sumac and release that pastures grasses to regrow prior to the loss of soil moisture, this would allow for an improving trend and improved range condition. An additional option is the use of surplus forage in the Chico Mule pasture for the Sumac cattle. This use would reduce the numbers and the time in the Sumac pasture. It would not displace the present horse and mule use. **(permittees)**

The Forest Plan introduced the terminology for characterizing range condition as satisfactory or unsatisfactory. We use these terms not as a judgment on the grazing system or permittee performance, but as an indicator of compliance with Forest Plan standards and guidelines. The Forest Plan requires that when range conditions are evaluated to be within the definition of 'unsatisfactory', objectives for these lands be developed to reach a desired future condition. You will see that any conditions identified in the DEIS as unsatisfactory are accompanied by a plan for recovery. To better reflect that need for recovery, we used seral stage as a more specific reference to distinguish the difference between satisfactory and unsatisfactory condition throughout the FEIS. We appreciate your suggestions for addressing conditions in the Sumac pasture and agree that the situation is a result of livestock shifts caused by efforts to protect steelhead redds. We will be addressing such specific shifts in pasture use at each annual operating meeting. We are not considering the Chico pasture as an area for which commercial

livestock grazing is appropriate because we would like to retain options for future grazing of Forest Service horses and mules.

2c.5 It's unacceptable to eliminate grazing due to small areas of pasture that are in unacceptable condition. Particularly when the patterns of conditions are consistent with damage due to rodents much more than patterns that would indicate grazing issues. Vast areas of eastern Oregon have been devastated by rodent infestations over the past 100 years. Much of these pastures are in good to excellent condition while signs of improving trend are apparent in the early seral areas. Therefore permittees believe that the current grazing system is working and it will allow for continued upward trend. The presence of Spalding's catchfly indicates the current grazing system is working to protect this plant. **(permittees)**

Refer to the response to comment 2b.1

2c.6 The Draft ElS does not adequately identify what is meant by adaptive management. What is perceived is that with adaptive management there will be less restrictions to do what is needed to have a healthy environment while maintaining a productive grazing program. It also removes some of the certainty to both the environmental assurances and the livestock management. Further definition of adaptive management needs to clearly state that both the environment and the livestock management will continue to be taken into account and that the permittees will be an active member of the adaptive management decision making team. **(permittees)**

Adaptive management certainly means different things to different people. In the context of this document, the adaptive management approach for Alternative 3 can best be seen by comparing Table 4 with Table 6 in the FEIS. Table 6 shows that Alternative 3 does not specify the duration of or maximum stocking level for each pasture. Rather, it specifies timing and maximum stocking for the entire allotment. This allows each pasture to best be managed to consider existing conditions as well as conditions that could arise in the future. In Table 4, note that each pasture has a specific duration and maximum stocking. It would be more difficult to adapt to changing conditions under Alternative 2 than under Alternative 3.

2c.7 Also it has been represented to us that permittees would have access to a wide base of land to be able to move to in case they would not be able to graze their traditional land due to something like fire. The parameters of these decisions needs to be clearly defined. **(permittees)**

Refer to the response to comment 2c.8.

2c.8 What is adaptive management and. what is gained or lost? Want more definition on flexibility of moving. Permittee request retained ability to utilize any available open pasture in the Wallowa Whitman National Forest if catastrophic event eliminates normal grazing. Permittees need the ability to move within permits as needed for adaptive management to work. **(permittees)**

Refer to the response to comment 2c.6. For the purposes of the JCRA, the ability to adapt livestock management to changing conditions is analyzed for the analysis area. However, as NEPA documents are completed for adjoining areas, assuming these documents emphasize an adaptive approach, then permits could be issued that allow flexibility across allotment boundaries throughout the Wallowa-Whitman National Forest.

2c.9 No fall grazing is authorized in Sumac/Two Bit area (Page vii). **(permittees)**

We agree that the Miller Ridge and Sumac/Two Bit areas are currently not grazed in the spring, but under Alternative 3 Modified, fall grazing could occur. In addition, consideration of big-game concentration areas was changed to consider areas allocated as Management Area 3 instead.

2d. Capability / Suitability

2d.1 The statement of capable lands on Page 124 is confusing and misleading. Capable lands include much more than the close-in headwaters. This paragraph needs rewritten or removed. **(permittees)**

Capable lands are defined on Page 57 of the DEIS and displayed in Figure 3 on Page 59. Livestock clearly use more areas than those modeled as capable. However, the capability model developed for the Wallowa-Whitman National Forest is an attempt to show the areas that would be grazed at a higher intensity. Based on your comment, we rechecked the model assumptions and discovered that we made an error on Page 124. Lands are modeled as capable if within ½ mile of water where slopes are between 20 and 45 percent in grade. Where slopes are less than 20 percent in grade, the model includes lands within 1 mile of water. This information has been corrected in the FEIS.

2d.2 Coyote Campground is excluded from area allowed to be grazed because they are designated "not suitable lands". Permittees believe that grazing should be allowed to reduce fine fuels. Concerned with fire hazard without grazing. **(permittees)**

The Coyote Campground was fenced after the Forest Service received repeated input from campground users that they objected to livestock being in the campground and the residual manure. The fenced area is approximately 12 acres in size. While grazing has been shown to reduce fine fuels, the fenced area is a very small ungrazed area within a 95,555-acre project area that is grazed. We do not feel that the increase in wildfire risk caused by not grazing Coyote Campground is substantial enough to counter the specific objections we have received about livestock in the campground.

2d.3 The suitability of grazing areas should include evaluation of the supply of forage for livestock, and the capability of these lands to produce suitable food and cover for selected wildlife species. 36 C.F.R. § 219.20(a). No grazing capacity is disclosed in the record. Without explicitly determining capacity, the SNF is unable to meet NFMA's sustainable use requirement that permitted use must be below or equal to capacity. Proposed continuation of present levels of stocking has not achieved and is unlikely ever to achieve recovery of watersheds "at near-natural rates". Best available science contradicts this supposition by the Forest Service. Recent science shows that light to moderate grazing still results in statistically significant soil erosion and sediment pollution into streams- evidence that was not considered in the DEIS. *Jones 2000.* **(HCPC)**

Suitability and capability were evaluated for the JCRAA on Pages 57-59 of the DEIS. While grazing capacity was not calculated based on forage production rates and livestock consumption needs, the capacity was inferred from evaluating grazing history, vegetative condition and trend data, and utilization monitoring results. Our analysis showed that current grazing systems support satisfactory range condition over virtually

all of the JCRAA, indicating that current stocking levels are below or equal to capacity. The single exception is the stocking level of the Swamp Creek Allotment, which was disclosed on Page 38 of the DEIS as needing an annual review of utilization monitoring where adjustments in stocking will be made before the start of each grazing season. We question the source of your statement that grazing must be conducted to achieve recovery of watersheds "at near-natural rates". PacFish provides direction for watersheds with anadromous fish by stating that grazing practices that retard or prevent attainment of Riparian Management Objectives or are likely to adversely affect listed anadromous fish will be modified. We have completed consultation with NOAA – Fisheries on the JCRAA and have received concurrence on our determination of Not Likely to Adversely Affect, and that none of the alternatives would prevent attainment of Riparian Management Objectives. We do not dispute that even light to moderate grazing results in soil erosion and sediment into streams. These effects were disclosed on pages 107 to 136 of the DEIS. While we disclose those effects, in terms of magnitude, direction, duration, and intensity, we are unsure how they fit within your description of "statistically significant".

2d.4 Perhaps more importantly, we believe that no term permits should be reissued until you conduct a thorough analysis of the allotment's suitability for grazing as defined in your regulations. The National Forest Management Act ("NFMA"), 16 U.S.C. § 1601 et seq., contains specific requirements that the Forest Service must follow in addressing actions on National Forests. One such requirement is that the Forest Service identifies "the suitability of lands for resource management." *16 U.S.C. § 1604(g)(2)(A).* Among other things, this means that the Forest Service must determine "in forest planning the suitability and potential capability of the National Forest system lands for producing forage for grazing animals and for providing habitat for management indicator species." *36 C.F.R. § 319.20.* Though a 'no-grazing' alternative is included in the DEIS, the benefits of that alternative to wildlife, watersheds, and non-game species must be fully analyzed. Without answering the absolutely crucial question of this land's particular suitability for continued grazing, the agency fails to determine the appropriateness of its actions as stipulated in 36 C.F.R. § 219.3. **(HCPC)**

The DEIS on page 57 addresses suitability. Suitability on the Wallowa-Whitman National Forest was determined during the original Land and Resource Management Planning process. As shown on Page III-49 of the Forest Plan EIS, approximately 1.3 million acres of the Wallowa-Whitman National Forest were classified as suitable. As described on Page 57 of the DEIS, all of the lands within the JCRAA meet the definition of suitable lands except for the area around Coyote Campground.

2d.5 36 C.F.R. § 219.3 further defines "suitability" as "the appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses forgone. A unit of land may be suitable for a variety of individual or combined management practices." *36 C.F.R. § 219.3.* But 36 C.F.R. § 219.26 must also be taken into account. It states that lands are not suitable if grazing "would result in substantial and permanent impairment of the productivity of the land." There is ample evidence within this DEIS that this is the case here. **(HCPC)**

Refer to the response to comment 2d.4. We do not agree that the effects shown on Pages 57 to 191 of the DEIS constitute "substantial and permanent impairment of the productivity of the land." Refer to the Record of Decision for further discussion of this item.

2d.6 We believe that an analysis of 'the economic and environmental consequences of the alternative uses foregone' must be conducted to determine if commercial livestock production is even appropriate in these areas. This analysis must take into account the impacts on federally listed and Forest Service sensitive species, water quality, recreation and other public values that will undoubtedly be impacted if you decide to re-issue term grazing permits for this area. **(HCPC)**

We have addressed the economic and environmental consequences of the alternative uses foregone by analyzing Alternative 1, which describes conditions for range, botany, aquatic, wildlife, recreation, and scenic resources and specially designated areas if livestock grazing were removed from the JCRAA.

2d.7 Instead of analyzing the "economic and environmental consequences of grazing and alternative uses forgone" as required by the regulations, the typical forest plan, if it addresses grazing suitability at all, narrows its suitability analysis to questions of forage production and steepness of slope. Instead of publishing a map that identifies lands suitable for grazing on a site specific basis, the typical forest plan describes suitability in generic terms such as absolute numbers of suitable acres or the proportion of the total area that is allotted for grazing.

For example, the forest plan for the Wallowa-Whitman National Forest addresses grazing suitability as follows

> Of the 2.3 million acres of the Forest, approximately 1.3 million are classified as suitable for livestock grazing under controlled management conditions that will maintain or improve the range resource. . . . In addition, current management is not always adequate to provide for rehabilitation of existing problem areas or to consistently prevent the occurrence of new problems. *LRMP 2-10*.

Although this discussion is more detailed than most of the eastside forest plans, it completely fails to comply with the NFMA regulations. The plan does not identify which lands fall into the 1.3 million acres that are "classified as suitable" for grazing. In addition, the plan fails to disclose the criteria used to classify lands as suitable for grazing. **(HCPC)**

While the Forest Plan EIS did not disclose which 1.3 million acres were classified as suitable, a Tentative Capability and Suitability Rating Guide was developed in 1999 for the Wallowa-Whitman National Forest to use in distinguishing capable and suitable lands. This guidance excludes the following areas from being suitable: developed campgrounds, administrative sites, exclusive use special use areas, fenced road rights-of-way, Research Natural Areas where the establishment report excludes grazing as a use, Wilderness where grazing was not permitted at the time of designation or where use has since been abolished, areas excluded by NEPA decision, areas fenced to exclude livestock for an indefinite period, municipal watersheds, townsites/city limits, areas administratively closed to livestock grazing, and lands which have been shown to be uneconomical to manage under any reasonable management system.

2d.8 Finally, the Wallowa-Whitman Forest Plan failed to account for management constraints. If "current management is not always adequate to provide for rehabilitation of existing problem areas or to consistently prevent the occurrence of new problems," then the Wallowa-Whitman Forest erroneously identified as suitable for grazing areas that will be unacceptably degraded by livestock. The approach to grazing suitability used in the last round of forest planning clearly does not comply with the requirements of the regulations. **(HCPC)**

Our charge is to implement site-specific decisions under the direction of the Forest Plan. If you do not agree with the approach made by the Forest Plan, we are not in a position to change it unless site-specific conditions warrant a project-specific amendment. We did not find any conditions within the JCRAA that would indicate that grazing was an inappropriate use of the land or where it would result in substantial and permanent impairment of the productivity of the land. Therefore, we did not recommend a Forest Plan amendment to the deciding official for altering suitable lands within the JCRAA.

2d.9 Just because the Plan assumes the areas are suitable for grazing does not necessarily mean that this is currently the case. As a consequence, the analysis team should validate the assumptions made in the Forest Plan regarding the acres under consideration, and propose amendments of the Plan (if necessary) to remove unsuitable acres from areas that now allow grazing. These would include areas that cannot be grazed in the near future due to damage from grazing. **(HCPC)**

Refer to the response to comment 2d.8.

2d.10 In order to comply with the NFMA planning regulations, determinations of grazing suitability must address ecosystem considerations such as presence of sensitive species and habitats, sensitive soils, presence of cultural resources, conflicts with recreation, length of growing season, water quality effects, forest health, cumulative watershed effects, and consistency with natural patterns of disturbance. **(HCPC)**

Refer to the response to comment 2d.8.

Wildlife

3a. Wildlife - General

3a.1 The role of beaver in Swamp Creek is a point of considerable discussion. This paragraph (Page 3, Paragraph 5) needs rewritten to reflect the understanding/or debate of how important beavers are to the watershed. **(permittees)**

We based the information in this paragraph on evidence of beaver activity in the lower segment of Swamp Creek and the simple geographic name of 'Beaver Creek' for a headwater tributary of Swamp Creek. We anticipate that restoration for the meadow segment of Swamp Creek would continue on the same path, regardless of the historic or future presence of beaver.

3a.2 Upland water improvements for livestock allowed distribution of wildlife and improved wildlife habitat. As increased emphasis is put on wildlife, recognition that those water sources were built for livestock and have other benefits is needed. **(permittees)**

We recognize the benefits, particularly when water improvements are regularly maintained to provide clean water, but this information is not needed for making a reasoned choice among the alternatives.

3a.3 The role of beaver in Swamp Creek is a point of considerable discussion. This paragraph needs rewritten to reflect the understanding/or debate of how important beavers are to the watershed. **(permittees)**

Refer to the response to comment 3a.1

3a.4 Upland water improvements for livestock allowed distribution of wildlife and improved wildlife habitat. As increased emphasis is put on wildlife, recognition that those water sources were built for livestock and have other benefits is needed. **(permittees)**

Refer to the response to comment 3a.2.

3a.5 The Tribe urges the Forest Service to closely analyze the impacts of livestock grazing to bighorn sheep. It is now without question that domestic sheep pose a great risk to native bighorn sheep. Domestic sheep vector a disease *(Pasteurella haemolytica)* that is usually fatal to bighorn sheep when the two come into direct contact. Since the allotments were issued, Forest Service research has documented these risks to bighorn sheep populations in the Hells Canyon National Recreation Area adjacent to the Payette National Forest. The Tribe urges the Forest Service to consider measures to integrate into the AMPs to minimize contact between domestic sheep and wild bighorns to assure the ultimate survival of bighorn sheep populations. **(NPTEC)**

We added information into the description of alternatives to specify that grazing of cattle or horses only would be authorized under the alternatives. The impacts of domestic sheep grazing were not analyzed because the alternatives would not authorize domestic sheep grazing within the JCRAA.

3a.6 An estimated 60-70% of western bird species (*Ohmart 1996*) and as many as 80% of wildlife species in Arizona and New Mexico (*Chaney et al. 1990*) and in southeastern Oregon (*Thomas et al. 1979*) are dependent on riparian habitats. Because of this, riparian ecosystems are considered to be important repositories for biodiversity throughout the west. *A.J. Belsky, A. Matzke, S. Uselman, 1999.* **(HCPC)**

We agree. Pages 33-34, 50, 64-66 of the wildlife report discuss the importance of riparian as well as other important habitat for avian species.

3a.7 The existing range condition in MA15 is "mixed." This is attributed to the conifer overstory, which "generally precludes sustainable rangeland." *DEIS 4.* The total MA15 acreage is 3294 acres within the analysis area, a substantial amount. *DEIS 6.* Ongoing livestock grazing has helped reduce the number of large trees and snags. *DEIS 155.* If these old growth areas are not suitable and livestock grazing has reduced large, old trees, it seems clear that cattle must be excluded from the designated old growth areas. **(HCPC)**

Designated old growth is 4% of the analysis area. The old growth areas that can be affected by livestock grazing are those that are on gentle slopes with more available forage. Some of the MA-15 areas contain forage suitable for livestock grazing (warm dry

mix conifer and Ponderosa pine types, which can and have been affected by livestock grazing especially historic grazing. The majority of MA15 areas have slopes greater than 30+percent. Cattle in general do not prefer this type of habitat although they will enter these areas. Typically these old growth areas do not usually have a high amount of forage so livestock are not attracted. Livestock is not the major factor in reduction of large old trees. Previous (historic) logging, fire suppression etc have contributed to a greater extent of denser forests, hence smaller diameter trees. Further information is contained on Pages 15-22 of the wildlife report in the Analysis File.

3b. Wildlife – Big Game

3b.1 A proposed change in the utilization standard from 55% utilization to 50% is unwarranted under the current situation. This is being proposed for possible changes that might occur and might become a problem in the future. This makes no sense in an EIS that is proposing "adaptive management" as the proposed alternative. Currently the elk numbers are somewhat below the management objectives (2900 vs. 3500). If you look at the past situation for comparison, in the 1979 the elk numbers peaked for this area at 5J 00 head. At that time the allotments were being grazed at their capacity. The crops and spring/summer forage on adjoining private lands was the main conflict, not winter forage. This should indicate that even with elk at Management Objectives and cattle at permitted numbers there would be adequate winter forage available. **(permittees)**

Refer to the response to comment 3b.3.

3b.2 Additional considerations include 1) in open winters the elk utilize this area frequently and have wide areas on which to feed. During hard winters the elk move out of this area down elevation to obtain their forage. 2) since the late 1970 's there are thousands of acres of elks winter range that are no longer being grazed: tribal lands in lower Joseph Canyon and neighboring ranches. **(permittees)**

Refer to the response to comment 3b.3.

3b.3 The permittees request that the utilization standards be left at 55% and include the condition that through adaptive management, if monitoring indicates a shortage of winter feed in this area that the utilization will be temporarily changed to the 50% until that need no longer exists. **(permittees)**

To simplify the discussion, the FEIS now states that use within areas designated as big-game winter range (Management Area 3) will retain 50 to 60 percent of the plant material in fall. Forest Plan utilization standards allow 55 percent forage utilization for all grazing regardless of which species of animal uses the forage or browse (including livestock, wild ungulates, rodents, insects, etc.). These standards were developed to ensure that basic needs of the forage and soil resources are met and are a first priority. In Alternatives 3 Modified and 4, in anticipation of big-game winter forage use, livestock utilization will be limited so that 50 to 60 percent of the plant material is available for big-game before they begin the winter. The assumption is that enough forage should be reserved for big-game so that the basic needs of the forage and soil resources are met. Utilization will be measured in key areas within the winter range

where livestock and elk use overlap to ensure needs of forage and soil resources are being met. If it is determined that desired conditions are not met, adjustments would be made to livestock operations.

3b.4 The reduction of elk and deer numbers has nothing to do with decreased hiding cover nor hunting pressure since there is much more hiding cover today than in past years and hunting pressure is significantly down. This statement needs changed. Utilization standards don't need changed, **(permittees)**

As stated in the DEIS on Page 137, elk populations are not meeting Management Objectives due to several factors. Based on analysis of elk statistics for much of the Blue Mountains (Schommer and Johnson 2003), we believe that those factors include predators, hunting pressure, decreased hiding cover, open roads, nutrition, weather, low bull ratios and disease (Schommer and Johnson 2003). A current study of elk calf mortality within the Wenaha and Sled Springs area notes that predation, especially by mountain lions, is one of the major factors of elk calf loss. We added a reference to this newly released study in the FEIS.

3b.5 Reduction of utilization to 50% utilization is not currently warranted. If there is concern for winter range in the future an alternative should set out monitoring of upland key areas which would allow for adaptive management to adjust any grazing when it is shown to be the limiting factor. **(permittees)**
Response #:

Refer to the response to comment 3b.3.

3b.6 Suggest changing wording instead of going from 45 to 50 % utilization. This would leave standard @ 45 with caveat of adaptive management to address problems. **(permittees)**

Refer to the response to comment 3b.3.

3b.7 Elk population #'s in Table 32 should go back further, know they are available to 1969. Rod Childers has these numbers if needed. The low rate of bulls is not due to many of these issues. This list seems to just be a list from a book. Issues that affect the bull ratio are hunting seasons, predators and season long hunting. Hiding cover is much higher than it normally would be with dense thickets and overstocked forests. **(permittees)**

The bull to cow ratio over the last 10 years has varied from 6-8 bulls per 100 cows. This is an improvement from the 1970's thru the 1980's when it was as low as 1 to 4 bulls per 100 cows. We believe that hunting pressure, road density, and other factors do account for the low rate, which is substantiated by several sources. Predator issues have more of an effect on calf survival. Hiding cover is defined as vegetation capable of hiding 90% of a standing elk from the view of a human at a distance equal to or less than 200 feet. Hiding cover has been reduced in this analysis area over the last 10 years by several vegetation mgt. projects, such as Hungry Bob, Wapiti, Bug check, Lone Dog, plus several fire fuel reduction projects. Grassland and forage areas comprise 45% of this analysis area.

3b.8 Add large bulls to breed quickly so that there are many calves all at once which reduces the calving season length and therefore loss to predators. **(permittees)**

Research at Starkey Experimental Station has confirmed that calving season length shortens when 3-year-old and older bulls are present within the herd. The presence of older age bulls within elk herds is mainly determined by setting hunting regulations within the game management units, which is a decision to be made by ODFW.

3b.9 Riparian areas hiding cover does not usually impact the calving season loss. Most calves are seen on the bench ground, not in the riparian areas. **(permittees)**

Although elk cow/calf pairs use a wide variety of habitats, they are usually close to water. Deer will also stay close to water (Toweill and Thomas 2002). Some of the landscape within this analysis area is very open with only available cover in riparian areas. These areas would tend to be used more frequently by elk and deer.

3b.10 Forest Plan states: Want 70% crown closure, 30% hiding cover. This is not appropriate in the Joseph Creek area. Currently there are more trees than ever before that are overstocked, stressed and susceptible to insect, disease and fire yet this EIS is stating there is not enough. That cannot be true. In some localized areas there is somewhat less brush in the riparian areas, however, most of these areas are lined with overstocked forests. If literature is to be used to describe needs, the literature must be of comparable environments. **(permittees)**

The Forest Plan states that of <u>forested lands,</u> at least 30% in a project area will remain in cover, including both marginal (40-69% canopy closure) and satisfactory (70% and greater canopy closure). This standard was introduced to ensure that even-aged harvesting was scheduled appropriately. As stated on Page 140 of the DEIS, literature (Thomas 1979) identifies optimal conditions for elk as 60% forage and 40% cover. The cover to forage ratio for this project area is 46% forage to 47% cover with 7 % on unclassified private land. Obviously, there is more than ample overall cover within the JCRAA, according to this model. However, Thomas also distinguishes that the optimum mix would consist of 20 % hiding cover, 10% thermal cover, 10 % hiding or thermal cover, and 60 percent forage. The discussion on Page 144 of the DEIS describes a reduction in the hiding cover portion of the mix, particularly with respect to screening of calves and fawns from predators and bull elk from hunting pressure. No amount of thermal cover can replace this need for hiding cover, particularly within 1000 feet of water, where does and elk cows often give birth (Thomas 1979).

3b.11 The Forest should provide greater consideration to big game winter forage requirements in those allotments containing a high proportion of Management Area (MA) 3 and 1 W lands. In particular, forage utilization standards should be reduced in the Swamp Creek and Table Mountain Allotments unless or until scientific data can be gathered to conclusively state that winter forage needs are not limiting elk numbers in this area. The ecological relationships influencing elk survival and recruitment are complex and not entirely understood. Relying on a professional opinion from ODFW staff to conclude that winter forage quality and quantity is not limiting elk survival is a large leap of faith. By designating resource areas as MA 3 or 1 W, decision makers have already established that big game forage is a priority for those areas.

Therefore, the Tribe recommends that all pastures containing 2:60% MA 3 and/or 1 W have at least a 50% retention standard for forage utilization. **(NPTEC)**

Refer to responses to comments 3b.1 through 3b.7

3b.12 The Forest should improve the DEIS' s analysis of livestock grazing on forest structure as it relates to big game hiding and escape cover needs. For example, the statement on page 144 of the DEIS "Livestock have minimal effects on forested canopy closure, as this is not preferred or available browse" ignores the relationship between livestock grazing and increased conifer recruitment within forested stands. This relationship is alluded to on page 159 and should be elaborated on in the big game habitat and security section of the analysis. The review paper by Belsky and Blumenthal (1997) may be a good place to start. Belsky, AI. and D.M. Blumenthal. 1997. Effects of Livestock Grazing on Stand Dynamics and Soils in Upland Forests in the Interior West. Conservation Biology, V 0111, No 2; 315-327. **(NPTEC)**

Livestock grazing, especially historic, may be a contributing factor in some ecotypes, but the main factors for these denser stands are fire suppression and previous logging of large-diameter trees.

3b.13 Elk (and mule deer) numbers are below current ODF&W Management Objectives ("MO"). *DEIS 3, 143.* If they increase to MO levels "additional forage may be needed." It seems unlikely that they would increase without first having that additional forage, as opposed to increasing in numbers without sufficient forage. In addition, ODF&W is now reviewing all the MO levels in the area. If they decide in an increased MO for elk in this area, there will be even more forage needs. **(HCPC)**
Response #:4 , Diane (The utilization standard will be adjusted as MO levels change)

Since it has not been determined that forage is the limiting factor for not meeting management objectives, and is most likely due to several factors it is not necessarily true that maintaining more forage will increase elk populations. Hunting pressure, recreational use (OHV's, mushroom picking, touring), road densities, and predators are all factors that can affect elk populations.

3b.14 Much of the analysis area is within elk winter range, where "approximately 50 to 60 percent of the plant material of key species in elk winter range should be available on October 1." *DEIS 142.* We note with interest the "50 to 60 percent" statement because Alternative 3 calls only for 50% forage remaining for winter elk use. *DEIS 146.* This figure should be established at 60% to both meet the science cited in the DEIS and because a conservative approach should be taken with elk numbers in their current decline. **(HCPC)**

A range is used for these variables since there are numerous types of landscapes within the project area. Measurements are taken at various locations and averaged together to specifically say exactly 50 or 60 would be very difficult to determine. A range allows for variability within an area and to ensure enough of the plants biomass to be viable for the future. Refer also to the response to comment 3b.3.

3b.15 Also, hiding cover has not been addressed in the DEIS other than to state it is a potential conflict between livestock grazing and elk and deer survival. *DEIS 144.* There is no concrete plan put forward regarding hiding cover. **(HCPC)**

The conflict mainly exists for elk calves and fawns, especially where this is the only available cover (ie riparian zones within grassland areas). A monitoring plan for shrubs is being developed for Swamp Creek which can then be applied for other areas. Shrubs do provide hiding cover in many areas and are an important part of many ecosystems. Forested lands can also provide hiding cover, although hiding cover has been reduced through several vegetation and fuel reductions projects, it still exists within the project area.

3b.16 It is of particular concern that, under the current situation, elk fail to meet Management Objectives for the rate of mature bulls, as well as calf to cow ratios. Among many other effects, lack of hiding cover could be a major factor in the elk not meeting these objectives. Conflicts in use between livestock and wildlife, particularly big game, can be acute in riparian areas, particularly in late summer. The DEIS offers little rationale how riparian habitat, or general forage habitat, will be improved from current conditions under Alternatives 2 and 3 (The mitigations proposed are unproven; moreover, Alternative 3 offers no funding for mitigation). These Alternatives are likely to maintain or worsen the conditions for this Management Indicator Species, elk. Additionally, any improvement in general range condition does not act as a proxy for actual population data, which is crucial in determining the health of this MIS and the overall health of wildlife habitat. **(FLOW)**

Refer to responses to comments 3b.7, 3b.13, and 3b15.

3b.17 Issue 6 is inadequately resolved; the DEIS asserts, but does not demonstrate, that the current system "has been shown over time to provide adequate winter forage for existing elk and deer populations." The DEIS asserts that the current system minimizes conflicts between wild ungulates and livestock; yet, the Management Indicator Species is failing to reach management goals for its population structure. Where cattle grazing has the potential to diminish winter forage, particularly in the Wild and Scenic River corridor, it may be inconsistent with required protections. After all, "wildlife" is listed as an ORV for the Joseph Creek Wild and Scenic River and its corridor. **(FLOW)**

Livestock grazing is not the only factor as to why elk are not meeting management objectives. Refer to responses to comments 3b.7 and 3b.13. Many factors cause fluctuations with elk populations, such as harsh winters, drought, and predators.

3b.18 It seems unreasonable to expand the grazing season under Alternative 3 when the MIS for wildlife, elk, is failing to meet objectives for its population structure under the current regime. The WWNF has reached the highly counter-intuitive conclusion that broadening the grazing season will maintain or improve the amount of winter forage. There is no rationale offered why 50 percent of residual plant material constitutes adequate forage for wild ungulates, as is called for in the Preferred Alternative. Monitoring is an inadequate protection when the standards are arbitrarily established. Additionally, it is inadequate to propose that "if deer and elk populations were to reach Management Objectives and increase the need for forage from the JCRAA, Alternative 3 would be less likely to result in reductions in livestock grazing as the systems are

more adaptive to account for changes." Not only is the current system contributing to elk and deer failing to meet Management Objectives, but the DEIS seems to be proposing that a reduction in livestock grazing would be unlikely to either facilitate the achievement of this objective or facilitate its continuing, once met. **(FLOW)**

Alternative 3 would not alleviate the need to meet utilization standards and the stocking (head-months) for Alternative 3 is no greater than Alternative 2 on an allotment-wide basis. Retention of 45% of residual plant material in uplands is what is required to maintain plant health and soil needs, after grazing by all animals including livestock, wild ungulates, rodents, insects etc. Refer to the response to comment 3b.7.

3b.19 In general throughout the DEIS, the "cumulative effects" analysis fails to adequately integrate the current grazing system into the list of other impacts affecting wildlife species, such as elk. Given the various pressures on elk populations—hunting, OHV use, etc.—the WWNF does not establish that the added pressure of livestock grazing (indeed, in some instances a broadening of the grazing season) will not significantly hamper the achievement of management objectives for elk and other big game. **(FLOW)**

Refer to the response to comment 3b.18.

3c. Management Indicator Species

3c.1 Grazing has also impacted pileated woodpecker and northern goshawk habitat. *DEIS 156, 159.*

We continue to object to the use of habitat modeling rather than population surveys as a means to ensure the viability of Management Indicator Species ("MIS"). MIS are chosen to represent a suite of other species, but MIS populations are not even being monitored. Based on a review of the 2000 and 2001 Monitoring Reports for Wallowa-Whitman National Forest, there is apparently no forest-wide monitoring of MIS taking place. Nor is any project-specific monitoring indicated in the DEIS. NFMA and its implementing regulations require the Forest Service to manage forests for viable populations of native vertebrate and desired non-native species. Diversity is assessed by identifying MIS, monitoring MIS, gathering inventory data on MIS, and analyzing the impacts of management activities on MIS, because MIS are an indicator of the overall diversity of the forest. *36 C.F.R. § 219.19 et seq.* NFMA regulation 219.19 requires that, "fish and wildlife habitat shall be managed to maintain viable population of existing native and desired non-native vertebrate species in the planning area." Further, the Forest Service Manual states the agency must manage "habitats for all existing native and desired nonnative plants, fish, and wildlife species in order to maintain at least viable populations of such species." *FSM at 2670.12.* In order to maintain viable populations of wildlife, "habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area." *36 C.F.R. § 219.19*. **(HCPC)**

Refer to the response to comment 3c.4.

3c.2 Detailed population trend analysis of these MIS and all other MIS should be conducted pursuant to NFMA. Pursuant to NFMA, "planning alternatives shall be stated and evaluated in

terms of both amount and quality of habitat and of animal population trends of the MIS". *36 C.F.R. §219.19(a)(2).* **(HCPC)**

Refer to the response to comment 3c.4.

3c.3 NFMA, its implementing regulations, and subsequent case law require the Forest Service to know what the viable populations of MIS located in the project area are before management prescriptions are applied. However, the DEIS never explains what the population levels are for the MIS. Since there is only an assumption that if habitat exists species will use it, there can be nothing more than an assumption that viability is assured through forest structure and stand development, i.e., habitat. Thus, there is only an assumption that viability is being ensured. This does not meet the requirements of NFMA. **(HCPC)**

Refer to the response to comment 3c.4.

3c.4 There is inadequate analysis of Management Indicator Species (MIS). Without more MIS consideration, it is difficult for the public to judge whether there is actually an "improving trend," not just in habitat condition, but also for key species in the planning area. Habitat condition is not necessarily an appropriate proxy for the health of plant and animal populations, particularly when the starting point for the system is heavy grazing use. In this case, "improvement" may just be a slower rate of decline for species and values affected by livestock grazing. Hence, the DEIS fails to adequately identify and quantify MIS considerations. **(FLOW)**

MIS species that occur within this analysis area are elk, Northern goshawk, and the primary excavators including pileated woodpeckers (there is no pine martin habitat within the analysis area). ODFW conducts yearly counts on elk populations within the project area. These surveys are conducted in February and are discussed within this document on Page 137 of the DEIS. Surveys have been completed within parts of the analysis area in the past for Northern goshawk, with some surveys within the last 4 years (See goshawk section in wildlife report). On Page 156, surveys completed within analysis area for pileated woodpeckers and other primary excavators are described with estimated amounts of snag and downed wood counts. According to an Interpretive Rule published on September 29, 2004 in the Federal Register (Volume 69, Number 188), habitat condition may be used as a surrogate for population data for determining the status of Management Indicator Species.

4. Fisheries

4a. Fisheries – General

4a.1 Permittees have been trained by USPS along with USPS and BLM employees on "PFC " which denotes "Properly functioning conditions" of a watershed. When this acronym is used in some other context it should not be abbreviated. **(permittees)**

We understand your confusion. When using the PFC for BLM, we added the reference of (BLM 1995) so that the difference between the two uses of the term PFC can be distinguished.

4a.2 Other habitat indicators Functioning at Risk or at Unacceptable Risk include Large Woody Material, Pool Frequency and Quality, Off Channel Habitat, Bankfull Width/Depth Ratio, Bank Stability, Drainage Network, Road Density, Disturbance History and Disturbance Regime. *DEIS 118, see also DEIS 129-131 and 136.* These specific habitat indicators are not discussed in any detail in the DEIS.

None of the subwatershed matrix indicators ratings would change as a result of implementing alternative 3, (*DEIS 121*) although they *could* improve watershed and aquatic conditions at a faster rate than Alternative 2. *DEIS 132.* **(HCPC)**

Bankfull width/depth ratio, drainage network, road density, disturbance history and disturbance regime are discussed in the Biological Assessment for fisheries which is a part of the analysis file. On page 115 and 116 of the DEIS, a discussion of bank stability is provided. We decided not to include the discussion of the other matrix indicators in the DEIS because they have a low risk of being affected by livestock grazing. There are very few matrix indicators that we can change with the influence of one project. The indicators are for a subwatershed and generally are not sensitive enough to respond to one project. It usually takes the incremental effect of several projects to result in a category change.

4a.3 The effects of grazing on fish are clear: 1) Direct effects from cattle trampling on individuals… and on streambanks that cause bank degradation and fine sediment to enter the waterway; 2) Grazing and browsing on streamside vegetation, thus inhibiting the growth and survival of riparian vegetation necessary for streambank stability, pool/riffle sequence formation and streamside shade; and 3) Compaction of riparian and meadow soils by livestock that changes the porosity and water retention qualities of areas that provide groundwater and surface water to adjacent streams. **(FLOW)**

Refer to the response to comment 4a.4.

4a.4 The WWNF does not demonstrate how continued grazing at the current stocking levels will maintain, much less improve, the Matrix indicators for the streams. Livestock have had substantial cumulative effects that have contributed to a situation where “less functional habitat is available” than it was historically (DEIS p 113). More riparian corridor livestock grazing is

likely to exacerbate rather than alleviate this problem. Moreover, suspect projections for matrix indicator data should not act as a proxy for actual population data. Through direct, indirect, and cumulative effects, the Preferred Alternative will continue to limit the quality of the fisheries resource in the JCRAA. **(FLOW)**

Refer to Page 120 of the DEIS where it says over the last 20 years we are in an upward trend for channel morphology (which implies a trend for riparian vegetation) even with the historic impacts of livestock grazing due to restoration projects and intensive livestock grazing management. We use best available science in the place of actual population data which is the matrix indicator data. Redd counts are included in the Biological Assessment, but this population information can be influenced by many factors outside the influence of this proposal.

4b. Fisheries – Threatened and Endangered

4b.1 Since restrictions that limit grazing until after July 1 in any pasture with steelhead redds is so detrimental to the range, permittees request to work aggressively with NOAA to mitigate that requirement. Permittees believe there is little chance of damage to steelhead due to trampling of redds and there is concern that long term restrictions on rotation of grazing will have a negative impact on bunchgrass and riparian health. This should be done at the earliest opportunity. **(permittees)**

We understand the need for flexibility that you describe. We will also be working with NOAA Fisheries on future analyses to expand the use of spring grazing as a tool to manage impacts to riparian conditions.

4b.2 Permittees request the USFS pursue NRT suggestion of trying some early season grazing in spite of presence of redds in the stream. Suggest accepting biological assessment of "likely to adversely affect" which would then require additional monitoring as mitigation. Another option would be to receive an incidental take permit for grazing. **(permittees)**

Refer to the response for comment 4b.1.

4b.3 Need to change this statement so that July 1 deadline is not an impediment to proper rangeland management, particularly if steelhead are delisted. **(permittees)**

Refer to the response for comment 4b.1.

4b.4 Committing to monitoring for steelhead redds and then stating only two options is not adaptive management. Should make statement that allows for variety of options when redds are found, such as increased monitoring which would allow earlier grazing. **(permittees)**

Refer to the response for comment 4b.1.

4b.5 Need to remove reference to the April - July 1 hard deadline, same reason as above. **(permittees)**

Refer to the response for comment 4b.1

4b.6 Permittees agree to add "sensitive and threatened" rather than just naming currently listed species as shown on Page 49. **(permittees)**

We have incorporated your comment into the document. If steelhead were to be delisted, the consultation requirements may be available for review. We changed the document to specify listed "threatened or endangered species rather than naming the currently listed species.

4b.7 The Tribe urges the Forest Service to analyze the impacts to anadromous fish. The DEIS identifies that the majority of the 11 grazing allotments' 95,555 acres are national forest lands located in the Joseph Creek drainage. This anadromous watershed has levels of fish far below the carrying capacity of Joseph Creek. It is very important to the Tribe that the Forest Service first determine the distribution of anadromous fish within Joseph Creek so that the grazing is not concentrated in portions of the drainage where these last remaining individuals exist. **(NPTEC)**

On page 113, main tributary streams with steelhead habitat are listed, which shows that occupied habitat is located throughout the analysis area in almost all perennial streams and even some intermittent streams. This habitat is protected through riparian utilization standards, which require livestock to be moved from the area before thresholds for streambank damage or riparian vegetation utilization are reached.

4b.8 The Tribe is concerned about the timing of the grazing in the allotments, which is focused on the late summer and early fall-a critical time for spawning and egg development for anadromous fish. With late season grazing, many of the grasses outside of the riparian area are stressed, and growth is not as robust as it is earlier in the summer and spring. This results in the livestock selecting riparian grasses and concentrating their grazing pressure on the riparian areas, thereby placing a high concentration of livestock in the smallest, most sensitive area of the allotment. **(NPTEC)**

The only anadromous fish in the analysis area is steelhead which spawns in the spring. We have late season grazing on many of the streams because NOAA Fisheries emphasized such protections to spawning and rearing habitat when steelhead were initially listed.

4b.9 The Tribe urges the Forest Service to ensure the highest level of aquatic resource protection. For example, the Forest Service should totally exclude grazing from the riparian areas by developing off site watering for the livestock. Doing so will allow the subwatersheds and Joseph Creek to recover from past grazing practices that have degraded water quality and otherwise suitable spawning habitat for salmon and steelhead. **(NPTEC)**

We have hundreds of upland water developments. The Swamp Creek Restoration Project has improved 5 ponds and will improve several springs and ponds in the future, including off-site watering. This is a foreseeable future action that will contribute to improving conditions for the action alternatives. We have an increasing trend in

riparian areas in the last 20 years, and these types of projects will only accelerate that trend.

4b.10 If the cumulative watershed effects are rated moderate to high for the short term and foreseeable long term, the Forest needs to change its proposal to effectively reduce these impacts to an acceptable level that improves the watershed. The Tribe needs to know what specific protections are being sought for subwatersheds with a high risk of cumulative effects for grazing. Has the Forest clearly delineated steelhead spawning and rearing areas for specific protection? How has the riparian enclosure around Starvation Springs mitigated for livestock impacts at the cultural resource site, rather than simply protecting the riparian area? **(NPTEC)**

See page 113 and figure 5 on Page 108 for the steelhead spawning and rearing areas. We haven't distinguished between spawning and rearing habitat because it can vary by year and it is ubiquitous. Therefore, we applied protections that are area-wide and are included in the alternative descriptions. These alternative descriptions incorporate the protections on Page 203 of the Biological Assessment. We made some changes to Table 31 in the FEIS to clarify the cumulative effects analysis. We are working with the Nez Perce Tribe under a separate NEPA decision to expand the fenced area at Starvation Spring.

4b.11 The analysis area is important habitat to the ESA-listed Snake River summer steelhead. With no grazing, subwatersheds in the analysis area would begin to move towards Functioning Appropriately in 10-20 years. *DEIS 114.* A 'may affect, not likely to adversely affect' determination is based on a "decrease" of risk to populations and habitat. *Id.* Yet livestock grazing has negatively influenced habitat elements in localized sections of most streams where riparian areas are low gradient and easy to get to. *DEIS 115.* Temperature is Functioning at risk. *Id.* Sediment/substrate is Functioning at Risk. *DEIS 116.* Channel Morphology is Functioning at Risk. *Id.* Although there is no data available regarding peak/base flows, it is assumed to be Functioning at Risk. *Id.* Riparian Reserves are Functioning at Risk. *DEIS 117.* **(HCPC)**

The may affect, not likely to adversely affect determination is based on the risk to populations and habitat. Refer to Page 208 of the Biological Assessment. The conclusion that there would be a "decrease" of risk to populations and habitat is derived from baseline conditions. These baseline conditions include ongoing actions such as livestock grazing continuing under current authorizations.

4b.12 Please be sure that the preferred alternative meets the mandatory standard in PACFISH that grazing practices shall not retard attainment of Riparian Management Objectives (RMOs) nor adversely affect listed anadromous fish or Inland native fish. GM-1, PACFISH at C-12. The U.S. Forest Service previously has defined "retard attainment of RMOs" as "[m]easurably slow recovery of any identified RMO feature (e.g., pool frequency, water temperature, etc.) that is worse than the objective level. Measurable degradation of the physical/biological process or conditions that determine RMO features would be considered to retard attainment of RMOs." NMFS BiOp on implementation of PACFISH, App. B "Final Definitions Proposed by USFS and BLM During Section 7 Consultation on Interim PACFISH Direction" (1/23/95) at 53. The DEIS says the area will be managed in a way that "does not prevent attainment of Riparian Management Objectives. However, there is additional verbiage in PACFISH that says "retard" OR prevent attainment. **(HCPC)**

The selected alternative will meet PacFish which is incorporated into the Forest Plan. We've consulted with NOAA fisheries regarding the effects of this project and have received concurrence.

4b.13 The 95% percent stability RMO of PACFISH is not being met in all stream reaches within the analysis area. *DEIS 124*. In order to get around this requirement, stream reaches have been averaged, allowing fenced portions to counter-balance unfenced and impacted areas. This does not meet the intent of PACFISH. Those impacted areas are still contributing to the degradation of riparian habitat. Streambank stability may be as low as 85% under Alternative 3. *DEIS 133*. **(HCPC)**

Alternative 3 Modified allows for improvement over time to 85 to 95 percent. The standard is 90 percent for priority watersheds with 5 percent of livestock-induced damage which is in Enclosure B (Wallowa-Whitman interpretation). We made some errors on this number in the DEIS and have corrected it in the FEIS.

4b.14 The Forest Service defines "retard attainment of RMOs" as the "measurably slow recovery of any identified RMO feature (e.g., pool frequency, water temperature, etc.) that is worse than the objective level." PACFISH EA, Glossary ("Attachment 18"), at 6. Degradation of the physical and biological processes or conditions that determine RMOs is also considered to retard attainment of RMOs. *Id*. This standard clearly requires the Forest Service to move toward attainment of RMOs at a specified rate and either suspend or modify grazing when necessary to satisfy that duty. In particular, the "do not retard" standard does not permit status quo grazing practices because this language goes beyond simply preventing attainment and imposes an affirmative duty on the Forest Service to move toward achievement of RMOs and riparian recovery.

The triggers are "designed to maintain livestock effects to stream channels and riparian vegetation at acceptable levels." Id. **(HCPC)**

We disagree that the Forest Service is obligated to move toward attainment of RMOs at a specified rate. On Page 120, we identify that channel morphology conditions have improved over the last 20 years. None of the alternatives retard attainment of the RMOs. We assess that by use of the matrix indicators, and all of those will be maintained or improved as described on Page 114 of the DEIS. We base our definition of "not retarding attainment of RMOs" on the August 1996 guide prepared by NOAA – Fisheries entitled "Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale". This guide explains how to use the matrix indicators to evaluate whether the action hinders the attainment of relevant environmental conditions. From this, a conclusion can be reached regarding the determination of effect to listed fish species.

4b.15 The CTWA is very concerned about potential impacts to anadromous fish stocks arising from grazing and other activities on national forests. Such activities have the potential to damage anadromous fish habitat thereby further harming salmon populations that can no longer tolerate additional impacts and, therefore, have the potential to impact the treaty fishing rights ()f the Columbia River tribes. **(CTWA)**

The Biological Assessment determined that the action is Not Likely to Adversely Affect

the summer steelhead populations and habitat within the JCRAA. The impacts of the alternatives were determined to maintain or improve the matrix indicators, a method prescribed by NOAA – Fisheries for evaluating the impacts of an action on anadromous fisheries. We believe that the impacts of authorizing litvestock grazing have been thoroughly evaluated in the Biological Assessment and the DEIS and do not reach the threshold of impacting treaty fishing rights of the Columbia River tribes.

4b.16 In particular, the Joseph Creek DEIS fails to adequately prevent the effects of livestock grazing on riparian and stream habitats and fish species listed under the federal Endangered Species Act (ESA). While the WWNF, for example, relies heavily on PACFISH standards as a means of compliance with ESA consultation, the DEIS IS devoid of sufficient analysis to determine whether the proposed action will comply with. such management directives. **(CTWA)**

We made a determination of Not Likely to Adversely Affect and received concurrence from NOAA – Fisheries through an informal consultation process. Therefore, we have met the requirements of ESA.

4b.17 Similarly, the DEIS lacks sufficient information to determine whether the document is consistent with the Wallowa-Whitman Land Resource Management Plan (LRMP) and NOAA Fisheries U.S. Fish and Wildlife Service Consultation requirements. Compliance with these management directives is essential to ensure that minimum fish biological habitat needs are met and are necessary to insure that the federal government adequately protects fish. **(CTWA)**

We agree that compliance with legal requirements and Forest Plan direction is essential in authorizing activities on the National Forest. Refer to the response to comment 4b.16 for how we complied with ESA. As summarized on Page 127 of the DEIS, based on our analysis, we can conclude consistency with Forest Plan requirements and with the Clean Water Act.

4b.18 NEPA requires full disclosure of relevant information to insure rational decision-making based upon a complete understanding of potential environmental effects. 42 U.S.C. § 4321, et. seq. This eliminates the need' for speculation on .potential impacts by insuring that data is, gathered prior to the implementation of a proposed action. Foundation for North American Wild Sheep v. U.S. Department of Agriculture, 681 Fold 1172, 1179 (9th Cir. 1982). Further, one purpose of NEP A is to "insure that environmental information is available to public officials' and citizens", 40 C.F.R. 1500.1.

The DEIS, however, fails to fully disclose or analyze information on the effects of grazing on fish habitat in violation of this requirement. The DEIS, for example, fails to fully disclose that average water temperatures on Joseph Creek do not meet PACFISH and INFISH standards. It is widely documented, however, that grazing stunts vegetative growth needed for the recovery of water temperatures (Platts et aI., 1991; Rhodes et aI., 1994; Fleischner, 1994; Knapp and Matthews, 1996; Belsky et aI., 1999). **(CTWA)**

We addressed water temperatures as one of the matrix indicators, and it was rated as maintain. PacFish and Infish standards are state water quality standards. On the top of

Page 122 of the DEIS, we are meeting Forest Plan standards – and an improving trend is anticipated for all streams within analysis area. See also Page 127 of the DEIS. We believe that the alternatives are consistent with the Clean Water Act because there would be no additional effect to the parameters for which streams in the JCRAA were placed on the ODEQ 303 (d) list.

4b.19 The WWNF itself, states that range condition in several affected pastures remains in unsatisfactory condition. Researchers have found that grazed reaches had far lower levels of overhanging banks than comparable ungrazed reaches on USFS lands in northeastern and central Oregon. [cite]. In all cases examined, the results were statistically significant, indicating that present federal grazing management is severely retarding progress towards the recovery of overhanging banks. These results are consistent with other available information across the west (Platts et aI., 1991; Rhodes et aI., 1994; Fleischner, 1994; Knapp and Matthews, 1996; Belsky et aI., 1999). Rhodes and Greene *(in process)* also document that none of the grazed reaches monitored come close. to meeting the PACFISH standards for lower bank angle. **(CTWA)**

Streams in the JCRAA are in forested or forest transition systems where the streambank stability standard in PacFish is more applicable than lower bank angle. In Swamp Creek, some meadow sections are up to 1/2-mile long or longer, but there is interspersed timber. In general, the lower bank angle standard is not meaningful for measuring livestock impacts in these systems.

4b.20 Unfortunately, the DEIS fails to adequately disclose that grazing will significantly thwart attainment of the bank angle standards under PACFISH and that the no-grazing alternative would result in far more rapid rates of recovery of overhanging banks than the preferred alternatives. The DEIS, therefore, fails to disclose that continued grazing will impede progress towards reduced summer water temperature needed by anadromous species in Joseph Creek. **(CTWA)**

Refer to the response to comment 4b.19. As described on Page 114 of the DEIS, the temperature matrix indicator would be maintained for all subwatersheds.

4b.21 The DEIS fails to disclose that grazing significantly retards the recovery; of width/depth ratios (Platts et al., 1991; Rhodes et aI., 1994; Fleischner, 1994; Knapp and Matthews, 1996; Magllligan and McDowell, 1997; Belsky et aI., 1999). This omission is compounded by the failure to adequately differentiate among the alternatives with respect to their effects on width/depth ratios based on the best available information. Further, the DEIS does not adequately note that assessments have repeatedly concluded that no grazing is far more compatible with the protection and restoration of. aquatic habitats than grazing, no matter how carefully implemented (e.g., Platts, 1991; Henjum et aI., 1994; Rhodes et aI., 1994, Kauffman et aI., 1997). **(CTWA)**

On Page 124 of the DEIS, the connection between strembank stability and width to depth ratio is described. Where streambank stability is below Wallowa-Whitman National Forest interpretation of the PacFish standards, (the Meadow segment of Swamp Creek), an active restoration program has been implemented. On Pages 120 and 124, we do address the differences among alternatives with respect to width/depth ratio. We believe

that all of the alternatives addressed in the DEIS are compatible with Forest Plan and PacFish direction for protection and restoration of aquatic habitats.

4b.22 NEPA requires that federal agencies "[r]igorously explore and objectively evaluate all reasonable alternatives." D. Reinke & L. Low Swartz, The NEP A Reference Guide § 1502.14 (1999) (Reference Guide). The WWNF must, therefore, provide a range of alternatives "covering the full spectrum of alternatives." *Id.* at Q-43. Aside from the status quo and the requisite no action alternative, however, the alternatives under the DEIS address only removal of livestock from the planning area and no other options that may be more politically acceptable and would have low impacts to certain areas overall. **(CTWA)**

We considered another alternative in the FEIS. This alternative responded to specific requests for changes to the alternatives presented in the DEIS. Alternative 4 takes a different approach to managing riparian, wildlife, botanical, and Wild and Scenic River resources.

4b.23 The WWNF must consider whether federal activity will increase the impacts of the selected' alternative. NEPA requires the agency to study "cumulative impacts" of its actions which are defined as :the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Rather, than analyzing the impacts of the preferred alternative alone, therefore, the WWNF must study the cumulative impacts of all actions affecting instream flows. Further, cumulative impact analysis must assess different types of activities to the proposed action especially if they affect a "target resource" such as listed ,fish that migrate over a large geographic area and are, therefore, impacted by numerous ,activities. See Natural Resources Defense Council. Inc. v. Hodel, 865 F.2d 288 (D.C. Cir. 1988); Marsh v. Oregon Natural Resources Council, 109 S.Ct. 1851 (1989). These activities include past, present and reasonably foreseeable future activities such as livestock grazing, 1 irrigation withdrawals on private lands, 'logging and water pollution discharges. **(CTWA)**

Refer to the response to comment 4b.24.

4b.24 The DEIS, however, fails to reasonably disclose existing cumulative effects on salmonid populations and habitats within the area affected by the proposed allotment management and does not discuss the actual amount of land disturbance within the project area for activities that it acknowledges cumulatively affect aquatic conditions (e.g. livestock grazing, water withdrawals, etc.). Likewise, the DEIS completely fails to address the cumulative effects of conditions on federal lands together with effects and actions on non-federal lands, including significant, floodplain alteration, grazing, and water withdrawal. **(CTWA)**

Refer to Table 31 of the DEIS. Yes, other actions were included as well as private land activities. The equivalent clear cut analysis does include the amount of land

disturbance. Refer to the disturbance history matrix indicator. The cumulative effects segment of the Biological Assessment contains a project-by-project list for consideration in cumulative effects. The watershed cumulative effects analysis takes into account the existing road system and the Equivalent Clearcut Area. Refer to portions of the DEIS that address non-federal actions (Page 132, table 28). The Biological Assessment addresses non-federal actions as part of the baseline condition (pages 9 and 423).

4b.25 The WWNF must provide a reasonable analysis of the cumulative effects of conditions on downstream non- federal lands and for federal lands on channel form, substrate conditions, flow levels, and water temperature. At a minimum, this must include the effects of water withdrawal, grazing, logging, roads, and agriculture and the extent of recently logged areas and roads within the affected watershed. **(CTWA)**

The analysis area was that portion of the Upper and Lower Joseph Creek watersheds contributing to flows in Joseph Creek where it leaves the Forest Boundary. Impacts were revealed at that point for direct, indirect, and cumulative effects.

4b.26 The WWNF fails to. disclose existing compliance with the substrate standard, analyze likely compliance with this standard within the project area and in affected downstream reaches, and adequately differentiate among the alternatives with respect to their consistency with ' meeting the standard, based on the best available science. The DEIS merely notes that "complications are involved regarding livestock effects on streamsides damage to soil, vegetation and water quality, and the cost of improvements needed to alleviate these effects". **(CTWA)**

PacFish has taken the place of the substrate standard through streambank stability. We consulted on those PacFish standards and received concurrence. On Page 115 of the DEIS there is a discussion of sediment substrate which is a matrix indicator.

4b.27 This does not specifically , addresses the requirement that riparian habitats be managed consistent with "limiting fine inorganic sediment covering stream substrate to. 15%",60-100% stream shading, :>80% stable streambank, and >80% of potential grass-forb, shrub, and tree cover. LRMP at 4-44, Indeed, the agency's failure to. Meet these standards is illustrated by the fact that the stream bank stability objectives for "Joseph Creek Meadow" is a mere 50%. DEIS at 5. **(CTWA)**

All of these values were from a 1987 document (Managing Riparian Habitat for Eastern Washington and Oregon) which was incorporated in the Forest Plan in 1990. All of these values have been replaced by PacFish and the RMOs which are even more stringent than the former standards. We are not familiar with the reference to 50% streambank stability for Joseph Creek Meadow.

4b.28 PACFISH provides riparian management Objectives (RMOs) for the purpose of establishing "a common set of characteristics healthy, functioning watersheds, 'riparian areas, and associated fish habitats", PACFJSH Environmental Assessment (DEIS) at 16, which include the maintenance of:

- 96 pools per mile on a stream channel of 10 feet in width;
- water temperatures below 64F within migration and rearing habitat and below 60F within spawning habitat anadromous fish and no. measurable increase in water temperature;
- 20 pieces. per mile of large woody debris which are greater than 12 inches in diameter and greater than 35 feet long in eastern Oregon forested stream systems;
- greater than 80 percent bank stability in non- forested systems;
- lower bank angles in non-forested systems of greater than 75 percent of banks with less than 90 degree angle (i.e. undercut); and
- a width/depth ratio. in all systems of less than 10;,mean wetted width divided by mean depth.

These standards and guidelines apply in all "Riparian :Habitat Conservation Areas (RHCAs)", PACPISH at 13,2 to all proposed or new projects and activities ... involving the management of timber, roads, grazing, recreation resources, riparian areas, minerals, fire and fuels, and land uses such as leases, permits, rights-of-way and easements, as well as restoration of watershed, fish, and wildlife habitat within all anadromous fish habitat occurring in Oregon **(CTWA)**

We addressed the RMOs through the matrix indicators established by NOAA. Refer to the response to comment 4b.14.

4b.29 Joseph Creek and tributaries, however, currently violate the mandatory temperature standards of below 64F within migration and rearing habitats and below 60F within spawning habitat provided in P ACFISH located within the La Grande Ranger District and several other national forests. See _ DEIS at 176; PACFISHp. C-6, C-16-17 (1995). Similarly, the WWNF fails to explicitly disclose all applicable PACFISH RMOs and the degree that existing conditions in affected streams meet these RMOs. As a result, RMOs that are directly and indirectly affected by livestock grazing in the selected alternative have not been addressed including: 1) pools; 2) water temperature; 3) lower bank angle in non-forested systems; and 4) width/depth ratio. **(CTWA)**

We addressed all of the matrix indicators in the Biological Assessment, but as described on Page 115 of the DEIS, for brevity we only summarized information in the DEIS for indicators that can be affected directly by livestock grazing. We addressed water temperature on pages 115, 120, 122, and 132 of the DEIS. We addressed width/depth ratio on pages 120 and 124 of the DEIS.

4b.30 Livestock grazing clearly and negatively affects all of these conditions by either degrading the conditions or preventing or impeding recovery of these stream attributes, (Platts et al., 1991; Rhodes et at, 1994; Fleischner, 1994; Knapp and Matthews, 1996; Magilligan and McDowell, 1997; Belsky et aI., 1999). Finally, the EA fails to reasonably. disclose likely future compliance with P ACFISH RMOs and to differentiate among the alternatives with respect to their likely degree of consistency with. attainment of such RMOs. **(CTWA)**

We added information to the FEIS to clearly describe that we expect all of the alternatives to be consistent with PacFish requirements both under the current grazing system (Alternative 2) and in the future.

4b.31 The DEIS fails to reasonably differentiate among the alternatives with respect to likely effects on habitat attributes, including those set as LRMP standards. Others have illustrated, however, that the selected alternative will have detrimental impacts on Joseph Creek and tributaries. Kauffman et aI. (1983), for example, compared differences in succession, composition, productivity and structure between riparian communities that were grazed and communities that were ungrazed under a similar grazing strategy as provided in the selected alternative in the DEIS. See M., DEIS at Table 6 pp. 40-44. **(CTWA)**

Refer to Table 28 on Page 132 of the DEIS for a summary comparison of alternatives. Our analysis does in fact conclude that the alternatives which include livestock grazing have impacts on riparian areas, however, the level of impact was found to be consistent with Forest Plan standards and guidelines (including PacFish).

4b.32 Kauffman also found that even limited grazing impacted grass, willow-black cottonwood and shrubs and concluded that "early evidence and observations" indicate that "a late season grazing strategy has a...negative impact on, succession to woody-dominated communities and hence, the long term structural diversity of this riparian ecosystem..." Elmore 1992, concludes that summer/fall grazing is generally incompatible with the recovery of shrubs and that in some steep channel systems, the proposed grazing system also usually leads to reduced bank stability. Finally, in riparian areas on. Joseph Creek itself, Green (1991) documented that even fairly light grazing retarded willow and shrub growth on banks, especially in comparison with ungrazed areas. **(CTWA)**

The NRST Monitoring Protocol (Appendix D of the FEIS), provides a means for understanding the interaction between grazing, shrub utilization, and streambank stability. Under Alternatives 3 Modified and 4, this protocol would be adopted to adjust future livestock management for the Meadow Segment of Swamp Creek and once refined, would be useful for application in other areas.

4b.33 In addition, channel widening and bank destabilization are common problems along the mainstem of Joseph Creek resulting in erosion that elevates stream sediment delivery, which reduces pool volumes, increases fine sediment levels and width/depth ratios, retarding attainment and improvement in these three RMOs. The DEIS itself provides that "Joseph Creek Watershed overall rates as "Functioning at Risk" for changes in peak and base flows. This rating is based on the amount of downcutting observed in the upper portions of at least half of the intermittent streams." DEIS at. 116. **(CTWA)**

On the contrary, channel widening and bank destabilization are not common problems along the portion of Joseph Creek that is within the analysis area. Refer to Page 133 of the DEIS. The portion of Joseph Creek on private land which begins at the source of Joseph Creek and runs to the beginning of the Wild and Scenic River boundary exhibits channel widening and bank destabilization due to livestock containment and agricultural practices, but these private properties are not waived properties and are not part of the analysis area. We did consider the cumulative impacts of these private lands, but changing activities on these private lands is not within the jurisdiction of the Forest Service.

4b.34 The effect of grazing on reducing or retarding bank stability has been consistently documented throughout the west (Platts et al:, 1991; Rh9des et al., 1994; Fleischner, 1994; Knapp and Matthews, 1996; Belsky et aI., 1999; Rhodes and Greene, *(in process).* The. DEIS provides that erosion along stream banks "has been caused largely by management activities, such as road building, logging, and grazing in the Upper Joseph Creek Watershed."DEIS at 116. **(CTWA)**

Refer to the response to comment 4b.35.

4b.35 The DEIS completely fails, however, to discuss available information indicating that bank stability is consistently degraded or impedes recovery under grazing. In northeastern and central Oregon, including areas managed by the WWNF, for example, researchers have found that measured bank stability in grazed reaches was consistently lower than in comparable ungrazed reaches; these differences were statistically significant in all reaches examined on federal, lands. This clearly indicates that current USFS grazing practices are either continuing to degrade bank stability or are retarding recovery. **(CTWA)**

We discussed the potential effects of grazing on streambank stability on Pages 120, 124, and 132 of the DEIS in the channel morphology section. A threshold impact of 90 percent is allowable under Forest Plan direction, and except for the meadow segment of Swamp Creek, the streams within the JCRAA are meeting this standard when considered on a stream-wide basis. We consulted on the level of impact associated with the alternatives, and NOAA - Fisheries concurred with our determination of effect.

4b.36 Although, the Endangered Species Act requires an analysis of watershed conditions via the "Matrix of Pathways. and Indicators", the DEIS fails to provide whether such analysis has been performed in relation to the planning area. In addition, the DEIS does not address utilization standards for range forage in riparian areas. Based on the fact, however, that here are several locations in. the planning area affecting species listed under the ESA, recommendations of the agency's own researchers provide that >6" stubble heights are necessary for critical habitats for threatened, endangered or sensitive species (Clary and Webster, 1989). Clary and Webster t1989) also recommend a 6" minimum stubble height for areas susceptible to bank damage. ,The failure to provide stubble height standards in the" DEIS even though several "the subwatersheds in the analysis area are 'FunctionIng at Risk' for parameters that are sensitive to grazing systems," DEIS at lI5, violates standard USFWS RPAs for listed species. **(CTWA)**

The matrix of pathways and indicators resulted from our agreements with USFWS and NOAA - Fisheries on how to consult under Section 7 of ESA. A complete analysis of the matrix with respect to the grazing proposal within the JCRAA is found in the Biological Assessment. Table 25 of the DEIS shows the matrix ratings for each of the indicators. We summarized the analysis of impacts to grazing –sensitive indicators on pages 114 to 132 of the DEIS. We summarized the Forest Plan utilization standards applicable to Alternatives 2, 3 Modified, and 4 in the FEIS.

4b.37 Further, the DEIS fails to adequately disclose and analyze existing consistency with, and

effects of the alternatives on the 10 PACFISJI ecological goals which include maintenance restoration of habitat complexity, water quality, channel integrity and other biotic and abiotic aspects of watersheds, streams, and habitats: Without such analysis, the USFS cannot assert consistency with the goals because it is clear from available literature that cattle grazing impedes progress towards these ecological goals (Platts et al., 1991; Rhodes etal., 1994; Fleischner, 1994; Knapp and Matthews, 1996; Magilliga'nand McDowell, 1997; Belsky et aI., 1999) **(CTWA)**

The matrix of pathways and indicators were developed to address the ecological goals. Following the matrix implies consistency with the ecological goals and the Aquatic Conservation Strategy.

4b.38 Finally, the DEIS fails to adequately discuss cumulative impacts on aquatic or riparian habitats or fish and any discussion of such impacts is primarily limited to the effects of livestock and big game grazing and the impacts of distribution, stocking rates and economics to private" lands. See, DEIS at 114-117. As a result, the DEIS conflicts with the requirement that Federal agencies, may not disregard actions on federal lands simply because their impacts may be relatively minor when compared to other actions implemented over abroad geographic scope. Pacific Coast Federation of Fishermen's Association v. NMFS, 253 F.3d 1137 (9th Cir. 2001). **(CTWA)**

Refer to Page 134-135. We included a cumulative effects analysis in the Biological Assessment. We addressed vegetation treatments, roads, other federal actions, and private land actions. We added information in the FEIS to clarify that our cumulative effects analysis area included only those subwatersheds that contained some portion of the JCRAA.

4b.39 The monitoring in the DEIS is inadequate to ensure compliance with preferred in-channel and forage standards or to determine compliance with RMOs. The DEIS, for example, does not require forage utilization/stubble height monitoring at least weekly in all grazed areas, and more frequently as limits are. approached. In addition, streambank stability must be monitored weekly and the entire stream system would have be monitored for all RMOs and inchannel standards just prior to and after grazing annually to effectively ascertain progress towards RMOs (or lack thereof). **(CTWA)**

Implementation monitoring was established by the Interagency Implementation Team as described on Page 52 of the DEIS. The frequency of this monitoring is not prescribed by a schedule, but the administration of range allotments requires constant evaluation of the best place to monitor. The frequency may change with climatic conditions, elevational considerations, the particular pasture, or the permittee's record at meeting standards in the past. In some cases, a weekly monitoring schedule may not be enough, and in others it may be redundant. IIT effectiveness monitoring was established to show compliance with RMOS. Effectiveness monitoring being conducted by Utah State (IIT Effectiveness Monitoring) using selected subwatersheds. Their monitoring within the JCRAA has been used to establish a baseline condition.

4b.40 The Joseph Creek DEIS relies on an analysis which fails to provide the detailed review

required by NEPA, disclose details of the condition of the project area and the fish stocks, and the true effects of grazing on riparian and stream habitat and to disclose the true impacts from cumulative effects. These shortcomings and lack of detailed information also bring to question whether the Joseph Creek DEIS complies with required standards in the LRMP, Pacfish and the ESA. Overall, the analysis is not a detailed analysis supporting a finding of no significant impact and ensuring compliance with management .directives. The DEIS, therefore, not only violates federal-law but is inconsistent with the federal government's recent pronouncement that listed runs of Columbia River salmon will not survive without significant and rapid increases in tributary habitat productivity. See e.g.,The Federal Caucus, CONSERVATION OF COLUMBIA BASIN FISH, FINAL BASIN WIDE SALMON RECOVERY STRATEGY, vol. 1 (December 2000). **(CTWA)**

We believe that by using the pathways of matrix indicators, we have provided site-specific analysis regarding the impacts of grazing of fish and fish habitat. Of course, the Biological Assessment contains more detail than the DEIS, and it is contained in the analysis file. We consulted on the determination of effect to listed fish species with NOAA – Fisheries, and they concurred with our determination. We believe that our analysis and process has been consistent with the LRMP, PacFish, and the ESA.

4b.41 Based on these concerns and in addition to the issues addressed in these comments, CTWA requests that the:

a) Environmental Impact Statement adequately analyzes the affects of the proposed action on the human environment including:

1) a detailed analysis of the action's impacts on fish. This analysis should include detailed comparison of the impacts on fishery habitat of the different alternatives

Refer to the response to comment 4b.40.

2) full disclosure of existing compliance with ESA, PacFish and LRMP requirements;

Refer to the response to comment 4b.30.

3) explicitly analyze and disclose current and likely future consistency with PacFish ecological goals by alternative;

Refer to the response to comment 4b.37.

5) disclosure of the status of conditions in the watershed needed to use the "Matrix of Pathways and Indicators" approach

Refer to the response to comment 4b.36.

6) full analyses or a modified version of the preferred alternative 3 as provided in the DEIS as the preferred alternative that includes:

i) exclusion or rest of riparian areas from livestock grazing sufficient to allow full recovery of

ecological systems and compliance with ESA, Pacfish and LRMP standards,

ii) the removal of livestock from riparian areas at anytime when such compliance is not taking place

In response to your comment, we have developed Alternative 4, which takes a different approach to riparian area management.

4b.42 The DEIS states that steelhead are a federally threatened species present in perennial streams in the JCRAA; additionally, there are many water quality factors that are "functioning at risk" in stream segments that have steelhead and redband trout. Perennial streams, including Joseph Creek itself, are considered "water quality limited," particularly for excessive summer rearing temperatures. Alternative 1 benefits the fisheries resource in the JCRAA by most quickly improving the quality of the aquatic habitat where steelhead and redband are found; "conditions would have the opportunity to improve at a faster recovery rate" (DEIS 114). The other alternatives do not demonstrably improve or maintain the water quality (itself at least somewhat dependent on the quality of riparian habitat), and thus do not adequately address the requirements of the fisheries resource, despite the implication that these alternatives would improve the fisheries resource. **(FLOW)**

Refer to the response to comment 4b.14.

4b.43 The finding that grazing "may affect" Snake River steelhead causes concerns, not just for the ESA, but also for the Wild and Scenic Rivers Act. Fisheries are listed as an ORV under the designation of Joseph Creek as Wild and Scenic, and cattle impacts on riparian areas influence the quality of the water that supports this ORV. **(FLOW)**

A determination of May Affect, Not Likely to Adversely Affect does not necessarily trigger an adverse effect on Outstandingly Remarkable Values. The determinations were made on an allotment-wide basis for all of the matrix indicators. As described in the Aquatic Resources section of the FEIS, with respect to indicators sensitive to grazing, conditions would remain the same whether grazing were authorized or not.

5. Vegetation

5a. Vegetation Impacts

5a.1 Under any discussion of range condition, trend should be included, **(permittees)**

In part, trend is addressed when range condition is assessed as being in satisfactory or unsatisfactory condition. 'Satisfactory' defines range conditions where trend is either stable, improving, or where the condition is at least good if a downward trend is noted. However, we agree that in some cases, trend would be helpful information for discussing range condition when the rating is close to the break point between satisfactory and unsatisfactory condition. In those cases, we did added information on trend to the FEIS.

5a.2 We do not believe that the unsatisfactory rating on the following pastures is warranted: Upper Swamp and Bennett - These pastures are part of the Swamp Creek Restoration project that was created to address watershed conditions. These conditions focus on the meadow portion of the pasture. The EIS identifies: lack of shrub species diversity, shrub quantity: some stream bank stability and non-native grass species that have been seeded by previous owners. **(permittees)**

We agree with your assessment of the cause of the unsatisfactory condition rating for the Upper Swamp and Bennett pastures. We added information to the EIS to clarify that the remainder of the pasture outside of the Swamp Creek riparian area does not share this same condition. Refer to the response to comment 2c.4.

5a.3 The National Riparian Team (NRT) visited these sites in August and concluded that the site was in a steep upward trend. They raised the question of what site potential was and what shrubs would be expected on these sites. They even questioned whether additional plantings were needed with such a steep upward trend. The NRT felt that the shrub community was in the early seral state and that considerable evidence of regeneration was present immediately following the 1996 flood, which was the last significant disturbance where you would expect shrub expansion when you are in an alder type plant association. This indicates that regeneration of these shrubs is occurring. Bottom line is that the NRT felt that the sites were not in that bad of condition (PFC rating came out 'functioning at risk just under the functioning line with an upward trend). It was stated that the management appears to be working. Permittees have been cooperating in an adaptive management style of grazing the past few years that is showing excellent results. As to shrub species diversity there was considerable discussion that the area is an alder site and that for an alder site it is not that bad. Both pastures were in compliance with Allowable Utilization Standards since 1995. Also these lands were not acquired by the USFS until the mid 1990 'so under the adaptive management that is being used the land shows a steep upward trend. For all these above reasons the permittees feel that it is inappropriate to rate the above pastures as unsatisfactory and request that they be changed in the final EIS. **(permittees)**

The National Riparian Service Team (NRST) review was completed at about the same time the DEIS was being finalized. We have included the team's recommendations in Appendix D of the FEIS. Alternatives 3 Modified and 4 adopt the monitoring protocol prescribed by the team.

5a.4 South Crow and Doe Gulch pastures of the Crow Creek Allotment were rated unsatisfactory because of an area on the ridge tops that was claimed to be severely impacted by grazing to where it was primarily annuals. In analyzing these areas closely they are ridge tops that have modeled soils from relatively deep soil to rocky interspaces much like the Biscuit/scabland community. The community type that is of concern covers approximately no more than 25% of the pasture and the percent of that community type that is in poor condition is no more than 30% of that area (7-8% of the total pasture). As to the cause of the pasture conditions, the patterns and mottling of the area would indicate rodents as the primary problem, not livestock grazing. These pastures have been grazed in the late fall each year for the past few years further bringing into question any concerns of grazing issues. **(permittees)**

We added information in the FEIS to reflect our September 22, 2004 field review of these pastures with the permittees and the changes in management of those pastures over time.

Our more detailed review also resulted in our conclusion that these pastures only contain isolated areas of early seral plant communities.

5a.5 For all these above reasons the permittees feel that it is inappropriate to rate the above pastures as unsatisfactory and request that they be changed in the final EIS. **(permittees)**

Refer to the response to comment 5a.4.

5a.6 The crop being referenced on Page 177 should be cereal rye, not annual rye grass **(permittees)**

We agree and made the change in the FEIS.

5a.7 The Tribe is concerned that the Forest wrote the DEIS in such a way that gives the public and the Tribe the impression that historic overgrazing is somehow unrelated to or outside of the existing analysis for Joseph Creek. *See, e.g.,* DEIS at 2-3,57-66. Existing conditions must be described in the context of both current and historic grazing practices, because it is the cumulative impacts of management decisions over time that have caused the existing rangeland and riparian conditions we see today. Does the Forest have any plans for active restoration in areas that will not recover on their own? Specifically, what does the Forest have planned for South Crow, Bennett, Upper Swamp and Doe Gulch Pastures? **(NPTEC)**

We certainly agree that historic grazing and the remnant effects of that grazing are pertinent to the Joseph Creek Rangeland Analysis. We believe we were realistic by identifying those historic impacts that may be irreversible over the lifespan of this analysis.. The analysis focuses on the current condition, regardless of what brought it to this condition, and looks forward to management to meet resource goals and objectives.

5a.8 The description of existing range conditions in Chapter 3 of the DEIS should be clarified. Too much of the assessment is based on professional judgment that appears to contradict the data generated by the Forest's own "Condition and Trend" plots. For example, page 58 of the DEIS states that, "Based on professional judgment, 4 pastures were identified as having unsatisfactory condition. From C and T plots, 14 pastures were identified as potentially having unsatisfactory range condition." Further, the DEIS states "field visits and professional judgment were used to sort out which plot results truly represented forage condition and trend related to livestock management." DEIS at 58. What this indicates to tribal staff is that the Forest Service does not trust their own data, but instead interprets range condition as they see fit through professional judgment. Such an approach does not encourage confidence in the overall assessment of the existing conditions. If Condition and Trend plots are no longer considered valid for assessing range conditions, the Forest should say so and then disclose that alternate methods need to be developed and implemented. **(NPTEC)**

We added information to the FEIS to explain how range condition was determined. Refer to the FEIS] In response to comments on the DEIS, we decided to express range condition in the FEIS as it relates to seral stage, which is a place on a continuum of plant succession.

5a.9 A table containing the trend for each pasture (declining, stable or increasing) would be very helpful in assessing the impacts of proposed management activities. **(NPTEC)**

We included a crosswalk table in the FEIS as a reference between terminology referring to Forest Plan standards, range condition, seral stage, and trend. Where we thought the trend was relevant, we included it in the FEIS.

5a.10 South Crow and Doe Gulch pastures of the Crow Creek Allotment, Bennett and Upper Swamp pastures of the Swamp Creek Allotment, and Sumac pasture of the Cougar Creek Allotment are currently in unsatisfactory condition. Another 14 pastures were identified through Condition and Trend monitoring as potentially having unsatisfactory conditions. *DEIS at 58*. Three pastures in the Davis Creek allotment that indicated unsatisfactory range were not included in the group described as being in unsatisfactory condition because an improvement in range condition is "expected." *DEIS 60*. 'Expectation' is not a scientifically justifiable position to be basing a DEIS analysis upon. **(HCPC)**

Changes in overall range condition require long-term monitoring, so it is premature to predict an outcome without supporting data. Yes, we are 'expecting' an improvement in range condition for the three pastures in the Davis Creek Allotment. To state any differently would be to deny that variables such as drought and insects influence forage condition. If we hadn't already made the management changes for Davis Creek, we would be prescribing those changes now. With respect to the 14 pastures identified as potentially having unsatisfactory conditions, please refer to response to comment 5a.8. With respect to our updated assessment of which pastures are in satisfactory versus unsatisfactory condition, refer to the response to comment 5a.4.

5a.11 In a number of Condition and Trend ("C&T") plots where unsatisfactory conditions were found, the plot was simply moved so it was no longer representing unsatisfactory conditions. *DEIS 62*. Other unsatisfactory conditions are blamed on historic practices, yet no recovery plan has been developed. If a pasture is in poor or unsatisfactory condition due to historic practices, continued use of that pasture is not appropriate until recovery has been achieved. Further pastures indicate unsatisfactory conditions, but these are discounted as being not representative of the pasture as a whole. Some pastures have no C&T plots at all. *Id*.

At least two pastures currently in unsatisfactory condition would recover to satisfactory condition if no grazing occurred (alternative 1). They would stay in unsatisfactory condition, however, under Alternative 3. *DEIS 72*. **(HCPC)**

The Forest Plan provides a standard that suitable lands in unsatisfactory range condition will be identified and specific objective for these lands will be developed. These objectives will define a desired future condition based on the existing and potential values for all resources (Page 4-54). Where we identified unsatisfactory range condition, we set objectives to meet a desired future condition. In each case, progress toward these objectives could be made with modifications to the grazing system, but did not require the removal of livestock from the pasture. With respect to the process used to determine satisfactory versus unsatisfactory condition, refer to the response to comment 5a.8.

The table on Page 72 of the DEIS and the following paragraph are in error. As shown on Page 48 of the DEIS, our intent was to show that Alternative 1 also resulted in unsatisfactory range conditions in the South Crow and Doe Gulch pastures. This conclusion was based on the assumption that the presence of annual grasses in the South Crow and Doe Gulch pastures was prevalent enough that recovery to satisfactory conditions could occur only through active restoration such as drilling and seeding to native grasses. Since the DEIS was released, we reviewed range conditions in the South Crow and Doe Gulch pastures. Refer to the response to comment 5a.4 for further information. We changed the FEIS to include this new information.

5b. Utilization

5b.1 What protocol is being used for shrub utilization? Since the ability to measure shrub utilization is nearly impossible, why do we continue to use this standard? The permittees propose that if shrubs must be monitored that you use an incidence of use that is measured before livestock are turned in and again immediately following livestock being moved out of a pasture. In addition there needs to be appropriate exclosures to aid in separating wildlife and livestock use. **(permittees)**

We will be using incidence of use for shrubs in the Swamp Creek restoration project. It is part of our monitoring along with Al Winwards greenline monitoring process.

5b.2 Specifically, there are no measurements of actual forage amounts needed per AUM (in lbs rather than percent stubble height). The DEIS does report that there are a total of 17,860 acres of capable lands within the analysis area. *DEIS 57.* We question whether these 17,860 acres can support 11,771 head-months of cattle who require at least 780 pounds forage per AUM. Moreover, at just 50% utilization, this would require a starting forage weight of 1028 pounds per acre. The DEIS does not disclose the actual forage amount used in the computer modeling to determine capacity, however we suspect it is well below 1028 pounds per acre. In fact, we question whether any land within the Joseph Rangeland Analysis Area could produce 1028 pounds of forage. If utilization standards are higher, even more starting forage per acre would be required to support the numbers of cattle and wildlife proposed in this DEIS. **(HCPC)**

We did not calculate the capacity of rangelands within the JCRAA. We chose not to develop potential forage production and potential animal needs because we have a long record of livestock grazing and wildlife use showing that in general range condition is satisfactory and utilization standards are being met. While your initial calculations might indicate that the JCRAA is currently overstocked, we disagree with your assumption that forage would only be provided on capable lands. As stated on page 58 of the DEIS, approximately 45 percent of the JCRAA is grassland or forestland with less than 40 percent canopy closure. Forage is also available within some of the areas classified as forestland with greater than 40 percent canopy closure. The capability model indicates where livestock grazing is expected to be at a higher intensity than other lands. Non-capable lands can provide a basis for forage production as well, particularly when permittees are successful at distributing livestock onto steeper ground and away from riparian areas. The measures enstated by Alternative 3 would increase the utilization standard related to big game, the Wild and Scenic River corridor, and the pastures considered to be in unsatisfactory condition. This change would require that

additional forage be retained. However, through distribution and adjustments in operating plans, it is likely that adequate forage would still be available. Because forage amounts vary year to year due to climate and other factors, it would be a situation that needs to be reviewed. Thus, the monitoring plan associated with Alternative 3.

5b.3 The DEIS seems to rely on arbitrary standards for utilization levels. There is no rationale leading the public to the conclusion that these standards will "maintain and improve" or that they will "protect and enhance." The DEIS correctly points out that, in areas where the slopes are gentle and particularly in the late summer, cattle graze riparian reserves more heavily. However, the document fails to provide information that corroborates the claim that these areas are being adequately protected. Particularly considering the DEIS statement that "shrub utilization measurements do not have an established protocol and can vary among observers," the DEIS' reliance on a 20 percent shrub utilization level as an indicator of riparian vegetation health appears arbitrary and unsatisfactory in ensuring that the grazing system "protects and enhances" the ORVs of Joseph Creek, or that it maintains the quality of riparian areas for streams that are listed as water quality limited (p. 125). **(FLOW)**

Additional information on how utilization standards are measures and how they relate to long-term health of forage conditions was added to the FEIS to respond to this comment.

5c. Proposed Research Natural Areas

5c.1 The boundaries of the RNA's need to be looked at for appropriateness. Some of the boundaries border old fields and trails etc. that should be excluded. **(permittees)**

The boundaries of the RNAs are proposals at this time and are subject to change at the time of establishment.

5c.2 Suggest looking at management near RNA's to aid in boundary designation. **(permittees)**

Refer to the response to comment 5c.1.

5c.3 The two potential RNAs within this analysis area – Haystack Rock and Horse Pasture Ridge – were established for protection of plant communities. Although the LRMP requires management plans for these RNAs, none have been developed. Without these RNA management plans, it is inappropriate to allow livestock grazing within these areas. The DEIS calls for 10% utilization of forage in these areas. *DEIS 37, 181.* The 10% utilization standard may place the characteristics of the RNAs at risk, especially since monitoring is not possible over the entire analysis area. **(HCPC)**

At the time of establishment, the RNAs will have management plans, but establishment requires a separate NEPA decision. At this time, we are prescribing a level of grazing that will protect the proposed RNAs from uses which would reduce their suitability for RNA designation. These areas are currently receiving only incidental use because of topography, distance to water, and the grazing systems currently employed. In

Alternative 3 we prescribed a 10 percent utilization standard because the pastures would have the flexibility to be used differently under this alternative.

5c.4 The Wallowa-Whitman LRMP states that livestock grazing is allowed in RNAs only when *needed* to establish or maintain vegetative communities. *LRMP 4-84.* Livestock grazing may be established in RNAs outside of this need, but in those cases it must be under a program established by the Regional Forester and Station Director that is consistent with the management prescription for the RNA. *Id.* Again, without RNA management plans for these two areas, livestock grazing cannot occur. **(HCPC)**

Because these are proposed RNAs rather than established RNAs, we are following the direction at the top of Page 4-84 stating that proposed RNAs will be protected from uses which would reduce their suitability for RNA designation. As an aside, refer to standard 5 on Page 4-84 which states that for established RNAs, that the Regional Forester and Station Direct shall as appropriate establish a level of acceptable casual or incidental livestock use that can be tolerated and is consistent with the management prescription for the RNA.

5d. Riparian and Wetlands

5d.1 The National Riparian Teams' suggestions for grazing management should be added to both Alternatives 2 and 3. **(permittees)**

We appreciate the value of the National Riparian Team's recommendations. However, at some point, we need to provide a distinction between current management (Alternative 2) and the set of activities associated with Alternative 3 in the DEIS. We decided that the snapshot of current management in May 2004 should represent the current management scenario. Since the team's recommendations came after that point, we decided not to include their recommendations in Alternative 2.

5d.2 Need to add the statement on Page 151 that "Livestock grazing reduces the incidence of large scale fire by treating the fine fuels in the areas. **(permittees)**

This statement relates to heavily forested areas adjacent to riparian areas. It is a large assumption to connect the presence of ungrazed or grazed grasses to the incidence of large-scale wildfire in conifers. While logic suggests a connection, we are not aware of any substantiating literature.

5d.3 Riparian areas used to be nature's fire breaks. This is no longer true with the current management. Also, on the west side of Swamp Creek there needs to be a thinning project to allow for livestock movement between the riparian area and the slope. Currently the thicket is so bad that there are few places livestock movement can occur without difficulty. **(permittees)**

We elected to keep the JCRA as simple as possible. Introducing a vegetation management component to the analysis at this time would be time-consuming and outside of the purpose of and need for action.

5d.4 Doubling of deciduous density and diversity statement is a value statement and is difficult to prove. Needs taken out. (See Ron Wiley statement earlier). **(permittees)**

Thank you for noting this error. We changed the FEIS.

5d.5 Eliminate the list of shrubs on last line of Page 9. **(permittees)**

Although the list of shrubs in the DEIS directly quotes the Wild and Scenic River Management Plan, we modified the list in the FEIS to reflect that dense stands of willow with a fair component of black cottonwood and aspen may have not been the correct species composition of shrubs that historically existed in Joseph Creek.

5d.6 The DEIS is unclear as to the frequency needed to decrease the livestock concentration in riparian zones. The Tribe needs to know when and how often livestock will be in riparian areas, and when will they be moved from the riparian areas. This information is critical to understanding the impacts that grazing is likely to have on the riparian habitat, as well as the effectiveness of the mitigation measures. **(NPTEC)**

The movement of livestock from riparian areas is a very subjective process, depending on the season of use, weather patterns, big-game use, etc. However, permittees have an interest in keeping livestock distributed throughout the pasture because once the riparian area approaches utilization standards, livestock need to be moved from the entire pasture. Better utilization of upland forage allows the permittee to retain livestock in the pasture for a longer period.

5d.7 The DEIS states that, *"While some areas are fenced and have ample riparian vegetation, some areas continue to experience a lack of some riparian shrubs, which would continue under this alternative."* DEIS at 152. However, the only reference to riparian fencing stated that only 34 acres are currently fenced. DEIS at 152. Therefore, it would appear that almost all of the analysis area's riparian vegetation is unprotected. The Tribe needs to know which areas specifically would continue to remain in unsuitable conditions, or decreasing health? How was the above stated conclusion drawn and what is being done to specifically mitigate for this issue? **(NPTEC)**

The 34 acres referred to on Page 149 is the total area fenced at upland sites, such as springs or seeps. Stream exclosures also occur throughout the JCRAA. The tables on page 128 of the DEIS note the stream exclosures that have been constructed since 1983. We have maps of stream exclosures in the analysis file which are available to review. It is assumed that areas that experience "a lack of some riparian shrubs" would be in "maintained" health.

5d.8 "Livestock grazing has damaged approximately 80% of stream and riparian ecosystems in the western United States". *A.J. Belsky, A. Matzke, S. Uselman, 1999.* "Livestock seek out water, succulent forage, and shade in riparian areas, leading to trampling and overgrazing of streambanks, soil erosion, loss of streambank stability, declining water quality, and drier, hotter conditions". *Id.* **(HCPC)**

Refer to the response to comment 5d.9/

5d.9 Riparian issues are also a concern for riparian dependent species. Many seeps, springs and streams in the analysis area have been developed for livestock use. Those that have not been developed are also used by cattle. *DEIS 148.* Yet these riparian areas are the last refugia for survival for many species. *Id.* According to the DEIS, studies show that it may take decades after periods of heavy grazing for vegetative components to again support amphibians and reptiles. *Id.* These species are important because they are indicators of a healthy aquatic system because they are very sensitive to pollution and loss of aquatic habitat. *DEIS 149.* Alternative 3 would continue to impact these areas. *DEIS 151-152.* **(HCPC)**

The DEIS on Page 125 states that if a spring/seep is developed and fenced, soil, water and biotic habitat functions are generally not altered. On Page 111, the DEIS states that areas of detrimental soil conditions (which affect vegetative components) are discontinuous and comprise of a very small proportion of the allotments". DEIS 111.

5d.10 Upland seeps and springs are not adequately protected. *DEIS 125.* There is no current assessment of them, and approximately 60% of them are not functioning properly. *Id.*

NFMA mandates that there be no management practices causing detrimental changes in water temperature or chemical composition, blockages of water courses, or deposits of sediment which seriously and adversely affect water conditions or fish habitat. *36 C.F.R. §219.27(e)* **(HCPC)**

As described on Page 45 of the DEIS, continued maintenance of range improvements will occur, but under a separate NEPA decision. The NFMA requires the Secretary of Agriculture to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System. The effects on water quality within Chapter 3 of the FEIS are consistent with the Forest Plan, and the Forest Plan was prepared and amended consistent with the planning regulations in effect at the time. Therefore, the Record of Decision concludes that the selected alternative is consistent with NFMA.

5d.11 The Forest Service has violated the Clean Water Act by failing to practice best management practices (BMPs) for non point sources of water pollution such as sediment. There is no discussion within the DEIS about whether BMPs are needed or whether they will be implemented. The Clean Water Act (CWA) requires each state to develop and implement water quality standards to protect and enhance the quality of water within the state. *33 U.S.C.S. §1313.* The CWA requires each state to develop a state process to identify agricultural, silvicultural (forest management), and other nonpoint sources of pollution (agricultural) and to set forth procedures and methods to control such sources. These state procedures are called "best management practices." The CWA requires the Forest Service in Utah to comply with the water quality standards set by the State of Utah. *33 U.S.C.S. § 1323.* Proper implementation of state-approved "best management practices" will constitute compliance with the CWA unless water quality monitoring reveals that the "best management practices" have permitted violation of these water quality standards. Also see *Blue Mts. Biodiversity Project v. Pence*, 22 F. Supp. 2d 1136, (D. Or. 1998). **(HCPC)**

While interim best management practices have been incorporated into the alternatives based on mitigation measures and protection measures from our ESA consultation

process, we did not name them as such in the DEIS. We added this reference in the FEIS. Refer to the response to comment 7.1 for the status of the TMDL for the Lower Grande Ronde Subbasin and development of final Best Management Practices.

5d.12 Of particular concern to the health of wildlife in the JCRAA are riparian reserves, which the DEIS points out are crucial for wild ungulate forage and refuge cover for a variety of species. Conflicts in riparian areas between livestock and wildlife are potentially more frequent and important than indicated in the DEIS. In the summer as well as the winter, conflicts with livestock may be limiting the forage and use of crucial riparian areas by wild ungulates. The DEIS fails to present a strategy by which these conflicts will be adequately reduced, particularly in the Wild and Scenic Corridor. **(FLOW)**

Our discussions with ODFW biologists indicate that wild ungulate populations in the JCRAA are not limited by forage concerns. In addition, the Wild and Scenic River corridor is typically grazed in the spring and fall and would not coincide with the summer or winter season you cite as a period of particular concern.

5e. Aspen

5e.1 The grazing effect is over-stated on Page 153. Aspen like disturbance. We know that the conifers are crowding out the aspen in their normal locations. Elk and deer will still browse. This section needs rewritten to better spread the cause/effect over the appropriate disturbances. **(permittees)**

We agree that factors other than livestock are affecting aspen decline; however, distributing the effect among the various causes is difficult. As stated in the response to comment 5c.2, any found clones would be included in the protection plan for aspen and eventually fenced from livestock and/or wild ungulate access.

5e. 2 The DEIS acknowledges that herbivory is a primary factor in aspen decline. DEIS at 157. Given the DEIS's statement that "the majority of the aspen stands in the analysis area could be lost within the next 50 years," how does the Forest propose to identify and protect other remaining aspen stands within Joseph Creek? What is being done to protect known, unprotected stands? **(NPTEC)**

The number of known aspen clones within this project area (approximately 7) is very few. The majority of the known clones within this project area are found along Elk Creek and near Dog Fight Corral. The majority of these clones are now within exclosure fencing, constructed to protect these areas from livestock herbivory. Additional clone caging (even within the wire strand fencing) and fencing is planned for 2005 in partnership with Wallowa Resources project grants.

5e.3 Wildlife surveys are being conducted for other proposals and are apparently used to identify remnant aspen stands. Are there currently any Forest Service surveys designed to inventory aspen stands? Are there any future plans to conduct federally sponsored surveys for aspen stands within Joseph Creek? **(NPTEC)**

As part of professional field-work, aspen stands are always recorded when encountered during wildlife, range, and botanical field work. The permittees and other FS field crews are well aware that we are interested in finding and protecting aspen stands. Wildlife surveys were conducted for numerous vegetation management and fuels reduction projects that fall within this project area. All botanical inventories, whether done by seasonal crews or contract crews are required to look for and report unique habitats such as aspen stands. Botanical inventories were also conducted for the vegetation management projects that fall within this project area. In addition about, 3100 acres of botanical inventories were conduced for the JCRAA analysis area over the 2003-2004 field season. Approximately another 1000 acres are being inventoried in 2004-2005. Additional surveys are proposed with the implementation of this project as described on Page 91 of the DEIS.

5e.4 Although aspen stands are continually impacted from livestock grazing (*DEIS 153*), there are no protection or restoration measures for aspen included within this DEIS. There is talk of "eventual" protection of the aspen stands (*DEIS 154*), but no action plan is developed or analyzed in this DEIS. With cattle grazing being one of the primary impacts to aspen, this DEIS needs to spell out a recovery plan for aspen within these allotments. **(HCPC)**

The JCRAA is a range management project not an aspen enhancement project. As such where livestock impacts to aspen are identified, action will be taken relative to livestock management to reduce those impacts. Broader scale aspen inventory and enhancement is outside the scope of this project. See also the responses to comments 5e.1, 5e.2, & 5e.3.

5f. Noxious Weeds

5f.1 Permittees support the aggressive implementation of all actions that will aid in the control of noxious weeds. A discussion about the benefits of having a vested partner (permittees) on the ground should be included. Having permittees present on the ground grazing livestock adds significantly to the monitoring for weeds, mapping of weeds and collaborating in getting the appropriate control measure on the ground in a timely manner. **(permittees)**

We agree with your statement.

5f.2 If all machinery cleaning is to be inspected, who is going to do it? This seems very expensive. Limit to vehicles from known infestation areas and require cleaning of all machinery when needed. **(permittees)**

We changed the mitigation measure regarding equipment cleaning in the FEIS. We expect that permittees would share the inspection responsibilities with the Forest Service. Refer to the response to comment 5f.5.

5f.3 The last sentence on Page 73 should be eliminated. There is already a discussion of weed seed sources. **(permittees)**

We agree that the sentence is redundant and we deleted it.

5f.4 Regarding the 3-day quarantine onto USFS from Idaho, change to "known weed infested areas." **(permittees)**

We changed the requirement to apply to livestock moved to the JCRAA from any known weed-infested areas, and they must be confined for a minimum of three days before entering the JCRAA. We emphasized the point by adding it as a mitigation measure in the FEIS.

5f.5 Bullet #3 on page 49 should be modified to read "To reduce risk of introduced noxious weeds, all equipment used to maintain water developments *or fences* will be cleaned in a manner sufficient to prevent noxious weeds from being carried into the analysis area." (added language emphasized). **(NPTEC)**

We changed the measure in the FEIS.

5f.6 The Tribe recommends the Forest Service manage grazing practices to decrease the spread of noxious weeds. Noxious weeds alter the native plant communities by out competing for nutrients and water. The Tribe encourages the Forest Service to use moderate grazing levels to reduce the physiological impacts on native plants and minimize soil disturbance. **(NPTEC)**

We believe that the alternatives represent moderate grazing levels. The Forest Plan forage utilization standards were established to provide for basic plant and soil needs.

5f.7 The analysis of proposed livestock grazing on the introduction and spread of noxious weeds is inadequate. The relationship between soil disturbance, loss of microbiotic crust, and increased invasibility of native plant communities as a result of livestock grazing-both historic and current-needs to be fully evaluated under all alternatives. The role of livestock grazing in converting native plant communities to annual exotic grasses should also be analyzed. **(NPTEC)**

We added information to the FEIS regarding prevention of noxious weed introduction and spread. We added measures from the national Guide to Noxious Weed Prevention Practices (July 2001) specific to livestock grazing. While prevention may not be completely successful, we are confident that using the measures in the guide is the best information available on how to proceed with noxious weed prevention.

With respect to the conversion of native plant communities to annual exotic grasses, we believe that the analysis is provided in terms of range condition. Pastures with a conversion toward annual exotic grasses would show a downward trend and eventually an unsatisfactory range condition.

5f.8 Relying on permittees to locate and report noxious weeds as the primary prevention strategy under the action alternatives is insufficient. Funding from grazing revenues for weed control is also likely to be insufficient to respond effectively to this issue. The Forest should fully analyze and implement specific mitigation measures that effectively address the introduction and spread of noxious weeds from livestock. **(NPTEC)**

Refer to the response to comment 5f.7.

5f.9 Alternatives 2 and 3 "may increase" the chance of noxious weeds spread by livestock. *DEIS 74*. When newly discovered invasives are discovered, treatment would be addressed in a separate analysis. *Id.* But, detecting new invasive plant sites across this many acres is "very difficult because of its size and undulating topography." *DEIS 87*. The potential for new weed populations to overwhelm our ability to control them is palpable. *Id.* These statements from the DEIS do not add up to creating the least bit of confidence in the Forest Service's ability to manage the invasive plant problem. This is not prevention. Prevention and treatment plans must be developed now. It is clear that continued grazing will exacerbate the invasive weed problem. **(HCPC)**

Noxious weed management is a larger issue than just contributing factors from livestock grazing or what weeds are found within the JCRAA. We added mitigation measures to the FEIS to strengthen the prevention strategy (refer to the response to comment 5f.7). However, despite prevention efforts, we disclose that livestock grazing would continue to play a role in the introduction and spread of noxious weeds.

5f.10 Native plant communities are "severely degraded" by the spread of invasive plant species. A. Joy Belsky & Johnathan L. Gelbard, *Livestock Grazing and Weed Invasions in the Arid West* 4 (April 2000). Invasive plant species alter ecosystems by "increasing fire frequency, reducing wildlife habitat, disrupting nutrient cycling and hydrology, increasing topsoil loss, and altering soil microclimate." *Id.* Livestock transport invasive plant seeds in their hair, digestive tracts and in the mud on their feet. *Id.* at 9. Livestock also increase the ability of invasive plants to invade native plant communities by disturbing vegetation and soils. Belsky & Gelbard, *Livestock Grazing and Weed Invasions in the Arid West* at 12. Despite the substantial potential for livestock to introduce and spread invasive plants, the DEIS fails to examine the impact of increased populations of invasive plants. **(HCPC)**

Based on your comment, we reviewed and strengthened our prevention strategies for noxious weed invasion and spread by livestock. However, other activities (such as off-road vehicles) are much more efficient at introducing and spreading noxious weeds. We consider these other activities by providing for basic plant and soil health through forage utilization standards to help the existing vegetation stave off the threat of noxious weed invasion. However, we cannot predict which noxious weeds would be introduced at what scale. Our best approach is to minimize the role that livestock grazing plays in the mix of noxious weed vectors.

5f.11 "One of the historic impacts from grazing is the perpetuation of noxious weeds and other exotic invasive species. Livestock grazing increases opportunities for the establishment and spread of exotic species through moving, feeding, and trailing. Where trampling of the soil crust churns the soil, weed seeds are better able to establish." Alternatives 2 and 3 maintain the status quo in terms of continuing the noxious weed problem, without providing any strategy for improving the situation. The DEIS does not establish that the current weed control measures are adequately curtailing the spread of these invasive species. By continuing the current grazing scheme, the WWNF will perpetuate the spread of noxious weeds. **(FLOW)**

Refer to the response to comment 5f.10.

5f.12 Noxious weeds present a problem to the botanical diversity of the JCRAA. By allowing livestock grazing near known populations and potential habitat of threatened, sensitive, and rare species, the WWNF is exacerbating the danger that the populations of these species will disappear or require further listing. Grazing is a known vector for noxious weeds, as the DEIS states, and rare botanical resources may require stringent protections from livestock grazing to ensure that this added pressure does not adversely affect their population levels. The protections outlined in Alternatives 2 and 3, then, may be inadequate without specifically accounting for the possibility that noxious weeds will impact botanical resources. In addition, populations of noxious weeds within the Wild and Scenic Corridor could be much more effectively controlled and prevented by excluding livestock from the corridor. **(FLOW)**

The potential for noxious weed invasion is one of the reasons that pastures with known populations of threatened plants are held to a higher standard for range condition. The risk of treatment of noxious weeds among threatened plants is not one we opt to take. However, noxious weed invasion can still occur in late seral plant communities, thus we have a program to monitor threatened plant occurrences, whether or not prescribed by a range management analysis. With respect to sensitive species, we prescribe a level of forage utilization that provides the basic needs for plants and soils, which reduces the risk of noxious weed invasion. Our noxious weed management program has a goal to monitor and appropriately treat any noxious weed population, whether in the vicinity of a listed plant occurrence or not. For example, we have aggressively treated and successfully controlled noxious weed populations within the Wild and Scenic River corridor and have worked cooperatively with upstream landowners to quickly control any weed occurrences that we have become aware of.

6. Botanical

6. The entire botanical resources section would benefit from more rigorous citation to the scientific literature. The Wildlife Resources section could be used as an example. Statements that draw conclusions or make bold statements about a species response to management activities need to be well documented by reference to research results. Three specific examples follow:

. "Even when some livestock consumption of catchfly plants occurred, the plant can apparently endure these conditions for a long period because of its very deep taproot, propensity for dormancy, and long lived lifecycle." DEIS at 85.

."It is also possible that Wallowa Mountain rice grass was able to colonize some grassland habitats that were converted to a more harsh site by heavy historical grazing as it would have been more competitive on those sites after cessation of the intensive grazing regimes." DEIS at 97.

."Engelmann's daisy is a prolific seed producer and most seeds have a small bristly pappus that helps aid in wind or animal dispersion. Thus they are often able to respond well to disturbances such as wildfire or grazing." DEIS at 100

Each of these statements draw conclusions and make bold statements about a species response to management activities. Therefore, the Forest should adequately document these statements by reference to research results. **(NPTEC)**

A thorough effort was expended to consult all the available and relevant literature and research/studies on these species. We welcome the submission of relevant documentation that may not be a matter of public record. The environmental evaluation needs to display consequences or effects to the decision-maker whether relative or absolute. It is not intended to be a dissertation on every species encountered in the project area. In the face of very limited documentation on these rare plant species, the biologist relied on his education in conjunction with over 14 years of on-the-ground Botanical and Ecological experience in formulating reasonable predictions of ecological responses. Increases and decreases in plant response to disturbance are well documented in many publications such as Plant Association of the Wallowa Snake-Province. Using professional judgment to apply these principles to similar species and settings is appropriate when qualifying the assertion and not stating the conclusion as an absolute fact. Because our information on Spalding's catchfly increases with time, the FEIS has been updated from the DEIS to explain the rationale for response predictions.

6a. Botanical – Threatened and Endangered

6a.1 Since the USFS is aggressively moving to protect the Spalding's catchfly in the Doe Gulch and South Crow pastures Mack Birkmaier suggested that he would like to exchange land that is in that pasture to remedy the situation. **(permittees)**

Conveying a parcel with listed plant species occurrences would be inconsistent with the Forest Service land acquisition program. However, you may want to pursue this proposal in another arena as we feel it is outside the scope of this particular analysis.

6a.2 The statement on Page 53 should be referencing to caging plants not their habitat since the habitat is so broad. Request remove "habitat" from statement. **(permittees)**

We changed the wording in the FEIS to better reflect our intention.

6a.3 Make sure the option of grazing in summer is not excluded even though it's understood that it is not preferred, sometimes it is necessary. **(permittees)**

We agree that multiple resource concerns may lead to a situation where summer grazing in pastures with Spalding's catchfly becomes desirable. Pasture rest and rotation can be beneficial to rangeland health compared to always grazing a pasture in the same season. The grazing regime in pastures with Spalding's catchfly will be designed to avoid summer use without eliminating the possibility should resource conditions warrant it. Should summer use of pasture with Spalding's Catchfly become necessary, measures will be employed to protect the Spalding's Catchfly sites from herbivory, trampling, or weed invasions. We changed this wording in the FEIS.

6a.4 It is acknowledged that Spalding's catchfly is growing in some of these areas and special grazing methods are being deployed to accommodate this ESA listed species. **(permittees)**

We appreciate the sharing of the permittees observations.

6a.5 To protect rare and threatened and endangered plant populations, the Tribe recommends salt placement should not occur within 1/4 mile of any known population occurrence, rather than the 1/8 mile as proposed on page 50 of the DEIS. **(NPTEC)**

We agree that, in general, keeping high impact salting sites farther away from sensitive resources is better. As such we accept the suggestion to generally increase the prescribed distance to at least ¼ mile unless site-specific conditions and objectives dictate a better location within 1/4th mile. In some situations the topography, range developments, resource conditions, and travel behavior modification objectives may suggest a location within 1/4th mile.

6a.6 Only 30% of the area has been surveyed for rare plants, "although these areas do not necessarily coincide with the areas having highest potential for Spalding's catchfly." *DEIS 12.* Again, we are concerned about negative impacts being followed up by corrective measures. Instead, a preventative approach is mandated by the ESA, especially in the context of a "May affect, likely to adversely affect" call. *DEIS 90.* For instance, the Alternative 3 monitoring plan for Spalding's catchfly states that action will be taken "If detrimental impacts" are observed. *DEIS 53.* By then it is too late. **(HCPC)**

The Record of Decision discusses that there could be significant effects to this species, and the project might potentially adversely affect this plant (species). However, some detrimental effects to individual plants or patches are not necessarily lethal unless repetitive or cumulative. This relationship is discussed in the FEIS and in more detail in the Biological Assessment. The USFWS did not conclude that the potential adverse effects rise to the level of a Jeopardy call for this species.]

6a.7 Besides, it is clear that detrimental impacts WILL take place. Seedlings in South Crow and Doe Gulch pastures are at moderate risk to trampling. The potential for indirect effects in these pastures is moderate to high. *DEIS 82.* In a series of papers Belsky has shown that grazing does not confer any intrinsic benefit on plants. *Belsky 1986; Belsky 1987; Belsky et al. 1993.* ATV use is on the rise across the district, thus creating direct impacts and indirect impacts (invasive plants). *DEIS 86.* It is highly probable that over the long term, future invasive plant invasion will contribute to habitat loss and localized occurrence extirpation of Spalding's catchfly. *DEIS 87.* Since the USFS has not yet taken any action regarding the impacts of ATVs, it is imperative that other management decisions such as this one take into account the impacts of ATVs. This DEIS does not do so. **(HCPC)**

Management of public OHV (ATV) use is not part of this proposed action or analysis, other than as applied to livestock management under the grazing permit conditions. We included a discussion of the effects of OHV use as a part of the cumulative effects analysis.

6a.8 Not surprisingly, where the soils and riparian areas are inadequately protected, rare botanical resources will also be endangered. The WWNF is required not to take any action that will push the sensitive species present towards endangerment, nor hamper the success of threatened or endangered species. The WWNF needs to do more than to state that habitat is improving—the population numbers of the sensitive species themselves need to be maintained or improved. Particularly for the threatened Spalding's catchfly, the WWNF's "may affect, not likely to adversely effect" finding may be inaccurate considering the intermittent success of the proposed protections and the undiminished likelihood of potential habitat being damaged by maintaining current grazing levels. **(FLOW)**

The Sensitive Species designation does not result from any law or act but is a designation conferred to that species by the Forest Service through implementation of its Manual Direction (FSM 2670). Refer to the response to comment 6b.2. With respect to the listed species of Spalding's catchfly under the Endangered Species Act, a determination of May Affect, Likely to Adversely Affect was made for Alternatives 2, 3 Modified, and 4.

6a.9 Moreover, the utilization standards do not ensure that the soils on which these species depend—particularly in moist riparian areas with vulnerable soils—will be maintained or improved. In actuality, it is likely that the structure and productivity of these soils will be disturbed and degraded by continued grazing of the current intensity. These issues are interrelated, and impacts to soils both directly and indirectly affect botanical resources as well. Particularly for areas listed as potential habitat for Spalding's catchfly, the proposed protection does not prevent the degradation of soil resources or potential trampling by livestock. **(FLOW)**

The Forest Plan EIS (Page IV-27) states that the final vegetation utilization standards in the Forest Plan were prescribed to give greater protection to soil and water values in response to Regional Forester standards. The utilization standards were not intended to avoid livestock-related impacts to soils, but instead to keep those impacts below thresholds. Soil impacts are also expected to mitigate through practices such as waiting until grazing lands are relatively dry before grazing and resting pastures for one or more years (refer to Forest Plan EIS, Page IV-27) Refer to the response to comment 7a.2.

6a.10 By removing cattle entirely from areas of particular botanical concern, the WWNF may ensure that it maintains these populations. Cattle directly impact threatened plants by trampling and eating them. Additionally, chronic depletion of soil productivity in areas known to have rare plants may endanger those populations over time. For these reasons, the WWNF should consider strong protections of these rare plant areas, up to and including removal of cattle from these areas. While some of these protections are in place for some areas of known catchfly populations, other areas will receive full protection only pending further monitoring. The monitoring scheme, itself, is inadequate. Monitoring on the basis of "range condition" is no proxy for documentation of populations and impacts to those populations. An "upward trend" in habitat does not necessarily ensure that threatened and endangered species and habitat is adequate to promote the continued survival of these populations. **(FLOW)**

The monitoring and inventory of Spalding's catchfly risk areas is prescribed to ensure that impacts occur within the parameters cited in the Biological Assessment. We agree that the only way to eliminate all risk to Spalding's catchfly from livestock is to eliminate livestock grazing, which is analyzed in Alternative 1. However, the ESA does not instruct the agency to eliminate all potential impacts from listed species, but rather

to consult with the USFWS to reach a set of management considerations that adequately protect the plant. We have completed those steps.

6a.11 With regard to the maintenance and improvement of habitat for threatened and endangered plant species, Alternative 3 is particularly inadequate in presenting specific and credible measures for protecting these species, particularly the Spalding's catchfly. "In essence, it proposes more flexibility in terms of pasture grazing season, while still staying within the overall permit requirements and abiding by the standards and guidelines. This may shorten recovery time for degraded areas and hasten the achievement of improving trends relative to Alternative 2. To the degree this occurs, it would intrinsically improve the habitat around any known or potential Spalding's catchfly to a greater degree than Alternative 2." Unless specific and rigorous protections for sensitive plant species are established, the adaptive management approach equally has the potential to enhance the degradation of known populations and potential habitat. No rationale is offered why the type of flexibility proposed would enhance the survivability of the Spalding's catchfly. **(FLOW)**

As described on Page 31 of the DEIS, Alternative 3 was developed with acknowledgment that changes will occur over the period for which grazing is authorized. These changes may result in a different approach to grazing an individual pasture, but in no circumstances would a pasture be grazed beyond the Forest Plan utilization standards. On pages 50 and 53, specific mitigation and monitoring requirements were established for Alternative 3 to ensure protection of Spalding's catchfly. These measures are beyond the basic requirement instilled by Forest Plan utilization standards. The flexibility of Alternative 3 Modified allows for changes in grazing schedules which could benefit Spalding's catchfly. For example, new information about the plant and reducing the impacts of grazing could be incorporated more readily by rotating the grazing that would normally occur in a catchfly pasture to a non-catchfly pasture. Alternative 2, however, allows for less flexibility and therefore the incorporation of new information could be less attractive because there are fewer options for incorporating the new information.

6a.12 The WWNF should fully inventory for the Spalding's catchfly. Some areas have not yet been inventoried. Moreover, it is difficult for the public to judge the "may affect, not likely to adversely effect" conclusion without being able to reference a full, completed consultation with the U.S. Fish and Wildlife Service. It is entirely possible that this agency will not concur with the WWNF's finding, particularly considering the ample damage that has occurred to known and potential habitat under the current level of livestock grazing intensity. **(FLOW)**

As described on Pages 86 and 89 of the DEIS, the determination for Alternatives 2, 3 Modified, and 4 is May Affect, Likely to Adversely Affect. This determination is based on the lack of inventory of the Spalding's catchfly risk areas and the potential risk to known occurrences. The USFWS concurred with this determination in their Biological Opinion, which is contained in the analysis file.

6b. Botanical - Sensitive

6b.1 No known site of rice grass on Elk Creek. This table identifies range observations over time that have not been communicated with the permittees nor have the pennittees been asked to

manage for given standards near these sites. The USPS has only been observing the sites. Pennittees feel this table insinuates that there are problems with the sites and they have not been meeting expectations. Since this is not true, table should be removed. **(permittees)**

Permittees support USPS working on technique to monitor Wallowa ricegrass appropriately. The same issues about Wallowa ricegrass are discussed in the narrative. Request narrative convey goals, steps to be taken in future if needed and monitoring plan. **(permittees)**

We added context and clarification to the table. In the FEIS, we added an additional Mitigation and Monitoring measure that dedicates time for the Botany/Range Staff to take permitees to Sensitive plant sites within their allotments and establish a process for the permitees to adopt a site for effects monitoring.

6b.2 As for other plants on the sensitive species list, there is no trend monitoring even at sites where livestock grazing impacts are known to occur. *DEIS 95.* Wallowa Mountain Ricegrass is vulnerable to physical or competitive disturbances and is slow to recover from them. *DEIS 96.* ATV impacts to ricegrass are also unknown. *DEIS 98.* Nonetheless, without much in the way of information regarding the current status of this plant or the effects to it, a determination of "May Impact Individuals, but not likely to contribute to a trend toward federal listing or cause a loss of viability to populations or species" has been made. *DEIS 98.* If a decision were to be made on such a lack of data, it would be the height of arbitrary and capricious decision-making. A similar situation exists with the Engelmann's Daisy. *DEIS 100-101.* **(HCPC)**

Forest Service managers are directed to develop and implement management practices to ensure that species do not become threatened or endangered because of Forest Service actions [FSM 2670.22(1)]. The Biological Evaluation is contained in the analysis file. The evaluation meets the standards and procedures for preparing Biological Evaluations contained in FSM 2672.42 and 2672.43. We disagree with your claim that the decision would be arbitrary and capricious because we followed Forest Service process for making a determination of effect and we adopted the mitigation and monitoring measures prescribed by a journey-level botanist to accompany that determination.

6b.3 With other sensitive species, not all potential habitat has been inventoried. Thus the impacts cannot be determined. *DEIS 103-105.* **(HCPC)**

Where we did not have inventories completed, we erred on the side of caution and assumed that they could be present. Our analysis of effects assumes that the species occur where the potential for habitat is likely.

6b.4 Much like for Spalding's catchfly, the protections proposed for the variety of rare plants in the JCRAA are inadequate, and the "may impact" finding understates the possibility of the current level of livestock grazing pushing these species towards listing. The area should be fully inventoried for these species as well. Species such as Engelmann's daisy and Wallowa Mountain ricegrass may suffer from herbivory as well as trampling and loss of soil productivity. It may be inadequate to establish protections for known and potential habitat for these species on a yearly basis in the annual operating instructions. The lack of a comprehensive knowledge of and strategy for the survival of these species diminishes the reliability of the "may affect" determination for these and other rare plant species present. **(FLOW)**

Refer to the response to comment 6b.2.

7. Soils / Water

7.1 The DEIS fails to establish any sort of restoration plan, either for existing conditions in need of restoration due to current and past livestock grazing, or for future conditions caused by livestock grazing. **(HCPC)**

Our current plan is INFISH and PacFish. Upon completion of the TMDL, the Forest Service will prepare a water quality management plan which will document best management practices and aquatic conservation strategies that we will routinely employ for management activities as well as instream and upland restoration projects to reduce erosion and increase aquatic habitat. – both passive and active techniques.

7.2 Continued livestock grazing will cause soil compaction and displacement within the allotments to persist. Even with no livestock grazing, soil recovery would take 20-30 years. *DEIS 111.* As with water quality, the LRMP states that soil productivity and stability shall take precedence over all other management direction. *LRMP 4-21.* There is no analysis of total Detrimental Soil Conditions within the Analysis Area, as required by the LRMP. *Id.* **(HCPC)**

As described on Pages 111 and 112 of the DEIS, effects on soils from livestock grazing are limited in areal extent, based on review of detrimental soil condition inventories that have been completed within the analysis area, and this meets the standard for detrimental soil conditions established by the Forest Plan.

7a. Soil Erosion

7a.1 It is extremely well documented that grazing significantly elevates soil erosion. *Rhodes et al., 1994; Belsky et al.,1999.* In many areas in the west, it is highly likely that soil loss caused by grazing exceeds a depth of 1 inch. These impacts are extremely significant due to their persistence. Soil compaction persists for 50-80 years, in the absence of continued impacts. *USFS and USBLM, 1997.* Soil properties never recover if subjected to continued impacts, such as roads with on-going grazing. The loss of topsoil is essentially permanent. *Beschta et al., 1995.* There are also statistically significant impacts to soils, vegetation and rodents even under light to moderate grazing. *Jones 2000.* **(HCPC)**

Refer to the response to comment 7a.2.

7a.2 The data of Kauffman et al. (2004), indicates that grazing has caused the loss of at least about 1.1 million ft^3 in soil water storage per square mile of grazed area in wet sites, based solely on the measured loss of soil porosity. Along the Middle Fork John Day River, Oregon, we compared ecosystem properties of dry (grass and forb-dominated) and wet (sedge-dominated) meadow communities at 3 sites that had been managed for sustainable livestock production with 3

sites where livestock had been excluded for 9-18 years as a means of riparian and stream restoration. Profound differences in the belowground properties of grazed and exclosed communities were measured. **(HCPC)**

We anticipate complying with the LRMP standards for detrimental soil conditions as livestock related impacts are localized as shown on Pages 109-111. There is often a large disparity between impacts from low- and medium-intensity grazing practices and high-intensity grazing practices, with the low- and medium-intensity grazing practices resulting in a much lower level of impact. We were unable to find the Kauffman et al. (2004) study you refer to, and therefore do not know the grazing intensity levels that were studied. Although there is the probability of small, localized areas of high-intensity grazing, we expect an acceptable level of soil compaction and displacement to continue under Alternatives 2, 3 Modified, and 4 on a watershed scale, with Alternative 3 Modified having the potential for less compaction and displacement because of its adaptive approach.

7a.3 Alternatives 2 and 3 in the DEIS do not maintain or improve soil productivity. The DEIS generally states that livestock grazing impacts are "local" or "isolated." Soils impacts are both acute in local areas and widespread throughout the planning area. Soil productivity is lost when livestock hoof action churns and compacts the soil, disturbing the microbial community and the physical structure of the soil. In so doing, livestock limit the soil processes that support vegetation and water infiltration. **(FLOW)**

The Forest Plan recognizes that authorized activities on the National Forest will result in a certain amount of detrimental soil conditions. Authorizing livestock grazing within the JCRAA will contribute to these detrimental conditions, but as stated in the DEIS, these conditions are limited in aerial extent and size (Page 112).

7a.4 The DEIS states that "continued livestock grazing will cause soil compaction and displacement within allotments to persist. The areas most susceptible to compaction and erosion are those where livestock use is concentrated or season long," areas that often include stream bottoms (DEIS p. 112). Yet, the Preferred Alternative would continue the current grazing regime and suggests that there is the possibility of improvement in the system. No rationale is offered as to why a continuation of the current grazing regime will enhance soil productivity, nor is it immediately clear why "any increase in detrimental soil conditions is expected to be limited in aerial extent and size" (p. 112). Confusingly, the DEIS states that "the percent utilization, the period of use, and the number of cattle on the allotment would remain the same, perpetuating the current quantity and quality of effective ground cover," but also implies with the assertion that Alternatives 2 and 3 would improve watershed and aquatic conditions (with Alternative 3 being better than 2). There is no evidence the current grazing regime will improve conditions, and the previous quote from the DEIS corroborates this perspective. Moreover, there is no concrete analysis of how and why Alternative 3 would improve conditions more rapidly. **(FLOW)**

In Alternative 3 Modified, cattle movement would be structured by utilization standards and resource concerns, rather than existing pastures and allotment boundaries and schedules. In correlating with soil impacts, we anticipate more success with utilization standards will result in better protections for soils.

7b. Soil Productivity

7b.1 Add wildlife to the list of disturbances that impact bio crust. **(permittees)**

We included wildlife as one of the "other soil surface disturbing activities" on Page 112.

7b.2 The statements on Page 111 about what would occur by eliminating grazing are not true. Particularly with continued presence of wildlife. Additionally the tone is anti grazing. Request this section be rewritten including wildlife impact and changing the tone. **(permittees)**

We added information in the FEIS to describe that the continued presence of wildlife would contribute to effects on soil conditions under Alternative 1.

7b.3 The description and analysis of biological soil crusts in the DEIS is inadequate given the proposed action's likely impacts to this resource. An excellent reference that might be useful is Belnap, J. and O. L. Lange (eds.) *2001.* Biological Soil Crusts: Structure, Function, and Management. Springer-Verlag, Berlin, Germany. **(NPTEC)**

We appreciate the referral and have added additional information to the FEIS regarding biological soil crusts.

7b.4 In a series of papers Belsky has shown that grazing does not confer any intrinsic benefit on plants. *Belsky 1986; Belsky 1987; Belsky et al. 1993.* Moreover, the importance of litter and living vegetation in protecting soils is well documented. Soil under mulch is moderated and has more moisture than bare soil, and mulch increases rapid water infiltration, reducing runoff and erosion, all of which benefits the native vegetation. *Ellison, 1960.* Earthworm casts have been found to be more numerous under undisturbed litter. *Ellison, 1960.* Standing dead as a plant protective mechanism has been reported for a number of species. *Ganskopp et al., 1993; Johnson and Nichols, 1982; O'Connor, 1991; Painter, 1987; Sheppard, 1919; Weaver, 1954; Williams, 1897.* **(HCPC)**

Refer to response to comment 7b.5.

7b.5 Management must ensure ample water availability for wildlife and vegetative needs as a priority above all other uses, including commercial livestock grazing. Current conditions of area watersheds, including riparian areas, soil resiliency and moisture retention, peak flows and runoff rates, seasonal ranges of water table levels, function of riparian areas for wildlife dispersal, etc., must be compared to historical ecological conditions prior to livestock grazing in the area. Some of this long-term data is likely not available for the Joseph Rangeland area, but areas with similar aspect, soils, and fire regimes can be studied and compared to this site. It is critical that the Forest Service demonstrate what impact grazing has had historically in order to determine what the future impacts will be and to determine what the opportunity costs are for the ecosystem if grazing continues instead of allowing natural processes to shape vegetative communities and aquatic environments. Conditions and trends concerning water availability, wildlife populations and native vegetation abundance and distribution must also be compared to historical pre-livestock conditions in this area. **(HCPC)**

Alternative 1 addresses the conditions that would begin to develop if livestock grazing were eliminated. However, as stated on pages 2 and 3 of the DEIS, we did not use the pre-settlement conditions as our baseline for existing conditions. Rather, we used the current conditions, as developed over almost 100 years of livestock grazing as the existing condition. We then compared the alternatives to this baseline condition.

7b.6 Almost no quantifiable data is available in the DEIS regarding biological crusts. *DEIS 112.* Nonetheless, an alternative that propose increased or at least maintained detrimental biological crust impacts is proposed. *DEIS 113.* **(HCPC)**

We added information regarding biological crusts to the FEIS. We believe that all of the alternatives would at least maintain the current level of impact to biological crusts.

7b.7 The WWNF argument regarding soil productivity is internally inconsistent, and it is factually inaccurate. The DEIS states that livestock grazing, under the current system, will produce a "potential decrease" in ground cover from the current level, and FLOW would argue that the term "potential" is a strong understatement in a system that already shows impacted soil productivity from the current grazing system. Hence, not only does the USFS contradict its own evidence in asserting that Alternatives 2 and 3 will enhance soil productivity, it unrealistically minimizes the risk that maintaining the current stocking levels will decrease soil productivity. **(FLOW)**

The DEIS did not imply that this effect was occurring everywhere, so we qualified it in the FEIS. In Alternative 2, we do not anticipate an improvement in soil conditions, but the possibility in Alternative 3 Modified occurs. We rephrased the paragraph on Page 112 to clarify.

7c. Water Quality / Hydrology

7c.1 Water Quality: This section of the document addresses only temperature and sediment as water quality impacts from livestock grazing. Impacts from animal wastes, including nutrients and bacteria, should also be identified and added to the indicators identified in Table 25, "Matrix Indicators for Grazing Sensitive Parameters," on page 132. **(USDI)**

We did not analyze the impacts of cattle waste on the nutrient level in streams because it is not a factor for which streams are listed as 303(d) water quality limited streams. The level of livestock grazing in the JCRAA was not considered to contribute a measurable level of nitrogen and phosphorous to the streams in the analysis area.

7c.2 Soil compaction issues are not of significant levels in this area. The frost heaving and thawing and the soil types reduce the concern. **(permittees)**

We do identify that soil concerns are localized on Pages 111 and 112 of the DEIS. The soil types in this area can be susceptible to damage.

7c.3 On Page 117, add "increased tree density" to the list of causes of flow changes **(permittees)**

We agree with your suggestion and added "increased tree density" to the list of causes.

7c.4 Question the usefulness of Table 25. Not sure it adds to the EIS. **(permittees)**

Table 25 helps set the stage for Table 31 which is the cumulative effects analysis. We've added some language to improve the flow between tables.

7c.5 The statement on Page 149 of unprotected riparian areas lacking diversity is not always true. This could be resolved by adding "some" riparian area . . . **(permittees)**

We changed the phrasing on page 149 of the DEIS to state that these areas "tend to lack this structural diversity, and this in turn reduces species diversity."

7c.6 Degraded conditions statement on Page 121 is inappropriate because it is a sacrifice area (changed area that should not be called degraded). Permittees request these areas not be called degraded but be called sacrifice. **(permittees)**

We feel that 'degraded' is the proper characterization for these water gap areas. However, we agree with your comment that these areas were strategically selected at the time that exclosures were installed to limit livestock impacts to certain areas. We rewrote the paragraph to better reflect this intent.

7c.7 The last paragraph on Page 121 makes is sound like all the headwaters are in poor condition solely due to livestock. Much of the watershed conditions would be true even without livestock due to wildlife. This paragraph needs rewritten. **(permittees)**

Our data supports this conclusion about the role that livestock play in trailing, trampling, and deciduous herbivory, although we acknowledge that wildlife have impacts on riparian conditions in general. As described on Page 124 of the DEIS, this effect is concentrated where livestock are more likely to graze (approximately 19 percent of the analysis area) and there is very little of this effect where slopes are not conducive to livestock access.

7c.8 Bank Stability/Water Quality issue is focused on the Swamp Creek area, however, it does have ramification across the permits. The bank stability issue has been a focus of the Swamp Creek Restoration Project for several years. It has been claimed that the bank stability of the Swamp Creek meadows was severely limiting water quality in the Swamp Creek drainage. It has also been assumed that livestock grazing was hampering the recovery of that area, particularly as evidenced by the lack of willows and the lack of recruitment of the alders. The NRT indicated that this was not necessarily so. They call into question the historical significance of willows in this watershed as stated by Sandy Wymans, " Willows don't normally grow in association with alder." Wayne Elmore further confirmed this stating that "no willow to scattered willow in alder communities. " Additionally the NRT fish biologist Ron Wiley "didn't feel management here was slowing recovery down and that we would get the same rate of recovery with or without grazing in the way it is being managed now. " **(permittees)**

As a result of the Riparian Stream Team review, additional monitoring of vegetation communities occurred in August of 2004 and would be continued under Alternative 3 Modified or 4. Refer to Appendix D for the monitoring protocol.

7c.9 The fish biologist Ron Wiley stated: "Don't try to predict amounts and time frames" this was in relation to rate of recovery of a stream. **(permittees)**

We appreciate the advice of the Riparian Streams Team, but this advice is not consistent with the intent of NEPA to provide the decision maker with a clear choice among alternatives, which includes measurable indicators for effects, including extent, magnitude, and timing. Therefore, we estimated the effects about these factors.

7c.10 Stating that you will obtain 95% streambank stability without knowing where you are today is not appropriate. It is "too much too soon." As stated before baseline data should be acquired in the near future utilizing the Al Winward Greenline method, then repeat this monitoring in 5 years expecting an upward trend. **(permittees)**

In August 2004, streambank stability along the Meadow Segment of Swamp Creek was estimated to be 70 percent.

7c.11 Vegetation does not reduce water temperature as stated here. It does lots of good things but not that. Vegetation improves bank stability, provides food for insects, and provides shade to slow the warming of water temperature. But it does not cool water. **(permittees)**

We changed the paragraph on Page 122 to state that streamside vegetation helps maintain cooler stream temperatures. Although streamside vegetation provides many benefits, we recognize that it cannot refrigerate water and we did not intend to imply that it does.

7c.12 Since stream bank stability has not been measured, how do you know it is not meeting standard? **(permittees)**

PacFish Priority watersheds have a standards for 90 percent streambank stability. The Wallowa-Whitman Enclosure B interpretation recommends no more than 5 percent new instability so long as it does not carry over into the next year. Certain streams have a high level of natural instability and cannot meet the 90 percent stability standard even if no human-induced activities were present. In these cases, a site-specific standard would be developed. The review of Swamp Creek by the Riparian Stream Team resulted in a range of values that might be appropriate for that type of stream, which have been incorporated into this analysis.

7c.13 The first & second paragraphs regarding peak/base flows on page 125 have a very negative tone against livestock. This section is unacceptable. Needs rewritten. **(permittees)**

We reviewed the paragraph and made some changes. Please review the new phrasingin the FEIS.

7c.14 The fish biologist Ron Wiley stated: "Don't try to predict amounts and time frames" this was in relation to rate of recovery of a stream. The time expected to reach these goals as shown on Page 133 is too short. Also since we don't know the shrub density currently how can we make these predictions? **(permittees)**

Refer to Response to Comment 7c.9. We do anticipate a difference in 5 to 10 years for streambank stability. Please note that table 30 has been modified to match the information on Page 48. This was an error.

7c.15 How are livestock impacts to Joseph Creek being mitigated, given that the water quality of Joseph Creek is below state water quality standards, and given that the Wild & Scenic Rivers Act states that no human induced actions can occur that will reduce water quality, and given that any adverse impacts to water quality, even though within Forest Plan Standard and Guidelines, will be corrected immediately (Joseph Creek Wild & Scenic River Management Plan), and given that "some localized impacts to riparian vegetation were noted" within the wild and scenic corridor? **(NPTEC)**

While water quality parameters are below state levels, non of the alternatives would increase the parameters for which the streams were listed.

7c.16 Table 28 discusses water quality. Were there any other parameters analyzed, such as fecal coliform, E coli, or fish habitat quality? Was there a limiting factors analysis performed? And, if so, what factors were identified and how do the alternatives outlined address them? How were the conclusions drawn in Table 29 regarding the increase in maximum summer water temperatures in 10 years and percent cobble embeddedness? Were other factors considered, such as percent fines? **(NPTEC)**

A limiting factor analysis was not considered necessary to make a reasoned choice among alternatives. These assumptions were based on the professional judgment of the project hydrologist who predicted no measurable increase in these parameters despite the presence or absence of livestock grazing.

7c.17 "Give management and enhancement of water quality, protection of watercourses and streamside management units, and fish habitat priority over uses described or implied in all other management standards or guidelines. *LRMP at 4-22.* The Standard and Guidelines is not disclosed in the DEIS.

Thanks for the notice. We added the standard and guideline you referenced.

7c.18 The Lower Chesnimnus and Elk Creek are 303(d) listed for sedimentation and summer rearing temperatures, and Lower and Middle Crow Creeks, Peavine Creek and Joseph Creek are 303(d) listed for summer rearing temperatures. *DEIS 119.* **(HCPC)**

The courts have ruled in a series of cases that federal agencies, including the Forest Service, may not authorize an activity that causes or contributes to Water Quality Standard ("WQS") violations pursuant to Sections 303 and 313 of Clean Water Act. *Most notably Northwest Indian Cemetery*

Protective v. Peterson, 764 F.2d 581, 588 (9th Cir. 1985). In other words, the EIS must address whether or not the proposed project would cause or contribute to WQS violations. This anti-degradation standard means that no degradation will occur – not that some degradation can occur as long as the beneficial uses are protected and standards are met. *See, PUD No. 1 of Jefferson County v. Washington Department of Ecology, 114 S.Ct 1900 (1994).*
Instead of analyzing water quality effects in this manner, the DEIS states that as long as conditions are *maintained* relative to the parameters for which a stream is 303(d) listed then the Clean Water Act is satisfied. *DEIS 122.* There is no dispute that livestock grazing is contributing to the temperature and sedimentation concerns in the analysis area. *DEIS 116, 119, 121, 124.* **(HCPC)**

When these streams were listed as water-quality limited, livestock grazing was occurring and at a higher intensity than currently occurs. The Oregon Administrative Rules at OAR 340-041-0004 give the purpose of the Antidegradition Policy as a guide for decisions that affect water quality such that unnecessary further degradation from new or increased point and nonpoint sources of pollution is prevented, and to protect, maintain, and enhance existing surface water quality to ensure the full protection of all existing beneficial uses. Continued grazing, and at lower stocking levels than in the past, would decrease the parameters for which these streams were listed and be consistent with the State of Oregon Antidegradation Policy.

7c.19 Please clarify which areas are in compliance with the 95 percent utilization standard; specifically, are riparian areas being disproportionately grazed? It is important to consider that the corridor itself, the area that should be receiving the most protection, may actually be receiving the highest level of grazing pressure. Although the DEIS states that 95 percent of monitoring sites have remained within prescribed utilization parameters, this does not ensure the public that riparian areas do not make up a disproportionately high number of the 5 percent in violation. That is, the 95 percent figure may mask intense pressure on riparian areas by measuring utilization in all areas, including non-riparian areas. It would be instructive to see how many monitoring sites are in riparian areas, and how many of these have been found in violation of utilization standards. **(FLOW)**

First, we would like to clarify that the utilization standard is not 95 percent, but in an upland site, the allowable utilization is 55 percent for grasslands in satisfactory condition, unless otherwise specified. In riparian areas, allowable utilization for grasses in satisfactory condition is 45 percent, unless otherwise specified. We added information in the FEIS to describe the mix of riparian and upland sites among those reported in the utilization table.

7c.20 Alternatives 2 and 3 do not protect and maintain aquatic resources, and we disagree with the finding that "an improving trend is expected for all perennial stream systems within the JCRAA" as a result of addressing impacts in "localized concern areas" (p.122). The term "localized" is apparently somewhat relative. Joseph Creek itself has multi-mile stretches where the Wild and Scenic Corridor show evidence of negative impacts—soil disturbance, stream contamination, reduced riparian reserves—from livestock grazing. There are many areas where cows can access riparian areas; in those areas, cows are having impacts that exceed the standard for "maintaining" conditions. **(FLOW)**

The Joseph Creek Wild and Scenic River Management Plan (Page 5) gives direction that no human-caused action may be undertaken which will result in a measurable reduction of existing water quality or that will prevent the meeting of Oregon State water quality standards. The evidence of livestock impacts documented in your photograph monitoring report show evidence that cows were present, but certainly does not rise to the standard of a measurable reduction in water quality or that will prevent the meeting of Oregon State water-quality standards.

Your review in August of 2004 occurred during a time when no livestock grazing is authorized. The Joseph Creek vicinity is grazed in the spring (April – May) and the fall (September-December). In August 2004, a group of 10 cow-calf pairs and 1 dry cow that were missed when moving a herd from the Swamp Creek allotment spent about two weeks in the vicinity of Joseph Creek before they were detected. The livestock were removed upon notifying the permittee. Elk activity in the Joseph Creek area is likely throughout the summer because grasses on the adjacent ridges reduce in palatability. We also received several reports of a moose residing in the corridor this summer. All of these factors contribute to evidence of large animals being in the vicinity of Joseph Creek.

7c.21 Alternative 1 is the best alternative in terms of enhancing the water quality of the Joseph Creek watershed. Streams in the watershed yearly exceed state standards for summer steelhead rearing temperatures, and segments of some streams in the system exceed standards for sedimentation. Bank erosion and instability present problems throughout the Joseph Creek watershed, particularly in areas where cattle have access to the stream (where the canyon isn't too steep). Additionally, livestock presence in the stream exacerbates fecal contamination, which, according to the DEIS, can and has had deleterious effects on herpetofauna (amphibians). The DEIS asserts that, at worst, the water quality will be "maintained", pending the development of a restoration plan for the Grande Ronde sub-basin. In fact, the water quality is being degraded by livestock impacts. **(FLOW)**

We recognize that existing temperature and sediment levels exceed State water quality standards in some streams of the JCRAA, but our analysis shows that activities are not expected to measurably increase them.
We added information in the FEIS related to fecal contamination.

Even the maintenance of current conditions would not ensure that the proposed grazing level will satisfy the "protect and enhance" standard for Wild Joseph Creek and the streams feeding it. Although the USFS asserts that stream bank stability surveys show 95 percent stability, FLOW counters that these studies have glossed over multi-mile stretches within the corridor where erosion appears to be a problem by averaging over all riparian areas. Where the cows can get to the streams, they are causing impacts to the water quality, and there are many areas throughout the planning area and within the Wild and Scenic Corridor where this is occurring. Additionally, we are concerned that sedimentation effects will extend beyond local erosive areas downstream to areas that appear to have acceptable streambank stability. **(FLOW)**

Level 2 surveys were conducted for this area. It is customary through this sampling process to estimate streambank stability on a reach by reach basis. Refer to the channel morphology sections (Pages 116, 122, and 127). Potential sedimentation effects from localized areas mentioned on Page 116 (or 117) under channel morphology (please note use of the word "can" in the 2nd to last sentence of the 3rd paragraph) are not expected to

affect streambank stability downstream, but rather be confined to the water column and streambed.

7c.22 The DEIS states that, as a result of the TMDL process, conditions must be "maintained or enhanced relative to parameters for which a 303(d) stream is listed," pending the development of a Water Quality Restoration Plan for the Lower Grande Ronde Sub-basin. The Preferred Alternative is not consistent with this objective, as continued grazing in riparian reserves will continue to limit the productivity in streamside vegetation, which is crucial for the water quality of streams in providing shade for the stream, in stabilizing the banks (preventing the widening of the stream and subsequent stream temperature increases), and in reducing sedimentation. The loss of soil productivity, even in local riparian areas, will gradually diminish the quality of the water relative to the crucial parameters. As the DEIS states, "even small areas of bank disturbance can contribute to downstream sedimentation," and the Preferred Alternative does not present a detailed analysis of how riparian and water quality impacts will be limited by maintaining current stocking levels. **(FLOW)**

Page 121 of the DEIS states that current management has potential for improving water quality and fish habitat and no matrix indicator ratings are expected to change. Also, on Page 134, the DEIS states that implementation of Alternatives 2 or 3 would not noticeably increase the risk of adverse cumulative effects. These conclusions are supported by analysis from pages 121 to 135 of the DEIS and in the Biological Assessment.

7c.23 It would be helpful to have a more detailed discussion about how proposed grazing management in each of the sub-watersheds is expected to improve water quality for listed parameters and functions, with more site specific information so the readers will better understand stream condition and management direction for protecting functioning streams and restoring degraded streams. EPA also recommends that there be a commitment to adopt the TMDL targets once that analysis has been completed. EPA recognizes that Alternative 3 includes adaptive measures to respond to changing environmental conditions related to aquatic resources. EPA is encouraged to see that the draft EIS predicts trends of improvement in achieving riparian management objectives and water quality for some streams. We are concerned that we do not see similar positive projections for other degraded streams. (EPA)

The tables on Pages 128 through 131 provide the site-specific analysis that supports the conclusions on water quality. Refer to Tables 23 and 24 for improvement projects by allotment, Table 27 for management interpretations of recovery potential by stream type, and Table 31 for the cumulative watershed effects analysis by alternative. Also refer to 1st paragraph under Alternative 2 – Aquatic Habitat for a more detailed discussion of grazing management changes. We will be preparing a WQMP upon completion of the TMDL and will be incorporating the results of the TMDL into the plan.

7c. 24. EPA recommends that the final EIS include a more robust cumulative effects analysis so that for each key issue the reader and the decision maker can clearly understand the direction that the overall ecological health of the project area is likely to take under the proposed management alternatives. The draft EIS states that most of the impacts to water quality are and will be due to cumulative impacts from past activities and potential future activities other than grazing, such as road maintenance, fuels reduction and recreation. The draft EIS also states that the project area

has a moderate to high risk of cumulative watershed effects. It is unclear to us whether Alternative 3 contains a grazing management strategy that takes the other activities into account when considering things like the need to protect and improve critical habitat.

We altered the table on Page 136 to include a ranking for activities other than grazing.

7c.25. EPA supports adaptive management that allows the USFS to respond to range and habitat conditions. While we would expect that under this kind of management, grazing would be curtailed or eliminated in areas where conditions are becoming degraded or functions are becoming impaired, the document did not clearly state that this would be the case. EPA recommends that the EIS contain more specific information on how the USFS will respond to changing conditions.

The mitigation and monitoring sections on Pages 49 through 53 combine to limit impacts to levels below Forest Plan standards and guidelines. The shadow box on Page 72 of the FEIS indicates what steps are taken under any of the alternatives if compliance monitoring indicates that standards are not being followed.

7c.26 EPA recommends that the EIS identify who will do the monitoring and how often monitoring will occur. We also recommend that the EIS include a more thorough explanation of how information from the proposed monitoring will be used to incrementally move the area towards desired future conditions. The EIS states that steelhead monitoring will include monitoring for redds and that redds will be protected when found. EPA recommends further discussion about the protective measures that will be taken to protect redds that are found in the project area.

Redd protection involves fencing the area from livestock access. Electrical fencing or instream caging are used protect the redd from livestock access. The shadow box on Pages 71 and 72 of the FEIS indicate what steps are taken if monitoring results indicate a need for changes in grazing management.

7c.27. The EIS states that the USFS consulted with the Nez Perce Tribe and Confederated Tribes of Umatilla. The EIS discusses Treaty Rights that exist in the area and the fact that management under Alternative 3 will act to preserve these rights. However the EIS does not discuss what key issues were raised by the Tribes and how these issues helped in the development of alternatives or management direction. EPA recommends including a section on Tribal consultation in the EIS.

We added the requested information in the FEIS.

8. Roadless and Roads

8.1 Although the area has high open road densities which are affecting wildlife habitat (*DEIS 137, 141*), there is no consideration in the DEIS of potential road closures. At a minimum, there should be an analysis of roads that exist primarily for livestock management. **(HCPC)**

Several NEPA decisions have been made for closing roads in the JCRA, and access for livestock management was considered in those decisions. Those decisions include the Lone Dog Vegetation Management Project, Hungry Bob Thinning and Underburning Project, Wapiti Ecosystem Management Project, Haypen Vegetation Management Project, and Bugcheck Salvage and Underburning Project. The Baldwin Vegetation and Road Management Project will reach a decision point soon and will also makes decisions on road closures. These projects prescribe numerous road closures, but have been implemented in phases as funding arises. Once these decisions are fully implemented, open road densities in the JCRAA will be sharply reduced. We did not feel that combining the JCRA with an access management project was necessary when so many previous NEPA decisions already address road management in this vicinity.

9. Wild and Scenic Rivers

9.1 There is a scenic water way (Joseph Creek) and two Research Natural Areas identified in the EIS The permittees recognize these special places and have been managing accordingly for many years. **(permittees)**

We appreciate your efforts and your comment.

9.2 20% shrub utilization standard is of concern if being able to identify whether livestock or wildlife are the cause. **(permittees)**

Because the standard does not distinguish which species utilized the plant, we do not believe that distinguishing between the uses is necessary.

9.3 The Wild and Scenic Rivers Act ("WSRA") provides that the Forest Service shall administer the Joseph WSR primarily to protect and enhance its outstandingly remarkable values. *16 U.S.C. § 1281(a).* The Forest Service has violated this duty by allowing livestock grazing that among other things degrades native plants, harms wild salmonids, and adversely affects recreational opportunities. There are "isolated small areas of unsatisfactory range condition" in the Joseph WSR corridor. *DEIS 3, 173.* Alternative 3 calls for allowable shrub utilization in the WSR corridor of 20% and allowable forage utilization of 50%. *DEIS at viii.* Current streambank stability within the Joseph WSRis at 90%, which is below PACFISH standards. *DEIS 176.* **(HCPC)**

The Joseph Creek Wild and Scenic River Management Plan (a Forest Plan amendment) addresses the appropriate level of grazing in the corridor (Page 6). On Pages 173 through 180 of the DEIS, the effects of grazing on the outstandingly remarkable values are discussed and compared to desired conditions contained in the Management Plan. We believe that all alternatives are consistent with direction in the Management Plan.

9.4 The DEIS fails to consider, analyze, or disclose how grazing will protect or enhance the values of the Joseph WSR. The DEIS inappropriately dismisses any impacts on the river on the basis

that livestock spend little or no time within the WSR corridor. That is not the correct legal standard for determining impacts from grazing on the river. The Forest Service must take such action respecting grazing under these permits to protect the values of the river, even where the grazing does not occur immediately within the corridor. Where grazing does take place within the corridor, the Forest Service must affirmatively protect and enhance the river's values. Section 10 of the Wild and Scenic Rivers Act requires that "Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system" and that "In such administration primary emphasis shall be given to protecting its esthetic, scenic, historic, archeologic, and scientific features." *16 C.F.R. § 1281(a).* **(HCPC)**

We base our determination of consistency with the Wild and Scenic River Act on how the alternatives compare to management standards established by the Joseph Creek Wild and Scenic River Management Plan. This plan allows for a specific amount of livestock presence. Our analysis shows that all of the alternatives are consistent with the desired conditions contained in the management plan.

9.5 In addition, under section 10 of the Wild and Scenic Rivers Act, the Forest Service has an obligation to ensure that all Forest Service actions are consistent with protecting and enhancing the river, which is substantively different than merely finding that the range allotments won't adversely affect the "outstandingly remarkable values" for which it was designated. Given the fact that the DEIS documents that adverse effects will occur, the DEIS has demonstrated that the proposed project will not, in fact, protect and enhance the "outstandingly remarkable values" present in the Joseph WSR, in violation of the Wild and Scenic Rivers Act. 16 C.F.R. § 1281(a). **(HCPC)**

We believe that the opportunity to address Wild and Scenic River Act mandate to protect and enhance the ORVs was addressed when the Joseph Creek Wild and Scenic River Management Plan was developed under a separate NEPA process and adopted into the Forest Plan in 1993. We compared the alternatives to management direction in the plan and believe that consistency with the plan implies consistency with the Act.

9.6 Overall, past and current grazing practices have extensively degraded the Joseph Creek Rangeland Analysis area. The EIS calls for alternatives that would attempt to remedy the problem through increased monitoring and controls of the livestock herd. This mitigation is not proven effective and the USFS did not offer any evidence supporting how a monitoring program may avoid Wild and Scenic Rivers Act and other environmental law violations. In addition, the effects upon water quality, plants, soils, wildlife, and recreation are substantial. **(FLOW)**

We discuss the remnant effects of the homesteading era in Joseph Creek, but the current grazing system (Alternative 2) is consistent with management direction in the Wild and Scenic River Management Plan. These remnant effects (establishment of cheatgrass where fields were cultivated) were present at the time of the river's designation and are not likely to change unless active restoration is used to reestablish native species. Alternative 3 Modified does not call for increased monitoring and controls. Rather, because of its adaptive nature, it ensures continued compliance of grazing with the Wild and Scenic River Management Plan by setting specific utilization standards for the corridor.

9.7 The outstandingly remarkable values of "Fish and Water Quality" and "Wildlife" are not protected and enhanced through current management, or through a continuation of the current stocking levels. FLOW has observed widespread cattle grazing impacts in the Wild and Scenic River Corridor. These impacts include significant soil disturbance and compaction, as well as in-stream fecal contamination. We also documented instances of bank erosion and trampling. These impacts were more than "isolated", occurring frequently in a multi-mile stretch of Joseph Creek. Widespread riparian corridor effects are known to worsen conditions for stream temperature, sedimentation, vegetation condition—and these factors, in turn, influence the health of fish and wildlife. We are attaching an abbreviated report of our field photographs of livestock impacts (on cd-rom) with these comments. Ultimately, the factual basis for many DEIS conclusions may be false; the livestock impacts under Alternatives 2 and 3 may be too severe to be comply with water quality, range condition, wildlife, vegetation condition, and recreational management goals. **(FLOW)**

Indeed, impacts within the Wild and Scenic Corridor (some of them photo-documented by FLOW field observations) on a local or widespread scale are inconsistent with the "protect and enhance" standard. The DEIS later states that "any adverse impacts to ORVs, water quality, or free flow, even within Forest Plan standards and guidelines, will be corrected immediately" (p. 175). It is counterproductive for the WWNF, with this goal in mind, to put forth a Preferred Alternative that, by its design, encourages impacts to soils that threaten ORVs. The soil resource, particularly in riparian areas, is inextricably linked to the health of the vegetation and aquatic resources in riparian areas. We would encourage the WWNF to expand its alternatives to include stricter exclusions of livestock grazing, particularly in the Wild and Scenic River Corridor. **(FLOW)**

We respectfully disagree with your characterization of effects as significant soil disturbance and compaction and stream fecal contamination. The Wild and Scenic River Management Plan and Forest Plan standards and guidelines in general allow for a specified amount of impact related to livestock in the Joseph Creek corridor. Some of the impacts you viewed may also be contributed by deer and elk. In fact, we received several reports in the summer of 2004 to a moose residing in the corridor.

9.8 The DEIS states that "all alternatives display a similar response to the indicators for Issue 1" and will "maintain current conditions" (p. 133). Rather than this being an assurance of the excellent health of the river corridor, the statement would seem to indicate that the indicators are not sensitive enough to detect conditions that do or do not "protect and enhance" the ORVs of the Joseph Creek Wild and Scenic River Corridor. A Wild river, according to the WSRA and the EA for the Joseph Creek W&S RMP, should have "watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America." The utilization standards proposed by the preferred alternative do not ensure that the habitat in the Wild and Scenic River Corridor meet the high standards set by the Wild and Scenic Rivers Act for a Wild river. If the current situation signifies compliance with the Forest Plan, then the Forest Plan itself may be inconsistent with the Wild and Scenic Rivers Act. Indeed, the DEIS indicates that such conflicts should be resolved in favor of compliance with the WSRA. Additionally, the DEIS is also at odds with the standards for "protecting and enhancing" ORVs outlined in the Wild and Scenic River Management Plan for Joseph Creek. **(FLOW)**

Refer to the response to comments 9.4 and 9.5.

9.9 Clearly, there are impacts to the river—many of them outlined in the Aquatic Habitat Section—that are inconsistent with enhancing and maintaining the Water Quality, Fisheries and Wildlife resources as though Joseph Creek were in its "primitive" state, as suggested by the WSRA. Alternatives 2 and 3 are not equivalent to Alternative 1 in terms of protecting and enhancing the ORVs of Joseph Creek. Furthermore, it would seem that, particularly for impacts within the Wild and Scenic River corridor, Alternative 1 would depart from 2 and 3 in terms of reducing the occurrences of stream bank erosion, fecal contamination, overgrazed vegetation, soil compaction, and other impacts. In stating that the alternatives are equivalent, the DEIS is misleading the public. Alternative 1 clearly removes the cause of many impacts—namely, livestock. **(FLOW)**

Although the issue indicator does not vary among alternatives, we provided discussion on Pages 173 to 180 of the DEIS about existing conditions within the Wild and Scenic River Corridor and how the alternatives vary in their effects on conditions in the corridor.

9.10 The DEIS states that "small stream reaches in other drainages also would not meet the 95-percent standard" for stream bank stability, in addition to violations on Swamp Creek. However, the DEIS suggests, that, although local areas may be in violation, the average of all sites meets the standard. FLOW questions whether the standard is adequate for the Wild and Scenic River corridor; we have observed stream bank damage in the corridor itself, and even if these were local cases, it would be inconsistent with the "protect and enhance" directive for water quality and fisheries in the corridor. Water quality, both in terms of sediment load and temperature, is damaged by stream bank loss. The impact of grazing in the corridor appears to be more than local and possibly even a chronic problem on large stretches of the river—wherever the cows can gain access to riparian areas. Chronic, grazing-induced erosion, pollution, damage to riparian corridors and reserves, and other water quality impacts render the current situation inadequate for the purposes of satisfying the WSRA "protect and enhance" standard. Upstream local damage can cause diffuse downstream impacts, in terms of sedimentation and possible increases in stream temperature (a result of the loss of streamside cover, and the widening of the stream). Hence, the erosion and sedimentation problem may threaten the fisheries and water quality ORV's. **(FLOW)**

Refer to the response to comment 7.c.20.

9.11 FLOW would contend that the DEIS falsely states the Joseph Creek Wild and Scenic corridor is "lightly used by livestock" (p. 64). There is ample evidence of past and present livestock use within the corridor, including in-stream manure, bank erosion, compacted soil, and trampled and browsed vegetation. "Light use" is apparently a relative term and does not necessarily imply compliance with the provisions of the WSRA. While the past 5 years may have seen improvements in the grazing system that have slowed the rate of degradation for water quality and fisheries values in the JCRAA due to grazing, the river's values are not being truly "protected and enhanced." Simply slowing the pace of degradation does not meet the standard of "improvement" that is set out by the WSRA "protect and enhance" standard. **(FLOW)**

Refer to the response to comment 9.9.

9.12 It is inaccurate for the WWNF to assert that "ongoing impacts result from roads, vegetation management, and recreation and occur at a greater intensity than those resulting from grazing"

for the JCRAA, particularly in the Wild and Scenic River corridor (p. 111). In the corridor, grazing is the most serious impact threatening the Water Quality and Fisheries ORVs for which it was designated. Grazing impacts are important, as much for their breadth as for their acuteness. Livestock use is evident throughout many areas of the Wild and Scenic corridor, causing widespread water quality impacts that, in turn, affect fisheries resources, including threatened steelhead. In riparian areas, the DEIS has correctly noted that livestock grazing "may be the single greatest impact," a statement that seems to establish livestock grazing as a primary concern. **(FLOW)**

Refer to the response to comment 9.9.

9.13 For a corridor that should be managed to promote excellent water quality and fisheries values, the DEIS provides no rationale for its conclusion that "riparian shrubs are present along Joseph Creek and its tributaries at a density and species diversity that would occur naturally. This condition is assumed to occur when utilization of shrubs by livestock and big game is less than 20 percent." This is particularly unhelpful if the shrub utilization measurements occur without a protocol. The residual forage standards seem similarly baseless. The DEIS provides no rationale why these utilization and residual forage levels are adequate to maintain the functions performed by riparian vegetation—providing stream shade, wildlife forage, and soil stability. Problematically, maintaining the current situation by adhering to the current stocking levels under Alt. 3 may not necessarily protect the outstandingly remarkable values of Wild and Scenic Joseph Creek, or maintain riparian areas in such a way that the limiting parameters for water quality in the JCRAA are not worsened. **(FLOW)**

Refer to the response to comment 9.9.

9.14 Obviously, the success or failure of WWNF to "protect and enhance" the water quality of Joseph Creek and its tributaries will directly influence the health of species dependent on that water—amphibians (poorly catalogued by the WWNF), threatened steelhead trout and sensitive redband trout. Thus, water quality issues are directly linked to the Fisheries value for which Joseph Creek was considered "outstandingly remarkable." Any and all measures should be taken to promote the health of these species, particularly in a watershed that is chronically limited by excessive summer rearing temperatures. Incidentally, we would encourage the WWNF to expand its knowledge of the herpetofauna in the JCRAA, as the DEIS admits a limited knowledge of the species present. **(FLOW)**

Refer to the response to comment 9.9.

9.15 Indeed, impacts within the Wild and Scenic Corridor (some of them photo-documented by FLOW field observations) on a local or widespread scale are inconsistent with the "protect and enhance" standard. The DEIS later states that "any adverse impacts to ORVs, water quality, or free flow, even within Forest Plan standards and guidelines, will be corrected immediately" (p. 175). It is counterproductive for the WWNF, with this goal in mind, to put forth a Preferred Alternative that, by its design, encourages impacts to soils that threaten ORVs. The soil resource, particularly in riparian areas, is inextricably linked to the health of the vegetation and aquatic resources in riparian areas. We would encourage the WWNF to expand its alternatives to include stricter exclusions of livestock grazing, particularly in the Wild and Scenic River Corridor. **(FLOW)**

Refer to the response to comment 9.9.

9.16 I am very concerned about the impacts that cattle grazing has on the Joseph Creek Wild and Scenic River. The soil is being compacted and disturbed, water quality is being degraded, recreation conflicts exist with those wishing a non-polluted wilderness experience, and rare plant and wildlife species are adversely affected. Livestock grazing in riparian areas are of particular concern, where often in the late summer these areas are used to the point that grazing negatively impacts water quality, soil productivity, streamside vegetation, and other organiswms that depend on these elements of riparian zones. **(Einhorn,. Bellinger, Di Micele)**

Refer to the response to comment 9.9.

9.17 As an aquatic ecologist, I believe the impacts on water quality and riparian areas from cattle grazing on the Joseph Creek wild and Scenic River are extremely detrimental. **(Kann)**

We appreciate your expertise, but the Joseph Creek Wild and Scenic River Management Plan describes the level of impact from cattle grazing that is appropriate for this river. We believe that the alternatives are consistent with the management plan.

9.18 There are significant impacts from cattle grazing in the Joseph Creek Rangeland Allotments for numerous threatened and sensitive species including redband trout, steelhead, Rocky Mountain bighorn sheep, elk, and several rare plants. The public interest is in preserving these forests, streams, and meadows for wildlife instead of continuing to degrade the ecological integrity of our public lands **(Kann, Einhorn,. Bellinger, Di Micele)**

Refer to the response to comment 9.17.

9.19 The Wild and Scenic Rivers Act requires that the outstandingly remarkable values for which a river was designated must be 'protected and enhanced." The preferred alternative in the DEIS does not present a grazing scheme that demonstrably achieves this standard for key outstandingly remarkable values – water quality, fisheries, and wildlife. The Wallowa-Whitman National Forest should protect the values of Joseph Creek that caused it to be included in the Wild and Scenic River system. **(Kann, Einhorn,. Bellinger, Di Micele)**

Refer to the response to comment 9.17.

10. NEPA Process

10c. Proposed Action and Alternatives

10c.1 Alternative 2 and 3 seem to be very close. Alternative 2 is supposedly the current management and alternative 3 is adaptive management. The current management incorporates nearly all of the adaptive management activities identified in alternative 3 and yet gives the

producers more assurances. Permittees propose a combined alternative that would be a better solution. **(permittees)**

We will be keeping both alternatives in the FEIS. We will also be adding a fourth alternative which was suggested by commenters to the DEIS. Alternatives 2 and 3 Modified appear to be similar at first glance, but Alternative 3 Modified is designed to allow grazing schedules and intensities to change over time in response to new information. While stocking levels for each allotment are the same between Alternative 2 and 3 Modified, how each pasture is grazed could change greatly over time, so long as the grazing scheme is consistent with Forest Plan standards and guidelines.

10c.2 The Tribe questions whether the Forest analyzed a reasonable range of alternatives. Alternatives 2 and 3 are essentially the same. As stated on page 31 of the DEIS, "Alternative 3 proposes the same level of overall livestock forage utilization across the 11 allotments as Alternative 2" and on page viii, "The 11 allotments would be stocked at the same level as Alternative 2." Because Alternatives 2 and 3 are essentially the same in terms of the permitted level of grazing and associated impacts, the Tribe feels the range of alternatives analyzed by the Forest is inadequate. The Forest should analyze a reasonable range of alternatives, namely an alternative that is designed to be the least harmful to the landscape and most compatible with responsible fish and wildlife management, as discussed throughout the Tribe's comments below. **(NPTEC)**

In response to your comment, we have added a fourth alternative to the FEIS that takes a different approach to fish, wildlife, and botanical resource management in the JCRAA.

10c.3 The Nez Perce Tribe would like to see the Forest Service analyze and implement an alternative that provides areas-and eliminating streambank trampling entirely-the Forest Service could manage a sustainable grazing operation where anadromous fish, aquatic resources, and wildlife habitat do not bear the risk of harmful grazing practices. The Tribe also urges the Forest Service to review the number of cow/calf pairs allowed in each allotment, as well as the timing for grazing on the allotment. If the Forest determines that total riparian exclusion is unfeasible, then the Forest Service must take a hard look at reducing the number of cow/calf pairs, and at limiting the amount of time grazing will be permitted under each allotment. **(NPTEC)**

In response to your comment, we have added a fourth alternative to the FEIS that takes a different approach to fish, wildlife, and botanical resource management in the JCRAA.

10c.4 NEPA documents must discuss alternatives to the proposed action in order to "provid(e) a clear basis for choice among options by the decision maker and the public." *40 C.F.R. §§ 1502.14, 1507.2(d), 1508.9(b); 42 USC § 4332(e).* Additionally, agencies "shall to the fullest extent possible: Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment." *40 C.F.R. § 1500.2(e).* The purpose of this requirement is "to insist that no major federal project should be undertaken without intense consideration of other more ecologically sound courses of action, including shelving the entire project, or of accomplishing the same result by entirely different means." *Environmental Defense Fund v. Corps of Engineers, 492 F.2d 1123, 1135 (5th Cir. 1974); Methow Valley Citizens Council v. Regional Forester, 833 F.2d 810 (9th Cir. 1987), rev'd on other grounds, 490 U.S. 332 (1989)* **(HCPC)**

Refer to the response to comment 10c.6.

10c.5 The Ninth Circuit has ruled that the goal of [NEPA] is to ensure "that federal agencies infuse in project planning a thorough consideration of environmental values ... The consideration of alternatives requirements furthers that goal by guaranteeing that agency decision makers [have] before [them] and take into proper account all possible approaches to a particular project (including total abandonment of the project) which would alter the environmental impact and the cost-benefit balance." *Bob Marshall Alliance v. Hodel*, *F.2d 1223 (9th Cir. 1988).* **(HCPC)**

Refer to the response to comment 10c.6.

10c.6 Throughout these comments we have noted issues or concerns that should have been developed further, many of which could lead to additional alternatives. Additionally, there are creative opportunities available for buying out and permanently retiring grazing allotments. Discussions could take place between permittees, the Forest Service, and public supporters of buying out/permanently retiring allotments. Other possibilities include:

1. Permanently retiring allotments or portions of allotments when the current permittee transfers or otherwise divests of their contract and interests;
2. Voluntary agreements with permittees to work towards conservation goals by resting allotments for a period of months or years, conducting and/or financially compensating for needed restoration work, terminating grazing allotments in sensitive areas, reducing livestock numbers to levels which do not adversely impact the natural resources of allotments or concentration areas within the allotments, etc;
3. Mandatory measures and contract provisions which work towards conservation goals by:
    a. resting allotments for a period of months or years;
    b. conducting needed restoration work;
    c. requiring financial compensation for natural resource damages incurred from livestock grazing;
    d. terminating grazing allotments in sensitive areas;
    e. reducing livestock numbers to levels which do not adversely impact the natural resources of allotments--including concentration areas within the allotments,
    f. raising the allotment fees to cover the full costs of the now federally subsidized "welfare ranching" programs, and to cover the extensive necessary restoration across the region's public lands due to past and ongoing livestock grazing practices. **(HCPC)**

In response to your comment, we have added a fourth alternative to the FEIS that takes a different approach to fish, wildlife, and botanical resource management in the JCRAA. The operational aspects that you suggest, however, are best addressed at the Forest Service policy level. For example, current policy does not allow a permittee to transfer or divest of their interest to an entity other than another valid livestock operation. Allotment fees are also outside the control of the deciding officer for the JCRAA. Your suggestions regarding voluntary agreements with permittees are well taken, and we have demonstrated success within the JCRAA of these kinds of agreements for accomplishing restoration work. The Upper Joseph Creek Watershed Assessment is an example of permittee involvement in restoration plans for the area. The Elk Creek Restoration Project had a high level of cooperation from the permittee in its completion and maintenance since the early 1980s. The Swamp Creek Restoration Project also

demonstrates the level of cooperation from permittees in providing for recovery of a degraded area.

10c.7 The Federal Administrative Procedures Act provides that agency actions which are "arbitrary and capricious, an abuse of discretion or otherwise not in accordance with law" will be held unlawful or set aside. 5 D.S.c. § 706(2)(A). In this case, the DEIS concludes that the key issues "reflect concerns with how the authorization of grazing as shown in the proposed action addresses the wild and scenic river outstandingly remarkable values, potential research natural areas, the threatened occurrences of Spalding's catchfly and big-game winter range." DEIS at 18. At the same time, however, the WWNF has selected the most resource intensive alternative which is to continue the existing livestock grazing system by authorizing continued grazing on eleven allotments within the planning area. DEIS at 4. Further, this alternative authorizes the application of a total of almost 9,000 aums on federal lands in the planning area and 4669 aums in the Swamp Creek allotment alone. DEIS at 27-30. **(CTWA)**

Alternative 3 is preferred not because it has the least impact on resources but because it provides a balance between meeting the purpose of and need for action while providing for a level of resource protection that is consistent with the Forest Plan and environmental laws.

10c.8 Select a modified version of the current alternative 3 as provided in the DEIS as the preferred alternative that includes:

1) exclusion or rest of riparian areas from livestock grazing sufficient to allow full recovery of ecological systems and compliance with ESA, Pacfish and LRMP standards;

2) the removal of livestock from riparian areas at anytime when such compliance is not taking place. **(CTWA)**

In response to your comment, we have added a fourth alternative to the FEIS that takes a different approach to fish, wildlife, and botanical resource management in the JCRAA.

10c.9 As stated in the reasons below, FLOW recommends either accepting Alternative 1 or the development of new alternatives to protect the Wild and Scenic River Corridor and water quality in the Joseph Creek Rangeland Analysis Area, as well as habitat for sensitive fish, wildlife, and plant species in the JCRAA. **(FLOW)**

In response to your comment, we have added a fourth alternative to the FEIS that takes a different approach to fish, wildlife, and botanical resource management in the JCRAA.

10c.10 FLOW would like to see further development of an alternative that would exclude cattle from the Wild and Scenic Corridor (an intermediate solution in lieu of canceling the allotments altogether). The goal of this Alternative, more than Alternatives 2 and 3 (but with a more compromising solution than Alternative 1), would be protecting the crucial and fragile riparian habitats for which Joseph Creek was designated Wild under the WSRA. **(FLOW)**

In response to your comment, we have added a fourth alternative to the FEIS that takes a different approach to fish, wildlife, and botanical resource management in the JCRAA. While livestock grazing would not be eliminated from the Wild and Scenic Corridor, it would be altered from the approaches in Alternatives 2 and 3 Modified.

10c.11 In conclusion, and for the above stated reasons, Friends of Living Oregon Waters recommends the development of a new alternative that specifically protects riparian areas from grazing impacts, as these areas are crucially important to the maintenance of wildlife, fisheries, water quality and botanical resources. These protections come with an extra legal mandate in the Wild and Scenic River corridor, where the protection of fisheries, water quality and wildlife outstandingly remarkable values are required by the Wild and Scenic Rivers Act. Reductions in grazing levels and season may be required in upland environments (as opposed to the broadening of the season proposed in Alternative 3), and more comprehensive exclusions will be necessary in riparian and river corridor areas. **(FLOW)**

In response to your comment, we have added a fourth alternative to the FEIS that takes a different approach to fish, wildlife, and botanical resource management in the JCRAA.

10e. Monitoring

10e.1 Permittees request that the Al Winward Greenline be established for monitoring in the Swamp Creek meadow area and that adaptive management be allowed to continue in managing the pastures in Swamp Creek. Also request the local management team continue to look at site potential and allow for adequate time in the recovery of Swamp Creek. **(permittees)**

The Al Winward Greenline method will be used for monitoring the Meadow Segment of Swamp Creek.

10e.2 Monitoring is repeatedly discussed in the description of alternatives as a means of ensuring that livestock grazing is being implemented according to standards and guidelines. However, the DEIS fails to disclose a comprehensive description of what exactly is being monitored and how that information is then used to make management decisions. **(NPTEC)**

We added information in the monitoring section about how the information will be used in management decisions. Refer to the shadow box on Pages 71 and 72 of the FEIS.

10e.3 The Tribe needs to know where the key areas to be monitored are located and whether such monitoring is sufficient to allow for adjustments in grazing management during the grazing season. Namely, the DEIS does not reveal any adaptive management strategy for addressing adherence to terms and conditions of the permit. What specific monitoring protocol is incorporated in the proposed action to ensure that grazing systems are not reducing the rate of recovery of riparian shrubs and streambank stability? Baseline monitoring of *Silene spaldingii* populations should be required under all action alternatives. **(NPTEC)**

We added information in the monitoring section about how the information will be used in management decisions. Refer to the shadow box on Pages 71 and 72 of the FEIS.

10e.4 As a whole, the monitoring program lacks scientific rigor. For example, page 72 of the DEIS states that under Alternative 3, "The utilization is instead determined by a monitoring program consisting of photo points and annual site visits." This basically translates to an ocular estimate by an individual which may or may not be repeatable. The Forest should analyze and implement a monitoring program, comprised of Forest biologists and range ecologists. **(NPTEC)**

The purpose of monitoring in terms of NEPA is defined by the Council of Environmental Quality in 40 CFR 1505.3 as follows: "A monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation." We are not proposing to gain information that meets the threshold for data collection set by the scientific community. Our monitoring is proposed simply to judge whether the mitigation measures are effective in reducing impacts to the level described in the EIS.

10e.5 The Tribe is also concerned with the lack of funding available to implement the proposed monitoring. Alternatives 2 and 3 both rely heavily on monitoring efforts to ensure implementation of the project as planned but there is no guarantee that funding will be available to accomplish those efforts. Given the budget realities facing the Forest it would seem more appropriate to manage the resources more conservatively in ways that do not require as much reliance on compliance monitoring. For example, the Tribe encourages the Forest to remove grazing from the South Crow, North Crow, and Doe Gulch pastures of the Crow Creek Allotment, which would allow for an upward trend in rangeland health by ensuring protection of Spalding's Catchfly from the impacts of livestock grazing. **(NPTEC)**

We share your concern about committing to monitoring efforts that may not be accomplished due to lack of funding. Therefore, you will note a simplified monitoring approach on Pages 51 through 53 of the DEIS. We believe that even with declining budgets, the level of monitoring listed in the DEIS is necessary and can be accomplished. We incorporated your suggestion regarding the South Crow, North Crow, and Doe Gulch pastures into Alternative 4 by eliminating both spring and summer grazing from these pastures.

10e.6 Much of the current condition determination was based on insufficient detail. The chart at page 60-61 of the DEIS indicates that for most pastures, there is no record of monitoring available or monitoring results were not recorded. Some pastures (e.g., Road in Crow Creek allotment and Dobbins) have no records of compliance with utilization standards in the last 10 years. Out of a total 64 pastures, 33 do not have monitoring results from 2003. 40 do not have monitoring results for at least 2 out of the last 3 years. There are 5 pastures all in Swamp Creek allotment – Snake Canyon, Beef Pasture, Lower Swamp, Red Fir and Miller Springs – that were not in compliance with utilization standards during various years, yet were not monitored the following year. One – Beef Pasture – was not in compliance in 1999, and there are no monitoring records for any year since! **(HCPC)**

We added information to the table to describe that it represents a summary of multiple readings within the allotments.

10e.7 One of the key drawbacks to monitoring as a protective tool is that it is after the fact. For instance, by the time that monitoring reveals a water quality impact (say, from sedimentation),

that cattle may have already removed themselves from that particular area. Thus, the only recourse is to alter the Annual Operating Instructions for the next year. In the meantime, the affected resource is damaged and recovery may take years or even decades. **(HCPC)**

We understand your point. Our monitoring measures on pages 51 to 53 of the DEIS are prescribed for a combination of implementation and effectiveness monitoring. The effectiveness monitoring tells us whether the grazing program is in compliance with standards while the effectiveness monitoring determines whether standards are achieving their objectives. There are some cases where thresholds may be exceeded by the time monitoring occurs, but monitoring protocols are designed to avoid that situation. For example, on Page 52 of the DEIS, it is described that trigger monitoring occurs to avoid exceeding utilization standards. Also, monitoring occurs frequently enough and at the right times to avoid exceeding standards.

10e.8 The monitoring proposed in the DEIS (at 51) is too vague for the purposes of NEPA (i.e., "Current utilization methods are coarse and subject to differences among individuals." *DEIS 72*.) A thorough monitoring plan is required, with defined processes, goals and locations:

1. A map showing key [or designated] upland and riparian monitoring sites for each allotment, which are used to determine compliance with utilization standards and which will be used in the NEPA process.
2. Monitoring results from 1995 to present.
3. A description of the current monitoring methods in use (how many and location of plots [riparian, floodplain, or greenline], photos taken, etc.) and the time of the monitoring such as end of grazing season, or end of pasture rotation, plus the date the monitoring occurred. **(HCPC)**

Except for C&T monitoring, collecting data in the same location each year is not necessarily helpful. In many cases, key areas are relocated to address specific resource concerns. The DEIS addresses the need to locate key areas for big-game and Spalding's catchfly concerns. Other concerns with forage utilization will arise over time, causing a need to move key areas to adjust to the need to monitor riparian or upland conditions. We provided a map of the current key areas, but that is simply a snapshot in time. The table on Pages 60 and 61 of the DEIS display a summary of utilization monitoring since 1995. These results are a combination of upland and riparian key areas. The specific data upon which this table is based is available at the Wallowa Mountains Office.

10e.9 Given NEPA's requirements that agencies take a "hard look" at proposed actions and fully disclose all components of the proposal to allow for public participation, the DEIS must disclose to the public crucial aspects of the monitoring program included in the proposal. The National Forest Management Act requires that the Forest designate key forage grazing areas, or key areas, in riparian and upland areas on all allotments for the purposes of monitoring forage utilization. Furthermore, as a result of the Biological Opinions on the 1996 Forest Plan amendments, the Forest Service is also obligated to designate key forage monitoring areas under the Endangered Species Act. The intended purpose of the key forage area requirement is to limit forage utilization in key upland and riparian areas to ensure protection of threatened and endangered species habitat. **(HCPC)**

Refer to the response to comment 10c.10.

10e.10. Since forage utilization monitoring is such a critical aspect of federal land grazing permit administration, and so critical to compliance with both the ESA and the NFMA, details of this monitoring must be made known to the public, the forest service decision maker, and the FWS for purposes of consultation pursuant to the ESA. **(HCPC)**

We believe that the summary of forage utilization monitoring on Pages 60 and 61 of the DEIS meets our need to disclose to the public the nature of permittee compliance with utilization standards. Each year a specific monitoring information is compiled and it is voluminous. You are welcome to review this information in the office and request copies of pages of interest to you. For purposes of ESA compliance, we have completed consultation with NOAA – Fisheries regarding the impacts on listed fish species. While we consulted with USFWS on Spalding's catchfly, the absence of any listed fish or their habitat within the JCRAA precluded our need to consult on fish species. NOAA – Fisheries was provided information about compliance with riparian utilization and participated in several field reviews of the JCRAA during the consultation process. They did concur with our determinations of effect.

10e.11 The EIS fails to explain how increased monitoring will avoid damage to riparian areas. The riparian concerns are not just occurring in the key areas identified by WWNF. Those areas are subjected to ongoing violations but so do many other sites along numerous streams, springs and wet meadows throughout the planning area allotments. The Preferred Alternative states that monitoring will establish trends in order to document the need for adjustments in capacity, numbers of head, or season of use. WWNF has documented livestock damage in many areas, including the Wild and Scenic River Corridor of Joseph Creek. There are no assurances, or a specific plan, for how cows will be kept out of riparian areas and avoid violations of the Wild and Scenic Rivers Act. **(FLOW)**

Monitoring has been prescribed to distinguish compliance with Forest Plan standards and guidelines. Your comment suggests that monitoring should be prescribed to track livestock-related impacts. We recognize that livestock grazing causes impacts, but at the same time, those impacts cannot exceed Forest Plan standards and guidelines. With respect to the Wild and Scenic River corridor, please refer to the response to comment 9.3.

10f. Effects

10f.1 The NEPA document must disclose the differences between historical ecological conditions and current conditions, and address necessary restoration throughout this allotment. **(HCPC)**

Our purpose and need to authorize commercial livestock grazing in a manner that is consistent with management direction. Such an ecological condition analysis does not appear necessary to make a reasoned choice among alternatives that support this purpose and need.

10g. Compliance with Laws and Regulations

10g.1 With adequate data, implementation plans and monitoring, we believe that a livestock grazing program could proceed within the Joseph Rangeland analysis area. However, this DEIS and the analysis supporting it is insufficient. The DEIS must comply with numerous federal rules

and regulations including the National Environmental Act (NEPA), 42 U.S.C § 4321 et seq., the National Forest Management Act (NMFA), 16 U.S.C § 1600 et seq., the Clean Water Act ("CWA"), 33 U.S.C. § 1251 et seq., the Endangered Species Act ("ESA"), 16 U.S.C. § 1531 et seq., and the Administrative Procedures Act ("APA"), 5 U.S.C. § 706 et seq. As prepared, the DEIS currently does not meet these laws and associated regulations. **(HCPC)**

Consistency with these laws is described in the Record of Decision, based upon information in the FEIS. We believe that the selected alternative complies with each of these laws.

10g.2 FLOW recognizes that riparian areas are some of the most botanically diverse in the JCRAA, in addition to being important habitat for big game and other sensitive species. FLOW is concerned that the DEIS does not present a specific plan for ensuring that riparian area impacts are consistent with the Clean Water Act and the Wild and Scenic Rivers Act. While Adaptive Management may provide flexibility, the Preferred Alternative as outlined in the DEIS does not present specific measures by which riparian impacts will be substantially reduced or eliminated. **(FLOW)**

Our analysis of Alternative 2, current management, indicates that the level of grazing currently authorized for the Wild and Scenic River has demonstrated over time that it is consistent with the Clean Water Act and Wild and Scenic Rivers Act. Alternative 3 Modified would have the necessary controls to ensure that adaptive management did not infringe upon that success.

10g.3 Due to these impacts, the grazing under the Preferred Alternative may be violating the Clean Water Act as well as the Wild and Scenic Rivers Act. Nonpoint sources of pollution may be regulated under the Clean Water Act. Specifically for livestock grazing, cattle must be managed properly to: a) prevent trailing and trampling of streamside vegetation; b) prevent utilization from exceeding the standards; c) prevent repeated use during the growth stages of plant development; and protect, maintain and improve existing riparian vegetation. Grazing in the JCRAA is particularly problematic with respect to trailing and trampling of streamside vegetation. Additionally, though it apparently passes utilization standards, these standards may be too arbitrary and loose to maintain the health of riparian habitats. **(FLOW)**

We base our determination of consistency with the Wild and Scenic River Act on how the alternatives compare to management standards established by the Joseph Creek Wild and Scenic River Management Plan. This plan allows for a specific amount of livestock presence. Our analysis shows that all of the alternatives are consistent with the desired conditions contained in the management plan.

11. Treaty Rights

11.1 It is recognized that tribal rights of grazing on unclaimed lands must be addressed, however, this EIS goes much further in the process than is appropriate at the present time. By including the references of actual permits as possible locations you are by default encouraging requests from the

tribes. Also to make the assumptions that you have is inappropriate. These are not limited to but include: the use of horses, instead of "stock "; the lack of analysis of switching any of these lands to horses; the lack of substance, such as season of use, timing of use, numbers of stock, branding requirements, base property, monitoring etc. to a potential tribal request. **(permittees)**

We clarified the differences among alternatives with respect to tribal treaty rights in the FEIS.

11.2 Permittees believe it is inappropriate to limit the potential grazing area by tribes to the Joseph Creek area. If the potential area is to be identified, it should include all traditional lands of the Nez Perce Tribe. Permittees do not believe that tribal grazing of horses should be authorized without an additional EIS. **(permittees)**

Because tribal treaty grazing rights are attached to the lands within the JCRAA, we are obliged to analyze the impacts if those rights were asserted. We do not foresee a separate environmental analysis as likely to happen so we believe it is timely to address the grazing rights in the current analysis. We included additional analysis of the effects of horse grazing in the FEIS.

11.3 Permittees request a definition of "unclaimed lands". **(permittees)**

While our response to your comment is not intended to serve as a legal opinion, we would venture to say that the recent ruling by the Oregon Circuit Court in Wallowa County regarding the State of Oregon vs Waters (Case #03M-5472) clearly endorsed our assumption in the JCRAA that federally administered lands are open and unclaimed lands.

11.4 Permittees request the specific court cases USFS believes are requiring action. **(permittees)**

Our efforts to consider tribal treaty rights in the JCRAA are not driven by court direction but by our charge to engage in government-to-government relations with the Nez Perce Tribe. The 1855 treaty clearly references grazing of cattle and horses as a right reserved by the Nez Perce Tribe. We have worked with representatives of the tribe throughout the JCRAA analysis process on this point.

11.5 Permittees request a separate EIS with broader involvement for tribal grazing issue, Permittees don't believe the EIS addresses horse impacts on the ground adequately. **(permittees)**

Refer to the response to comment 11.2.

11.6 Tribal grazing needs to be addressed county wide. This EIS only addresses tribes on these permits. Therefore is Alt3 a magnet to tribe use? **(permittees)**

Refer to the response to comment 11.7.

11.7 Designate a location where tribe could run horses. Don't believe USFS should be targeting a location for this use at this time. Tribal treaty rights states pasture "stock" why then does the EIS talk specifically about horses? **(permittees)**

The Wallowa-Whitman National Forest policy on tribal grazing rights is to provide the most appropriate location for the tribe to exercise those rights considering existing active permits and available forage. While the Rescissions Act is in effect, permits may be reissued on the same terms and conditions as an expired permit. Expired permits occur throughout the ceded area for the Nez Perce Tribe and would be a logical place to provide for tribal grazing. The generation of analysis that the Rescissions Act requires, however, should provide for the full range of uses that could occur. That is why tribal grazing rights are included in the JCRAA. As additional analyses are completed, more area would have the appropriate NEPA analysis completed for both cattle and horse grazing. This would lessen the concern you have that the JCRAA would become a magnet for assertion of tribal treaty rights.

11.8 The right of the Nez Perce Tribe to graze livestock on public land is a right the Tribe reserved to itself in the Treaty of 1855. As such, any grazing proposal by the Forest Service must closely consider and analyze the impacts to the Tribe's reserved treaty right to graze. The DEIS only considers treaty grazing under Alternative 3. This is unacceptable to the Tribe because under any management alternative, the Forest is required to maintain its fiduciary responsibilities to protect and enhance treaty rights. It is important for the United States to recognize the tribe's treaty-reserved pasturing right must be interpreted as the Nez Perce Tribe understood it, and that the federal government may not limit or restrict its meaning. Article 3 of the Treaty of 1855 plainly states, in part "and pasturing their horses *and cattle* upon open and unclaimed land" (emphasis added). Further, the Forest's analysis needs to clearly discuss how treaty grazing is evaluated with respect to existing permitted grazing, as well as the anticipated impacts if treaty grazing was requested by the Nez Perce Tribe. **(NPTEC)**

Alternative 2 in the DEIS does consider tribal treaty rights. It only recognizes that a NEPA analysis would need to be completed prior to grazing of horses to establish the protection measures by which such grazing would be consistent with the Forest Plan. Since Alternative 2 completes that NEPA analysis for cattle, tribal grazing of cattle would not require an additional NEPA analysis if grazing rights for cattle were asserted. We have clarified Alternative 2 in the FEIS to ensure that it is understood that it provides for the assertion of tribal grazing rights.

11.9 Further, the DEIS provides no analysis of the impacts of livestock grazing to culturally important plant resources within the project area. Please provide one. **(NPTEC)**

Because the Nez Perce Tribe has an interest in keeping site-specific information about this resource protected, we propose holding a discussion about specific concern areas as the tribe identifies them.

12. Miscellaneous

12.1 The last 50 plus pages of the Draft Environmental Impact Statement (DEIS) have a very negative tone against livestock grazing. It is as if the authors are stating that they don °t want grazing on these lands but since the law says they have to allow it, here are all the problems that will occur. In an allotment management plan the discussion should focus on the allowable use, the impacts, the benefits and the actions available to the operators (permittees and USFS range staff) to make it a successful operation. **(permittees)**

We examined the pages you cited and added further information to identify where adverse impacts from livestock grazing are occurring. In some of the paragraphs you cited, we noted that because we did not specify where the effects were occurring, we implied that they were occurring everywhere within the analysis area. We attempted to clarify the extent of those impacts in the FEIS.

12.2 Need to include that viewing cattle is important in Joseph Creek. **(permittees)**

We added information that livestock are part of the customary landscape.

12.3 Name correction: Chute Canyon not Shoot Canyon on the map on Page 14. **(permittees)**

We corrected the maps. Thank you.

12.4 Question whether Emmons is the correct name on the map on Page 14? Do not recognize that location. **(permittees)**

Emmons is a pasture name for the Elk Mountain Allotment and is not necessarily a location.

12.5 Haypen vegetative management project is in the east portion of the allotment not west portion as stated on page 34. **(permittees)**

The information provided in the DEIS is correct. While the mechanical treatments for the Haypen project occurred in the east portion of the allotment, underburning of natural fuels is scheduled for the west portion of the allotment.

12.6 The spelling should be Vawter not Vauter on Page 177. **(permittees)**

We made the change. Thank you.

12.7 Add Chris Cunningham to the list of permittees on page 194. **(permittees)**

We made the change. Thank you.

12.8 The Tribe is concerned that the Forest has not conducted a comprehensive assessment of biological diversity within the project area, or even an analysis of the effects of livestock grazing on biological diversity in general. The Tribe acknowledges that the Forest made a reasonable attempt to evaluate this biodiversity impacts within the Riparian Resources section; however, such an analysis was not extended to the upland habitats within the project area. **(NPTEC)**

Through analysis of management indicator species and various listed species, we feel that we have analyzed effects on those components of a diverse biological system that are most at risk.

99. Support of Alternatives

99.1 We appreciate the inclusion of Alternative 1 (no livestock grazing) in the DEIS. While we are not categorically opposed to livestock grazing on the Wallowa-Whitman National Forest, we have no choice but to support further exploration of this "no livestock grazing" alternative and the choosing of it in the Record of Decision. Our primary reasons for supporting Alternative 1 relate to the information in the DEIS indicating the environmental impacts of the current and past livestock grazing program in this area, the lack of baseline data available to calculate impacts, and the inability of the Forest Service to monitor and administer the proposed livestock grazing program as described in Alternative 3. **(HCPC)**

Thank you for your opinion. It has been noted for the decision-maker.

99.2 With the current set of alternatives provided for public review, FLOW recommends Alternative 1 in order to ensure that the public interest is served by protecting the outstandingly remarkable values of Joseph Creek, as well as the condition of the entire JCRAA. **(FLOW)**

Thank you for your opinion. It has been noted for the decision-maker.

99.3 I support the selection of Alternative 1 (cattle exclusion) with respect to the Wild and Scenic Corridor to help restore the soil, water, wildlife, and native vegetation of the area. **(Kann, Einhorn,. Bellinger, Di Micele)**

Thank you for your opinion. It has been noted for the decision-maker.

Appendix C – National Riparian Service Team Swamp Creek Restoration Assessment

INTRODUCTION

The National Riparian Service Team (NRST) conducted a service trip on the Wallowa-Whitman National Forest August 17-19, 2004 responding to a request by the Wallowa Mountains Office regarding the Swamp Creek Allotment. The Forest Service and NRST were accompanied by permittees along with the OSU extension agent from Wallowa County.

The group spent the first two days completing Proper Functioning Condition (PFC) assessments on various reaches of Swamp Creek. Key parts of the discussion centered on the site potential including species, water gap hardening, streambank stability, browse monitoring methods, off-site water development and fencing and trend of the overall drainage. The group estimated the reaches assessed were at the upper end of Functioning at Risk with an upward trend, or at the lower end of Properly Functioning with an upward trend. The NRST members noted that although the functionality of Swamp Creek had been impacted by historical management practices and natural events, the current condition indicated that the system is in a state of recovery. Management in recent years has allowed an upward trend on the riparian-wetland vegetation attributes (could state how long the current management has been occurring). This vegetation is very important for the dissipation of stream energy associated with high waterflow. Over time with floods and droughts, the riparian-wetland vegetation will filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize streambanks against cutting action; and develop diverse ponding and channel characteristics. The last day of the session centered on site objectives and strategies to meet these objectives. Three out of four objectives were developed with another meeting scheduled to develop the fourth. The resulting goal, objectives and strategies are as follows:

OBJECTIVES

Objective 1: Improve hardwood diversity (upland/riparian) in Swamp Creek Watershed appropriate (within) site potential. [I don't remember any big capability issues = highest ecological status an area can attain *given* political, social, or economical constraints.]

Strategy:
a. research site potential
b. monitor existing plantings
c. research site location that provides best potential for survival
d. plant as appropriate
e. cage residual shrub species

Objective 2: Improve riparian/wetland vegetation to increase streambank stability and appropriately process sediment.

Strategy:

a. identify chronic problem areas and determine if management changes or practices need to be implemented

- develop alternate water sources/portable pumps
- harden agreed upon water gaps
- continue adaptive grazing management (year to year seasons, numbers, herding, etc.)
- address tree density - possibly cut livestock trails
- low moisture supplements
- low stress handling
- seed appropriate grass species as needed
- cage selected chronic cutbanks if possible (cutbanks need to be evaluated on a case by case basis by the IDT to determine if the cutbank is following natural recovery or stream processes. These areas may now be a part of a terrace. Also, if willows could not be planted on streambanks because of the inability of fencing off, what do you propose on a cutbank? Maybe barriers to trails along the bottom of a cutbank is an alternative.)
- establish riparian reference cages over alder and sedges

Objective 3: Maintain grazing opportunities and strive to provide a sustainable and economically viable livestock operation while allowing for natural recovery processes.

Strategy:

a. utilize adaptive management strategies as needed to improve riparian condition within pastures.

b. evaluate season, numbers, and rotation for riparian areas (flexibility).

c. current grazing management has been working, so maintain the option of continuing current grazing strategy.

Objective 4: Improve vegetation to provide fish and wildlife habitat for a diversity of species.

Strategy:

a. gather baseline information (i.e. beaver, mussels, site potential, bird species).

b. monitor for change in vegetation and wildlife species.

c. utilize adaptive management strategies to maintain or improve wildlife habitat.

MONITORING OPTIONS

Short Term: (annually)

- residual vegetation measurements and utilization of grasses and shrubs
- streambank alteration
- photo monitoring
- survival inventory
- redd counts
- bird counts

Mid Term: (3 - 5 years)	Vegetation Cross-Section Composition, Greenline Composition, and Woody Species Regeneration (Winward 2000). Macroinvertebrates (funding dependent)
Long Term:	Vegetation Cross-Section Composition, Greenline Composition, and Woody Species Regeneration (Winward 2000). Cross Sections (hydrology) Temperature Hankin & Reeves (after flow events) Well monitoring Proper Functioning Condition

* Note: Management changes will not necessarily occur as a result of any one monitoring option. A monitoring plan of the project is being developed.

PROJECTS

1. Develop alternate water sources and eliminate water gaps as possible
2. Identify chronic sediment sources, prioritize and treat as needed

[There is nothing wrong with this statement as long as the folks identifying, prioritizing, and treating the sediment sources have a good understanding of the nature of those sources and whether they really need human intervention or not. I bring this up, because of things like channel evolution. There are times when once the riparian-wetland vegetation can take advantage of eroding terraces, this sediment is used to rebuild a floodplain. So get the Interdisciplinary Team to fully investigate what the acute/chronic source is, what might be the cause(s), whether the system is overloaded with sediment and not able to process what would naturally come from the watershed and human caused acute/chronic sediment source input, and so warrant spending time and money to treat it. It may take some time to get the riparian-wetland areas back to PFC, and then determine if human caused sediment sources are inputting too much for the desired condition for fisheries, and decide to treat them at that time.]

3. Cage existing residual native shrubs (50)
4. Modify 40 downstream structures as necessary
5. Develop a monitoring plan for the restoration project

The following Monitoring was submitted as part of the project proposal/grant to Bonneville Power Administration.

Monitor to establish a baseline for a long-term monitoring plan. The Forest Service and the Grande Ronde Model Watershed have cooperatively developed a long-term monitoring strategy which includes baseline monitoring in conjunction with trend monitoring. The Forest Service conducted a Region 6 Hankin and Reeves Level 2 survey in 2004 to establish a baseline for the number of pools and large wood per mile.

Additional baseline monitoring needs are as follows:

1. Greenline monitoring (Winward) at six sites throughout project area agreed upon by Forest Service personnel and permittees

2. Proper Functioning Condition surveys

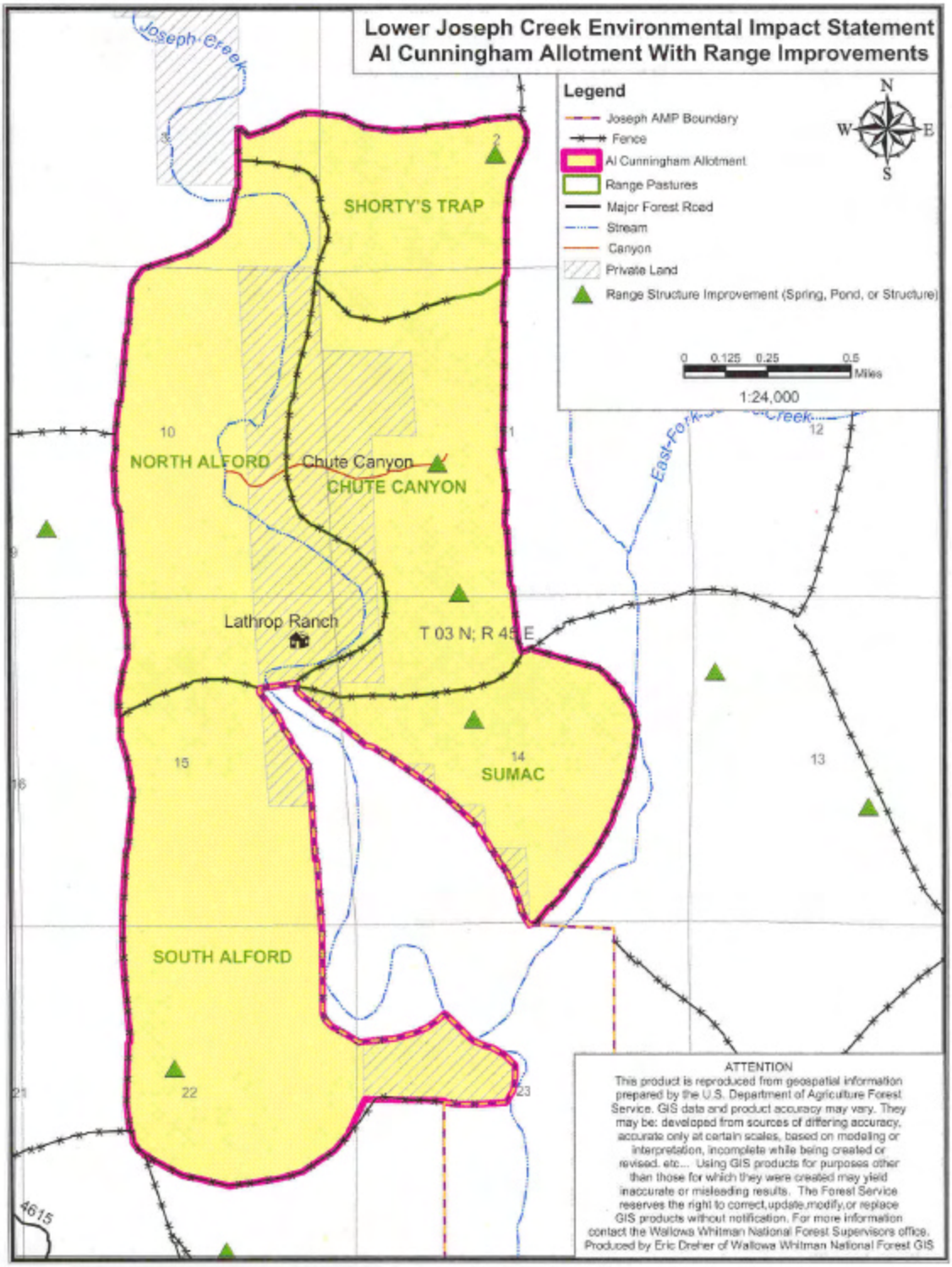
3. Channel morphology assessment for project area using Rosgen's classification system

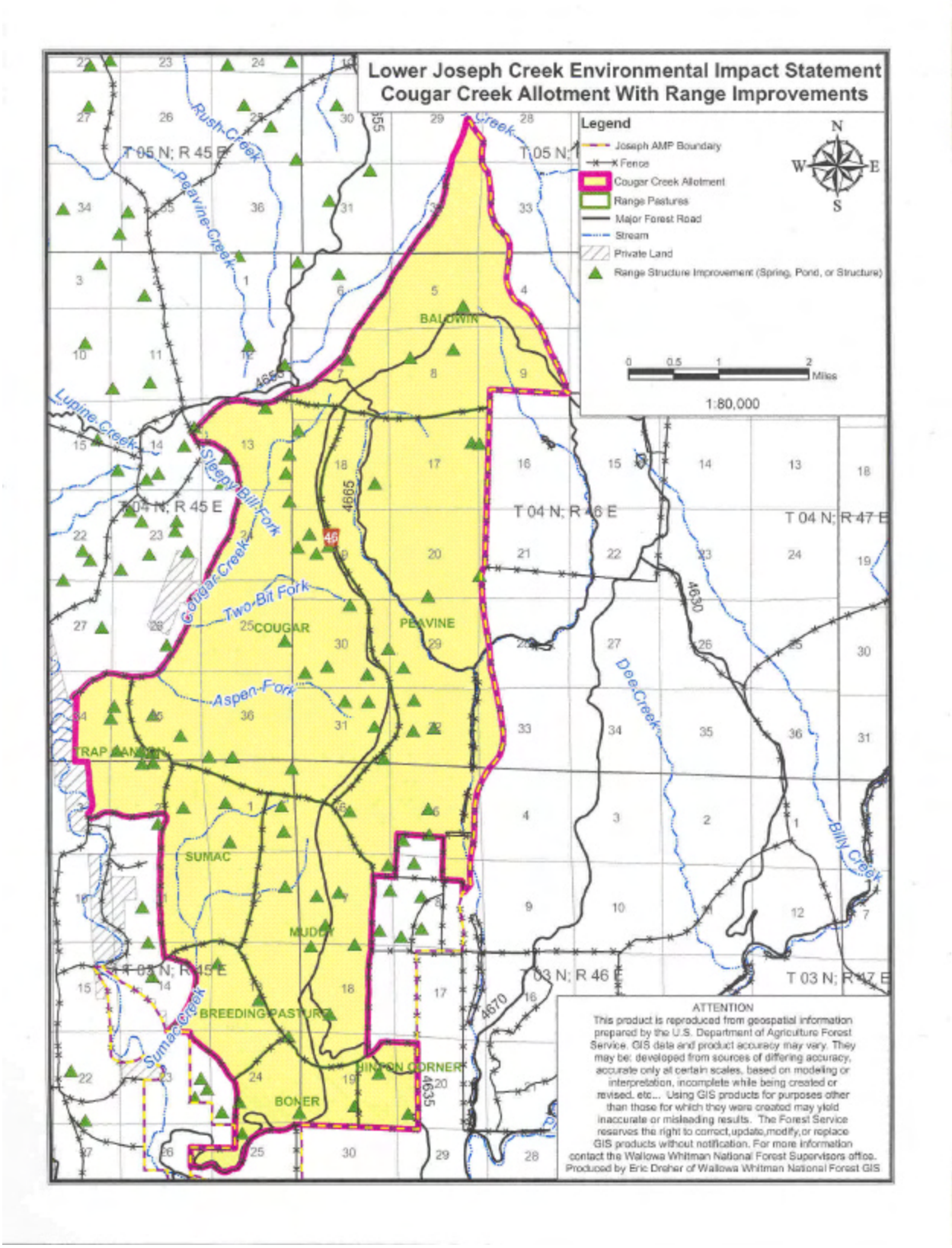
4. Streambank condition assessment for project area (% of existing unstable banks)

Additional annual monitoring to be done by the Forest Service includes:

Livestock utilization of grasses and shrubs, streambank alteration (compare to baseline streambank condition assessment), photo monitoring, temperature monitoring (3 sites), meadow water-level monitoring (2 sites with 3 wells each), survival inventories of planted deciduous shrubs, and redd counts. Education, including involving students from local schools in the monitoring program, and a field trip from the Portland State *Perspectives in Watershed Health* Course.

Appendix D – Maps of Existing Range Improvements




Lower Joseph Creek Environmental Impact Statement
Cougar Creek Allotment With Range Improvements
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Lupine Creek
Sheep Bill Fork
Cougar Creek
Two-Bit Fork
Aspen Fork
Dee Creek
Billy Creek
Sumac Creek
BALDWIN
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BREEDING PASTURE
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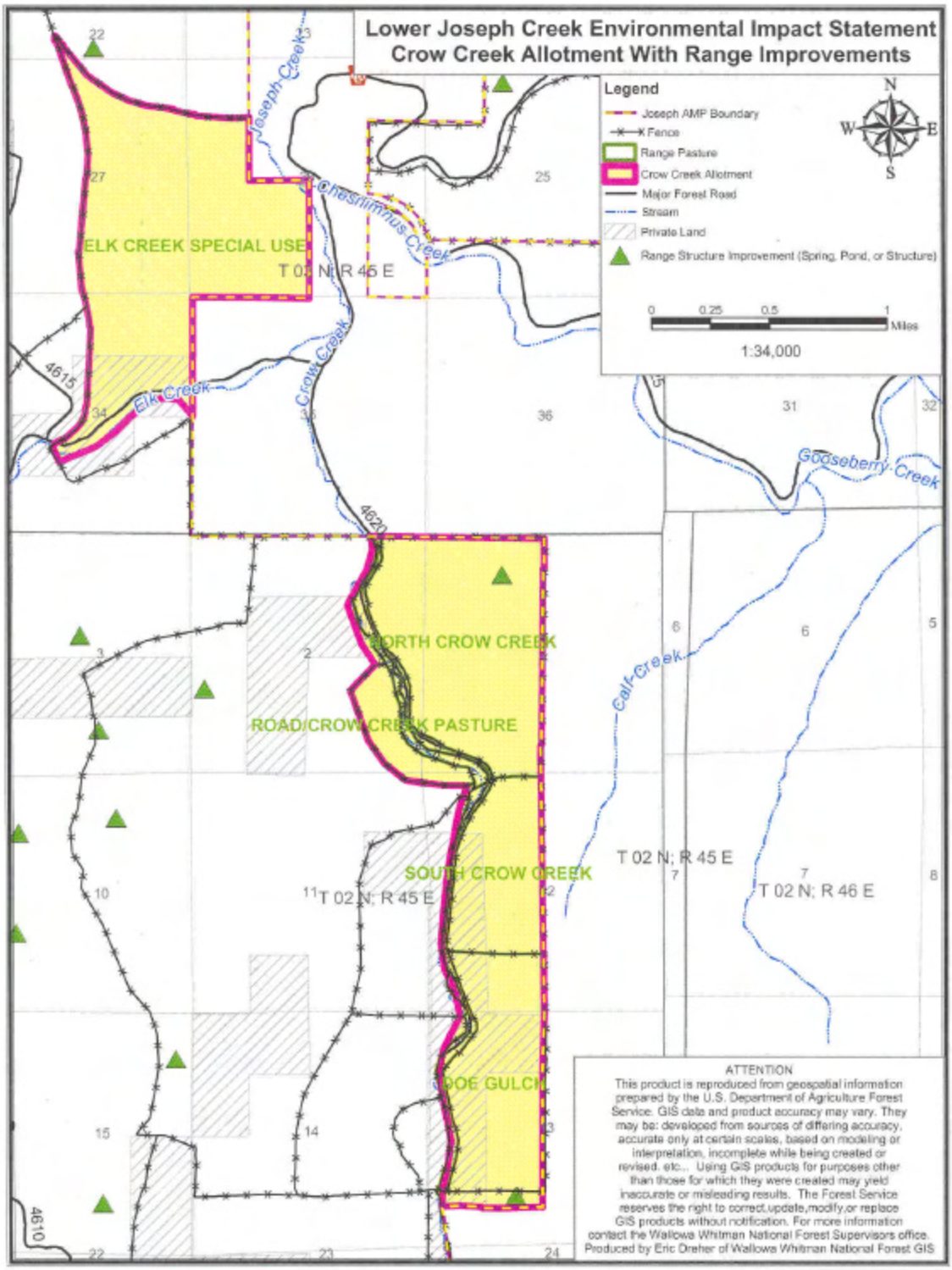
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Crow Creek Allotment With Range Improvements
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Crow Creek
Elk Creek
Gooseberry Creek
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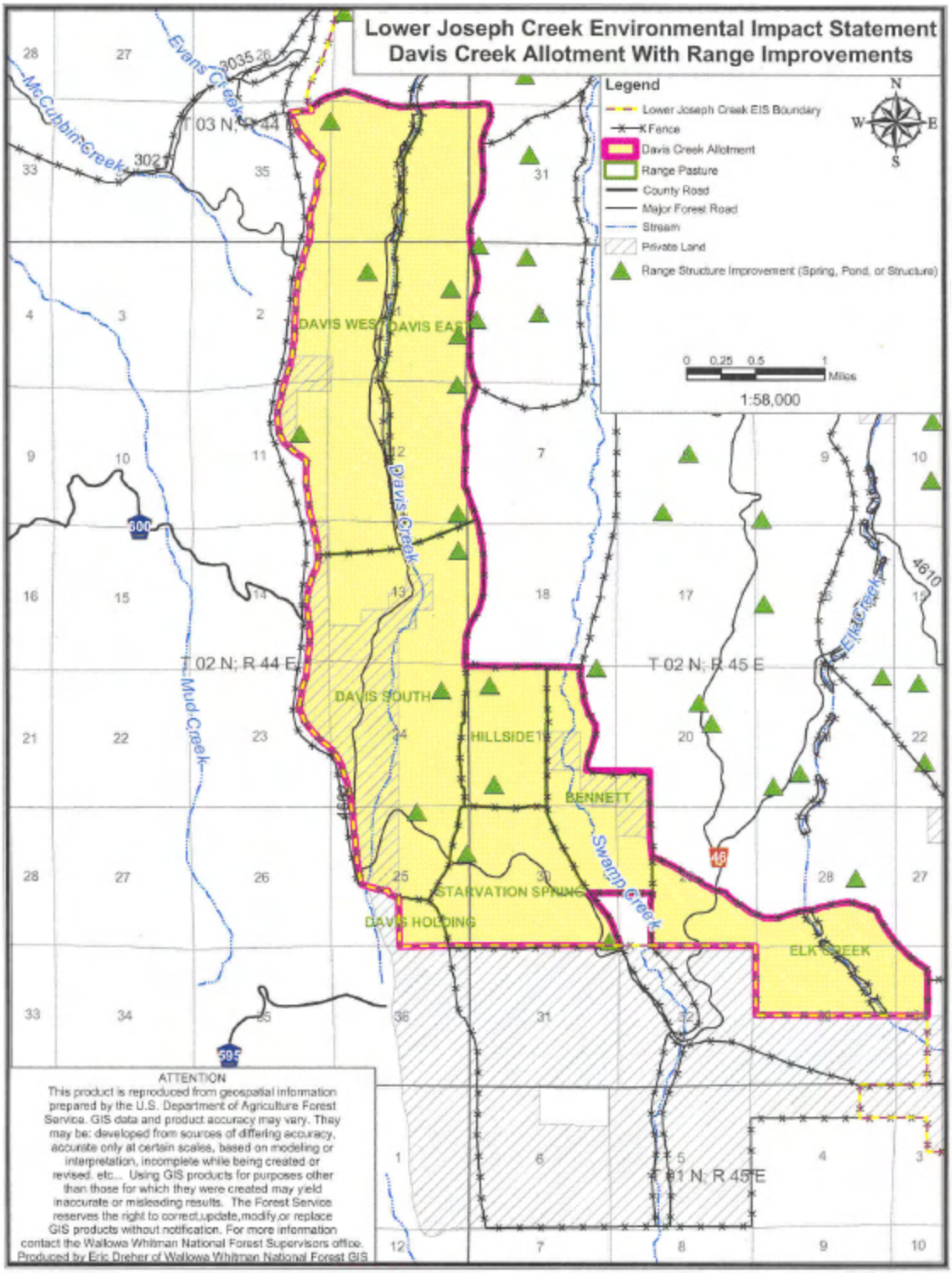

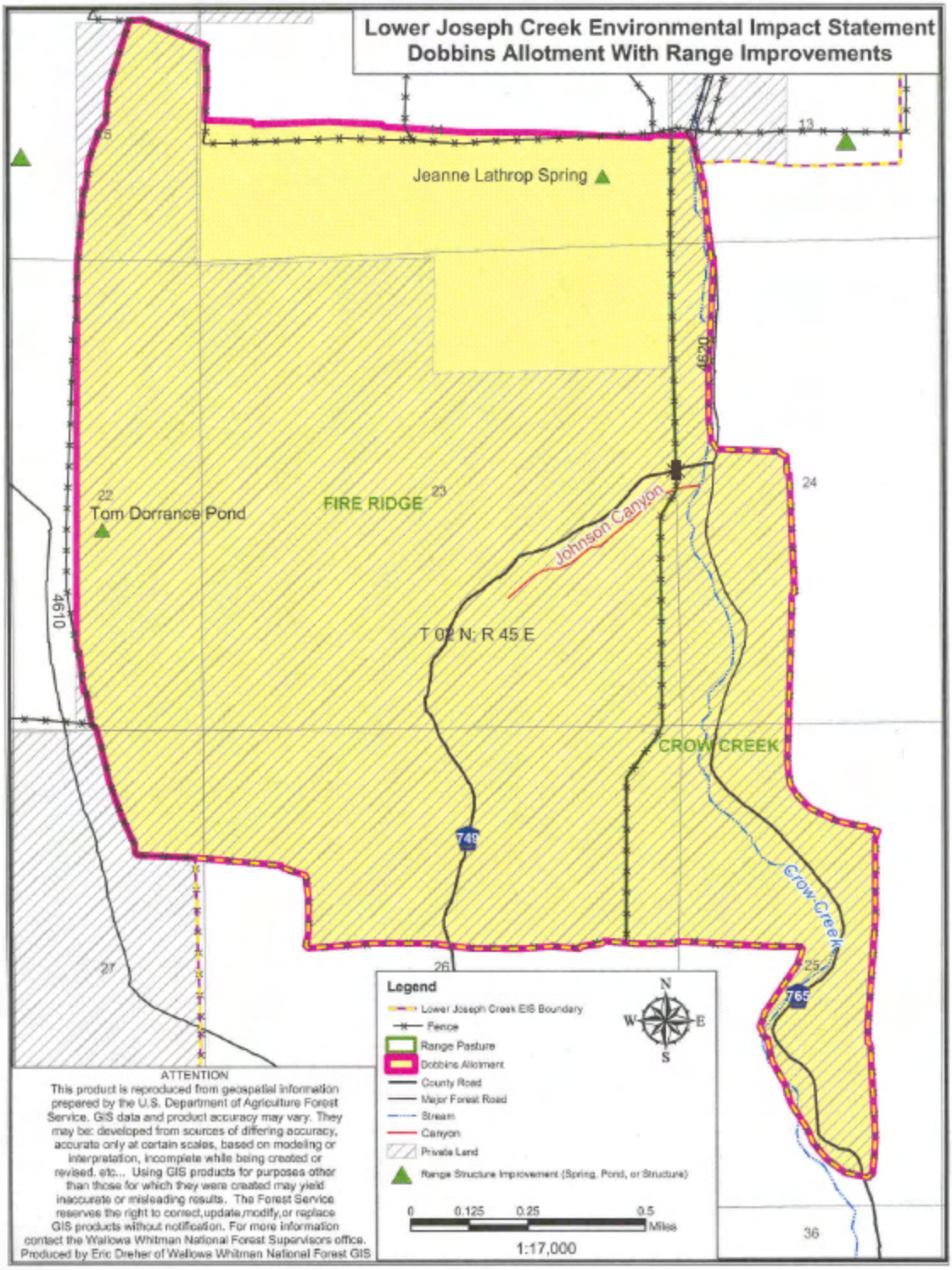
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Dobbins Allotment With Range Improvements
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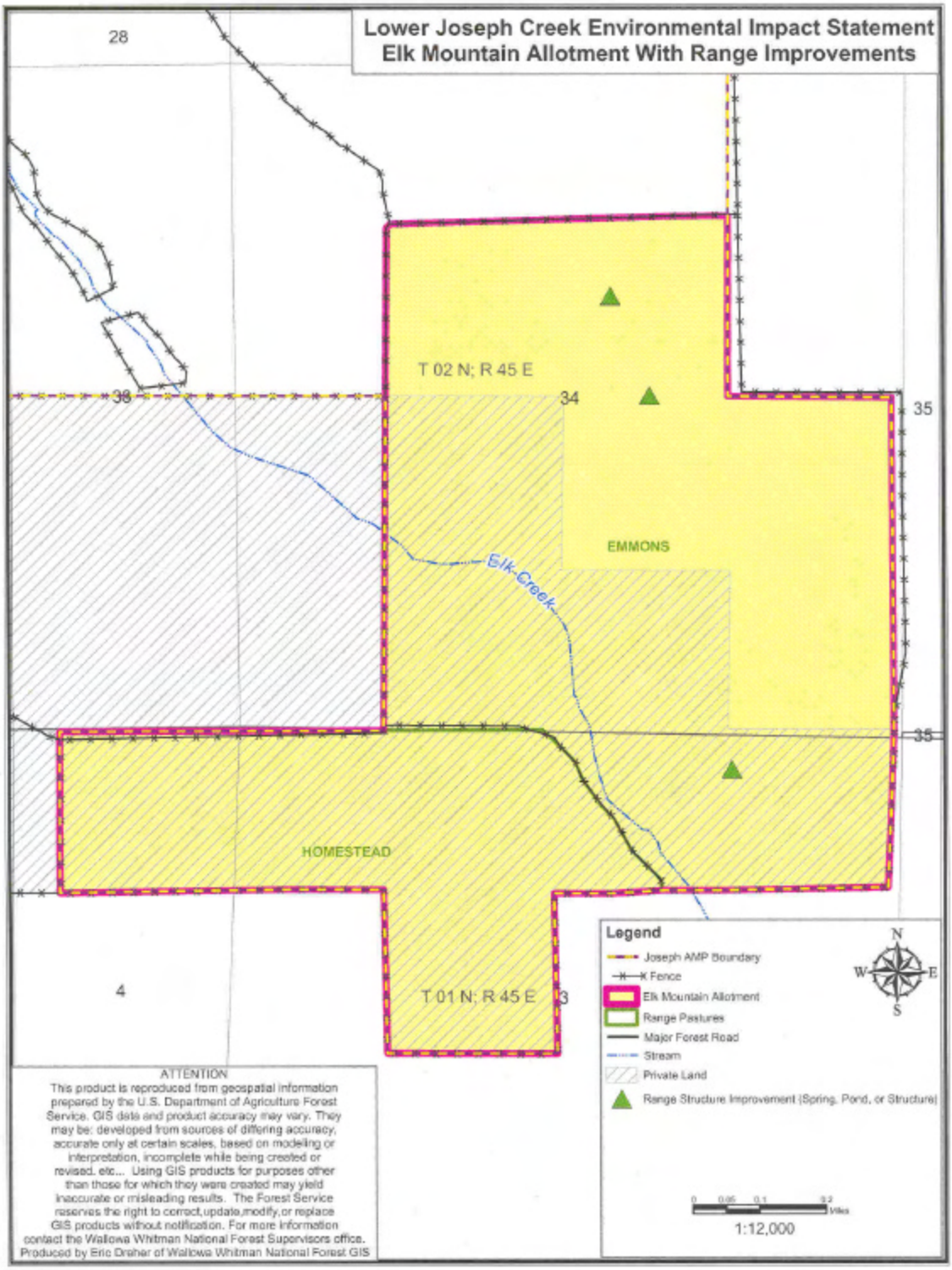
Lower Joseph Creek Environmental Impact Statement
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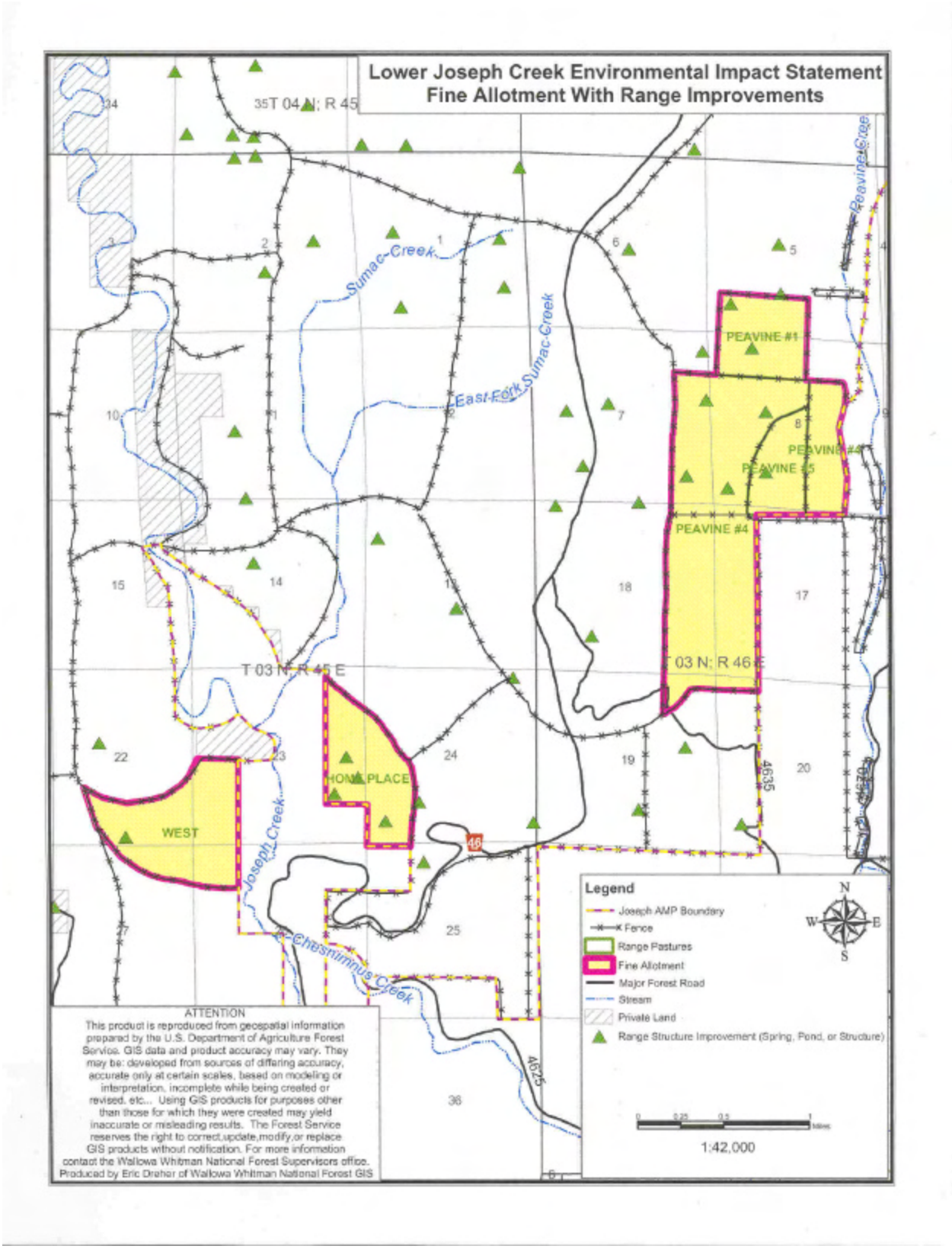

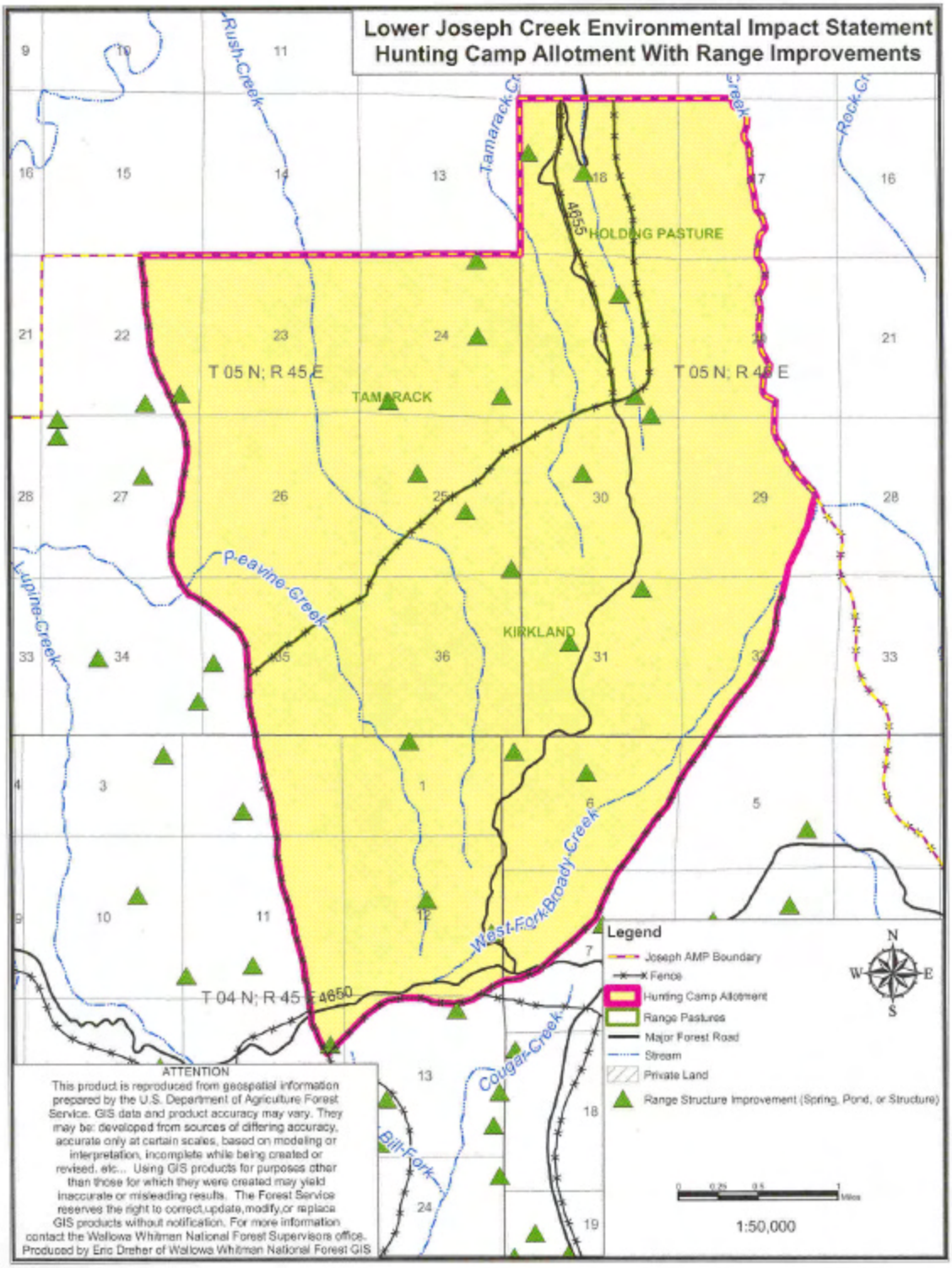
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Cougar Creek
Bill Fork
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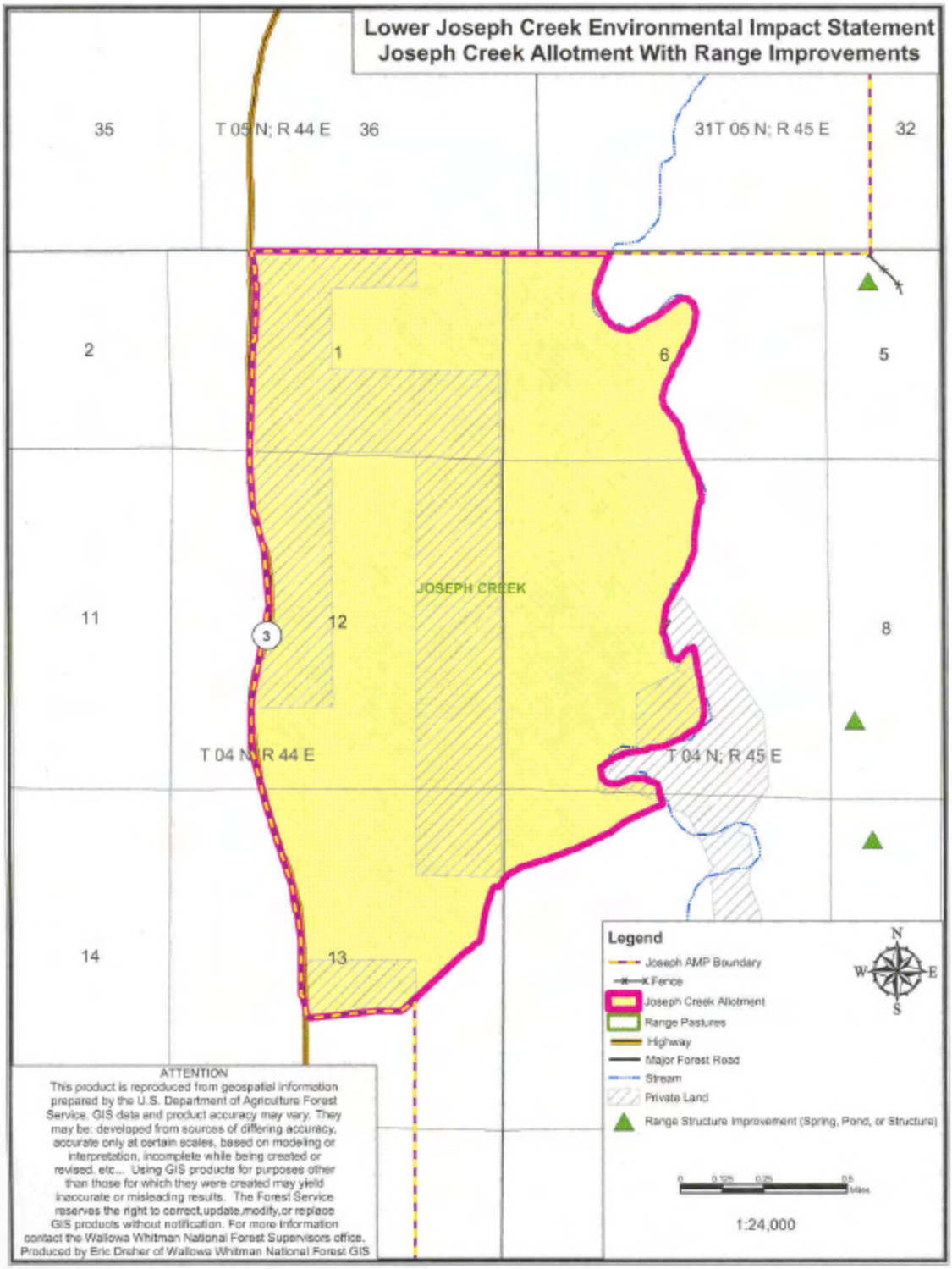
Lower Joseph Creek Environmental Impact Statement
Joseph Creek Allotment With Range Improvements
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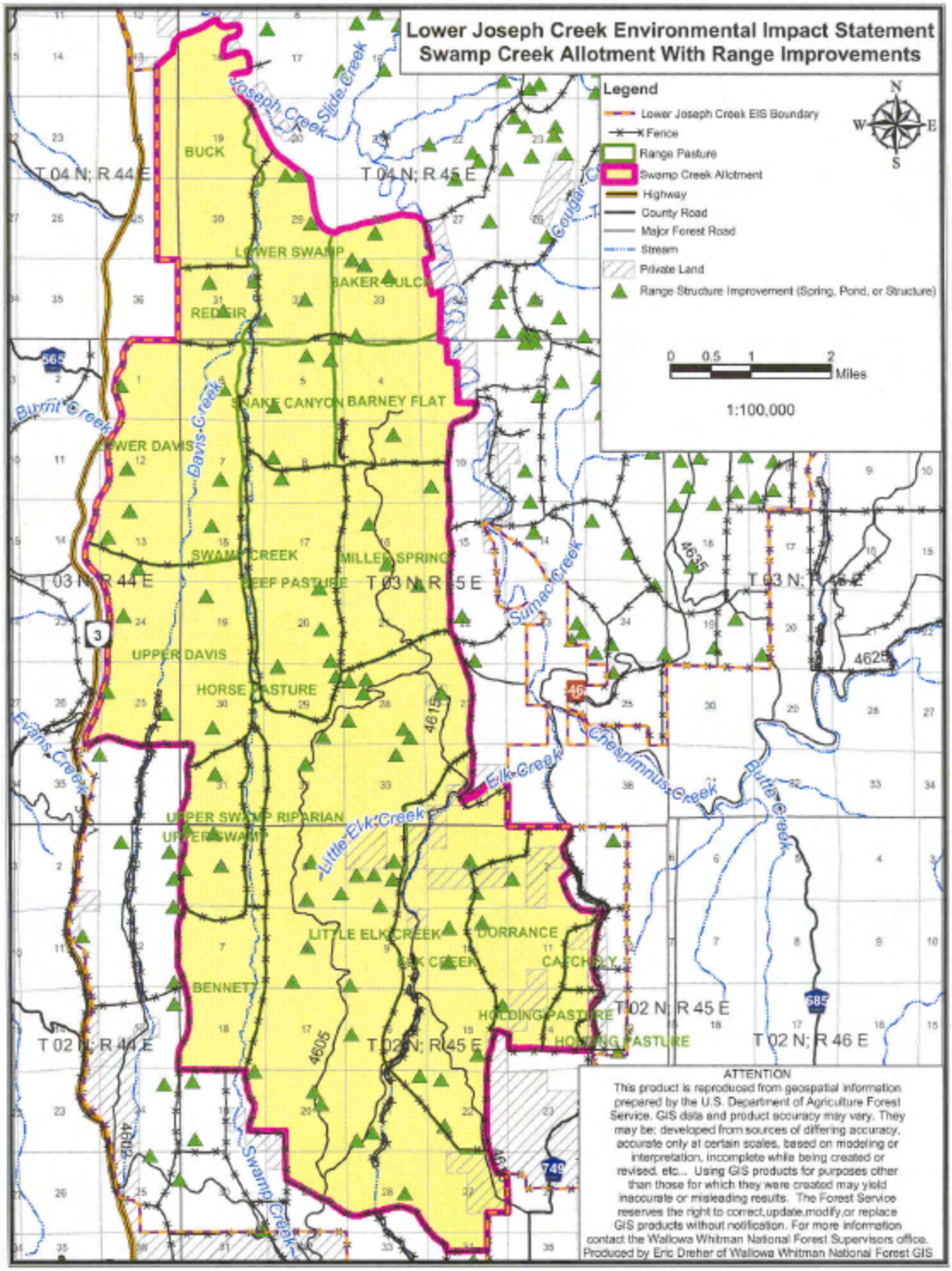

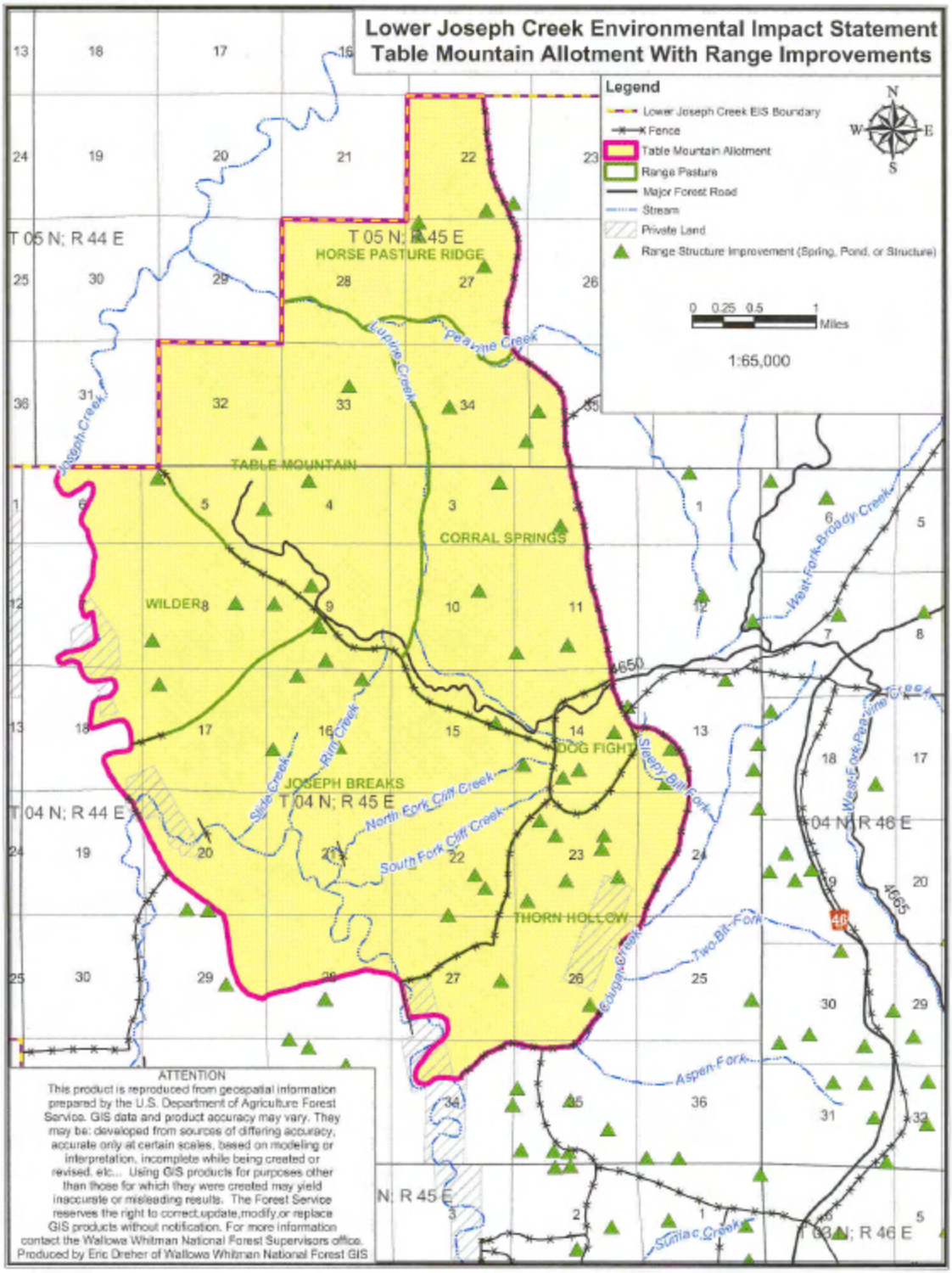
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JOSEPH BREAKS
THORN HOLLOW
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T 04 N; R 46 E
Joseph Creek
Lupine Creek
Pearsine Creek
Side Creek
Rim Creek
North Fork Cliff Creek
South Fork Cliff Creek
Sleepy Bill Fork
West Fork Broady Creek
West Fork Pearsine Creek
Two Bit Fork
Aspen Fork
Sumac Creek
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