UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT OFFICE
ASHLAND RESOURCE AREA

REVISED* ENVIRONMENTAL ASSESSMENT

for the

COVE CREEK GRAZING LEASE RENEWAL

(DOI-BLM-OR-M060-2009-0014-EA)

List of Preparers	Responsibility
Kimberly Hackett	Rangeland Management
Jeff Stephens	Wildlife
Kevin Kocarek	Fisheries
Ted Hass	Soils
Tim Montfort	Hydrology
Dulcey Schuster	Botany
Stephanie Larson	NEPA Compliance/Writer & Editor
Kristi Mastrofini	NEPA Compliance/Writer & Editor

* Revision 2 (September 2011) of the previously Revised EA (May 2010)

Location: The Cove Creek Allotment is located south of the Dead Indian Memorial Highway off of the Cove Road in T. 39 S., R. 2 E., Sections 2, 3, 4, 9, 10 and, 11. The entire allotment is approximately 2,985 acres and the BLM-managed portion of the allotment is 1,207 acres.

CHAPTER 1 - PURPOSE AND NEED FOR ACTION

A. INTRODUCTION

The Bureau of Land Management (BLM), Ashland Resource Area proposes to renew the 10-year grazing lease on the Cove Creek Allotment. **This Revised Environmental Assessment** (EA) documents the environmental analysis conducted to estimate the site-specific effects on the human environment that may result from the renewal of this lease. The EA has been revised to clarify several factors that further support the rationale for the proposed decision. Changes are summarized here with associated page numbers to allow the reader to easily find the clarifications;

- P. 6 A section that includes grazing management that is common to all grazing alternatives has been added.
- P. 9 A section has been added that addresses alternatives considered but eliminated from detailed analysis.
- P. 12 An update to the cumulative effects section in regards to the Sampson Cove Timber Sale.
- P. 12-13 Analysis of Methane Emissions from Livestock Grazing on the Cove Creek Allotment has been added.
- P. 13-14 Updates to the Hydrology affected environment section.
- P. 18-19 Updates to the Hydrology analysis for Alternatives 2 and 3.
- P. 30 The discussion of Franklin's Bumblebee has been removed because the expert consulted explained that there seems to be an invisible, but real division created by the Sierra-Cascade crest and so this species would not be affected by the grazing within the Cove Creek grazing allotment (Robbin Thorp Pers. comm.).
- P. 32 Clarifications to the Wildlife analysis of Alternative 2.

The analysis documented in this EA will provide the BLM authorized officer, the Ashland Resource Area Field Manager, with current information to aid in the decision-making process. This EA complies with the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA; 40 CFR Parts 1500-1508) and the Department of the Interior's regulations on Implementation of the National Environmental Policy Act of 1969 (43 CFR part 46).

B. WHAT IS THE BLM PROPOSING, AND WHY?

This section provides a brief description of BLM's proposal and explains the underlying need to which the agency is responding in proposing this action. The Medford BLM authorizes livestock grazing as a component of its multiple-use program under the Federal Lands Policy and Management Act of 1976 (FLPMA) (43 U.S.C. § 1701 et seq.). The objectives of the regulations set forth under 43 CFR 4100, Grazing Administration, are to "establish efficient and effective administration of public rangelands" so as to "provide for the sustainability of the western livestock industry and communities dependent upon productive, healthy, public rangelands." *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington* meets the requirements and intent of 43 CFR, Subpart 4180 (Fundamentals of Rangeland Health) and provide a basis for assessing the rangeland condition and trend.

A Rangeland Health Assessment was completed for the Cove Creek Allotment in 2008, which assessed the conditions and trends of the Cove Creek Grazing Allotment against the Standards for Rangeland Health. A preliminary determination on the results of the assessment was made in November 2008, and is summarized below under the section "Relevant Assessments & Plans". The Rangeland Health Assessment for the Cove Creek Allotment is available on BLM's Website: <http://www.blm.gov/or/districts/medford/plans/inventas.php>. It is BLM's determination (although preliminary), based on the Rangeland Health Assessment, that two of the five standards, Upland

Watershed Function and Ecological Processes, are being met. The Standards for Riparian/Wetland Watershed Function, Water Quality, and Native, T & E, and Locally Important Species are not being met primarily due to current livestock grazing management practices.

Under existing law (Public Law 108-108, Section 325), grazing leases that were due to expire during fiscal year 2004-2008, prior to the completion of the lease renewal process, were temporarily renewed with existing terms and conditions. The Cove Creek grazing lease was temporarily renewed and there is now a need to conduct the required environmental analysis for renewal of this lease. There is a need to develop grazing management for the Cove Creek Allotment that is operationally and administratively feasible, and addresses the requirements of 43 CFR 4180.1, which is to make substantial progress towards meeting the Standards for Rangeland Health in the Cove Creek Grazing Allotment.

The BLM proposes to modify the existing livestock grazing lease for the Cove Creek Allotment to; change the season of use, split the allotment into two separately fenced pastures, and require additional terms and conditions for resource protection. The modified grazing lease would be issued authorizing 49 cattle (75 AUMs) to graze Pasture 1 from May 15 through June 30. Pasture 2 would be authorized under an Exchange of Use agreement* (EOU) authorizing 5 cattle (13 AUMs) for 45 days between May 15 and November 15. Additional terms and conditions include; restricting salt block placement to at least ¼ mile from streams (intermittent and perennial), wet areas, ponds, springs, seeps, and special status species, and using active herding to distribute cattle away from degraded riparian areas. These changes are proposed to reduce impacts to riparian areas and plant communities within the allotment in order to make progress towards meeting the Standards for Rangeland Health in the Cove Creek Grazing Allotment. Short of eliminating grazing or fencing off all areas with water, there will be impacts from grazing in riparian zones (acknowledged in the Medford District RMP via its accompanying EIS). Therefore, the objective is not zero impact.

***** Exchange of Use (EOU) agreements may be applied for when a lessee owns or controls lands intermingled with federally managed lands. Exchange of use agreements allow cattle grazing on private lands controlled by the lessee to comingle with cattle being managed by the lessee on federal grazing allotments. Exchange of use can be requested on an annual basis.

The **project area** is defined as BLM-administered lands within the Cove Creek Grazing Allotment. The **analysis area** is the area used to assess the effects to resources affected by the project proposal. The analysis area varies by resource.

C. COVE CREEK ALLOTMENT RANGELAND HEALTH ASSESSMENT

Rangeland Health Assessments are completed on grazing allotments prior to the consideration of a grazing lease renewal. These assessments are conducted by an interdisciplinary team of resource specialists and are based on field visits to the allotments and evaluation of all available data. The Standards for Rangeland Health provide a basis for assessing and monitoring ecological and rangeland condition and trend. The five standards, listed below, were used to assess the condition and trend in the Cove Creek Grazing Allotment. Associated with each standard is a list of indicators that are used for completing an assessment of the standard. For each indicator the evaluators assign the degree of departure from the ecological site description and/or ecological reference condition. The evaluation of indicators provides a basis for making a determination as to whether each standard is, or is not being met. An evaluation of causal factors provides a basis for a determination as to whether the current grazing practices are contributing to meeting or not meeting the standards. Preliminary findings documented in the Cove Creek Allotment Rangeland Health Determination provided a basis for formulating the agencies proposed action for renewing the Cove Creek Grazing Lease. The following is a brief summary of the Cove Creek Rangeland Health Determination. More detailed information concerning resource conditions is contained under the Affected Environment Section(s) of this Environmental Assessment.

- **Standard 1 (Watershed Function-Uplands) is being met**
  The main soil limitations affecting livestock grazing are erosion, compaction, the depth to bedrock, and the slope. This grazing system does not significantly diminish the health and

function of the watershed. This is accomplished by maintaining adequate vegetative cover, healthy root systems, and soil moisture content. These factors aid in maintaining existing infiltration, percolation, runoff and erosion rates. The Rangeland Health Field Assessment (RHFA) indicators pertaining to Soil/Site Stability revealed that all 10 indicators were rated none to slight departure from the ecological site description.

- **Standard 2 (Watershed Function-Riparian/Wetland Areas) is not being met, current livestock grazing management practices are significant factors**
  Surveys indicate that 3.0 stream miles (67%) within the allotment were found to be Functional at Risk with an upward trend (improving). The surveys indicate 0.5 stream miles (10%) as Functional at Risk with a downward trend (degrading). The surveys rated 0.8 miles (17%) of channels as Non-Functional. Streams classified as Proper Functioning made up 0.3 miles (6%). According to the BLM stream survey, actively eroding banks and fine sediment percentages were high in the surveyed reaches of the Cove Creek allotment. Within the allotment, 1.8 stream miles on BLM land (24%) were found to have actively eroding banks with the level of erosion greater than 30%. Surveys also showed that 2.6 miles (36%) of the stream reaches had fine sediment levels greater than 30%; this level is above the "desirable" benchmark set by Oregon Dept. of Fish and Wildlife. A one meter exclosure cage was established near a spring in T. 39 S., R. 2 E. in Section 3 to monitor vegetation condition. Photos were taken throughout the 2003 and 2004 grazing seasons to monitor riparian vegetation and soil conditions inside and outside the exclosure. Trampling, soil disturbance, and stubble heights below the recommended 6 to 8 inches were observed outside the exclosure and throughout the spring area. In 2007, extensive trampling, soil disturbance, and stubble heights below 6 inches were observed during stream surveys of riparian areas, wet meadows and springs in T. 39 S., R. 2 E. in Sections 3 and 11. During field visits in July and November 2008, hydrology staff documented excessive grazing impacts at these locations and the presence of cows in Section 11 five months beyond the permitted season of use.
- **Standard 3 (Ecological Processes) is being met**
  The forested portion of this allotment supports a diverse mix of forest plant communities where the energy, nutrient, and hydrologic cycles are balanced and utilization is low enough to not disrupt these cycles. Invasive plant species are generally confined to some road-sides or localized disturbed areas. The dry meadows and oak woodland plant communities support a diverse mix of plant species. However, invasive plant species are scattered in patches throughout the majority of the non-conifer areas, particularly annual grasses. In addition to reducing habitat quality for wildlife, annual grasses have shallower root systems and shorter life cycles than native perennial grasses, and thus have reduced capacity to hold the soil and retain water and nutrients. Introduction and establishment of exotic annual grasses occurred in past decades, and current livestock grazing is not intense enough to contribute to additional conversion of native plant communities to exotic annual grasslands.
- **Standard 4 (Water Quality) is not being met, current livestock grazing management practices are significant factors**
  Within the Cove Creek Allotment, there are no streams listed on DEQs 2004/2006 303 (d) list. BLM stream surveys conducted in 2007 in the analysis area (USDI 2007) identify scattered locations in T. 39 S., R. 2 E., Sections 3 and 11 where livestock grazing is contributing to stream sedimentation through trampling of streambanks. In 2007, extensive trampling, soil disturbance, and stubble heights below 6 inches were observed during stream surveys of riparian areas, wet meadows and springs in T. 39 S., R. 2 E., Sections 3 and 11. During field visits in July and November 2008, hydrology staff documented excessive grazing impacts at these locations and the presence of cows in Section 11, five months beyond the permitted season of use. Concentrated livestock grazing is contributing to sedimentation, destabilization of streambanks, and acceleration of changes in channel morphology.
- **Standard 5 (Native, T&E, and Locally Important Species) is not being met, current livestock grazing management practices are significant factors**
  The allotment is not meeting the Standards and Guidelines for protection of habitat for terrestrial and aquatic wildlife species. Current use levels on this allotment are light with small < 1acre

patches of heavy use in semi-wet meadows and heavy use in riparian areas in T. 39 S., R. 2 E., Sections 3 and 11 therefore; the foothill yellow-legged frog is likely to be adversely affected by the grazing use in those areas. There are no effects to federally listed SONC coho salmon or their critical habitat as a result of grazing. There are no effects to federally listed Northern Spotted Owls or their critical habitat as a result of grazing. The allotment is also meeting the Standards and Guidelines for protection of habitat of special status vascular and non-vascular plant species. The allotment is outside the range of federally listed plants so there is no impact to any federally threatened plant species, there are four populations of sensitive species, and they occur in areas receiving slight-light or seldom use and are not impacted by the current authorized grazing.

D. DECISION FRAMEWORK

The Ashland Field Manager, as the responsible official, will make a decision based on the interdisciplinary teams analysis summarized in this Environmental Assessment. The decision will include a determination of whether or not the impacts of the Proposed Action are significant to the human environment. If the impacts are determined to be insignificant, a Finding of No Significant Impact (FONSI) can be issued and a decision implemented. If this EA determines that the significance of impacts are unknown or greater than those previously analyzed and disclosed then a project specific EIS must be prepared.

E. CONFORMANCE WITH EXISTING LAND USE PLANS

The actions proposed and analyzed in this EA were developed to be consistent with, and/or tier to the following documents:

1. *Final EIS/ROD for the Medford District Resource Management Plan* (RMP) (1995)
2. *Final Supplemental Environmental Impact Statement and Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (Northwest Forest Plan FSEIS 1994 and ROD 1994)
3. *Final SEIS for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (2000), and the ROD and *Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (2001)
4. *Medford District Integrated Weed Management Plan Environmental Assessment (1998*) and tiered to the *Northwest Area Noxious Weed Control Program* (EIS 1985).

The Medford District initiated planning and design for this project to conform and be consistent with the Medford District's 1995 RMP. Following the March 31, 2011 decision by the United States District Court for the District of Columbia in Douglas Timber Operators et al. v. Salazar, which vacated and remanded the administrative withdrawal of the Medford District's 2008 ROD and RMP, we evaluated this project for consistency with both the 1995 RMP and the 2008 ROD and RMP. Based upon this review, the selected alternative does not contain design features not included in either the 1995 RMP or the 2008 ROD and RMP. Accordingly, this project is consistent with the Medford District's 1995 RMP and the 2008 ROD/RMP.

The alternatives are compliant with the direction given for the management of public lands in the Medford District by the Oregon and California Lands Act of 1937 (O&C Act), Federal Land Policy and Management Act of 1976 (FLPMA), Endangered Species Act (ESA) of 1973, Clean Water Act (as amended 1972, 1981, 1987 and 2002), Safe Drinking Water Act of 1974 (as amended 1986 and 1996), Clean Air Act (as amended 1990), Archaeological Resources Protection Act of 1979, Taylor Grazing Act (TGA) of 1934, Public Rangelands Improvement Act of 1978, and National Environmental Policy Act (NEPA) of 1969.

F. SCOPING AND ISSUES

Scoping is the name for the process used to determine the scope of the environmental analysis to be conducted. It is used early in the NEPA process to identify (1) the issues to be addressed, (2) the depth of the analysis, and (3) potential environmental impacts of the proposed action.

A scoping letter was sent February 27, 2009 to interested parties notifying them of the BLMs intention to conduct an environmental analysis for the renewal of the 10-year grazing lease on the Cove Creek Allotment. The letter sought to gather comments and issues based on a range of options seeking to satisfy the needs described above. Three letters were received.

An interdisciplinary (ID) team of resource specialists reviewed the proposal and all pertinent information, including public input received, and identified relevant issues to be addressed during the environmental analysis. These issues will be used to identify required terms and conditions and to focus the analysis of environmental effects that may result from the implementation of BLM's proposed action or alternatives. Grazing is proposed at varying levels by alternative in the Cove Creek Grazing Allotment. The following questions frame the issues determined to be relevant to the Cove Creek Grazing Lease Renewal proposal.

- What is the potential for effects to riparian and wetland areas and associated aquatic habitat?
- What is the potential for effects to water resources?
- What it the potential for effects to fish?
- What is the potential for effects to botanical resources?
- What is the potential for effects to wildlife?
- What is the potential for effects to soils and site productivity?

CHAPTER 2 - ALTERNATIVES

A. ALTERNATIVES ANALYZED IN DETAIL

This chapter describes the Proposed Action Alternative, and alternatives to the proposed action, developed by the ID Team to achieve objectives identified in the Purpose and Need statement in Chapter 1. A no-action alternative, which assumes a continuance of the existing lease, is presented to form a base line for analysis. Lease Terms and Conditions, included as required features of Alternatives 1 and 2 are important for reducing impacts of grazing and considered in the analysis of anticipated environmental impacts.

Common to All Grazing Alternatives

GRAZING MANAGEMENT

It is mandatory under all alternatives that Terms and Conditions would be met by the lessees. If it is determined by the BLM at any time that a lessee is not meeting their required Terms and Conditions, corrective measures would be implemented. Corrective measures would include consulting with the responsible lessee and may include withholding the annual use authorization, temporary or permanent

reductions in AUMs, or lease cancellation. Failure to maintain range improvements to BLM standards could result in an evaluation for damages and compensation to cover maintenance deficiencies based on non-compliance with lease Terms and Conditions, and other penalties defined in 43 CFR 4170 *Penalties*.

Alternative 1- No Action

Under the No Action Alternative, the grazing lease on the Cove Creek Allotment would be issued at the same animal unit month (AUM) level, season of use and with the same terms and conditions currently in effect. One AUM is the amount of forage necessary for the sustenance of one animal unit, i.e. one cow/calf pair or one cow, heifer, steer, or bull for a period of one month. Total AUMs represent the number of animal units (or cattle) multiplied by the number of months included in the season of use.

Grazing Management

The grazing lease would be issued for a term of 10 years continuing livestock grazing during the permitted season with 49 cattle from May 1 to June 15 totaling (75 AUMs).

Terms and Conditions

The following terms and conditions are specified by the authorized officer in accordance with 43 CFR 4130.3-1 and 4130.3-2, and are intended to assist in achieving management objectives, provide for proper range management, or assist in the orderly administration of the public rangelands.

- Turn-out will be based upon range readiness as determined by BLM*.
- Actual use reports are to be returned within 15 days of off-date.
- Maintenance of assigned range improvements is a requirement of lease.
- Billings are due upon receipt and must be paid prior to turn-out.
- Late payment may result in unauthorized use and/or interest penalty.
- BLM approved ear tags are a requirement of lease.

*Range readiness is generally determined to be when the soil moisture is low enough to prevent impacts from livestock hooves and damage to soils, and the stage of plant growth has progressed enough to where grazing may begin without damage to vegetation. Therefore, the turn-out dates described in this EA could potentially be adjusted slightly by the BLM based on range readiness.

Range Improvements & Maintenance

There are currently five rangeland improvement projects in the Cove Creek Allotment. Under the No Action Alternative, the BLM would continue to maintain four of the improvement projects, and the lessee would be responsible for maintaining one of the projects (Table 2-1).

Maintenance consists of the timely repair through the input of sufficient labor and materials to keep improvements in usable condition for the purposes intended over the normal expected and extended life span (based on required inputs of new materials or updates to design over time). In the event that repairs would no longer be effective in maintaining the proper function of range improvements, the lessees would notify the BLM to determine replacement needs.

Existing exclosure fences would be maintained to exclude livestock at all times Fence maintenance includes: periodic inspection for functionality, keeping wire tight and properly attached to posts with approved materials, keeping stays functional, repairing gates, repairing drainage crossings, splicing broken wire, replacing segments of wire when worn out, and any other work necessary to keep fences functional.

Maintenance for springs, pipelines, and troughs, includes: periodic inspection, repair or replacement of worn or damaged parts, repair of leaks, removing trash or silt, winterizing the facility, and maintaining

wildlife escape ramps.

Failure of the lessee to maintain assigned range improvements to BLM standards could result in an evaluation for damages and compensation to cover maintenance deficiencies based on non-compliance with lease Terms and Conditions and other penalties defined in 43 CFR 4170 *Penalties*, which may include withholding the annual use authorization, temporary or permanent reductions in AUMs, or lease cancellation.

Alternative 2 - Proposed Action

This alternative would modify the existing livestock grazing lease to change the season of use in the Cove Creek Allotment and split the allotment into two separately fenced pastures. Pasture 1 would be approximately 2,065 acres (1,080 BLM acres) and includes; T. 38S R. 2E. Section 3 and BLM portions of Section 4, 9, and 10 and Pasture 2 would be approximately 920 acres (120 BLM acres) and includes; T. 38S R. 2E Sections 10 and 11. Under this alternative a modified grazing lease would be issued authorizing 49 cattle (75 AUMs) to graze within Pasture 1 of the Cove Creek Allotment. The season of use would be changed to May 15 through June 30. Pasture 2 would be authorized under an Exchange of Use agreement (EOU) for 5 cattle (13 AUMs). The season of use would be within the dates of May 15 through November 15 for a period of 45 days. This alternative is proposed to reduce impacts to riparian areas and plant communities within the allotment.

The following terms and conditions are specified by the authorized officer in accordance with 43 CFR 4130.3-1 and 4130.3-2, and are intended to assist in achieving management objectives, provide for proper range management, or assist in the orderly administration of the public rangelands.

- Turn-out will be based upon range readiness.
- Actual use reports are to be returned within 15 days of off-date.
- Maintenance of assigned range improvements is a requirement of lease.
- Billings are due upon receipt and must be paid prior to turn-out.
- Late payment may result in unauthorized use and/or interest penalty.
- BLM approved ear tags may be a requirement of lease.
- Lessee would conduct active management practices such as herding to promote livestock distribution to avoid sensitive areas and site damage from overuse.
- Lessee would limit use of riparian areas accessible by livestock that are functioning at risk or non-functional in Sections 3 and 11 by herding and salting the livestock.
- An average stubble height of 5 inches will be maintained in riparian areas throughout the season.
- Lessee shall provide reasonable administrative access across private and leased lands to the Bureau of Land Management for the orderly management and protection of the public lands.
- Salt blocks would be placed at least ¼ mile from streams (intermittent and perennial), wet areas, ponds, springs, seeps, and special status species.
- All livestock would be removed from the allotment by the schedule off-date.

Range Improvements & Maintenance

Under this alternative, maintenance of two range improvement projects would become the responsibility of the lessee, as noted in Table 2-1 below. A more detailed description of maintenance requirements is included under Alternative 1, above.

The existing water development (project #750080) in T. 39 S., R. 2 E. in Section 11 would be redesigned to install an off-site trough and construct an exclosure around the pond. This would include adding additional pipe to install a trough. Trees will be felled towards riparian areas at key locations in Section 11 where needed to obstruct access by livestock.

Alternative 3 - No Grazing

Under the no grazing alternative the grazing lease would not be renewed on the Cove Creek Allotment. In accordance with 43 CFR 4110.3-3, active use of the allotments would terminate at the close of the 2011 grazing season.

Terms and Conditions
None

Maintenance of Range Improvements
Under Alternative 3, the BLM would continue to evaluate and maintain or remove the five rangeland improvement projects (Table 2-1). The lessees would not be responsible for maintaining any range improvement projects.

B. COMPARISON OF ALTERNATIVES

Table 2-1. Rangeland Improvement Projects by Maintenance Responsibility by Alternative

Project Name	Range Improv. No.	Project Description	Alt. 1 Maint. Resp. (current lease)	Alt. 2 Maint. Resp.	Alt. 3 Maint. Resp.
Cove Creek Detention Dam #1	750083	Water Development	BLM	BLM	BLM
Cove Creek Detention Dam #2	750082	Water Development	BLM	BLM	BLM
Cove Creek Detention Dam #3	750081	Water Development	BLM	BLM	BLM
Cove Creek Pipe Pump Chance	750080	Pump Chance, Trough, and Fence	BLM	Lessee	BLM
Cove Creek Spr. #2	750262	Water Development & Trough	Lessee	Lessee	BLM

Table 2-2. Proposed Level of AUMs and Season of Use by Alternative

Comparison Factor	Alternative 1 No Change	Alternative 2	Alternative 4 No Grazing for Ten years
Numbers of Cattle **Pasture 1:** **Pasture 2:**	49	49 5 (EOU)	0
Season-of-Use **Pasture 1:** **Pasture 2:**	May 1 to June 15	May 15 to June 30 May 15 to Nov 15 (45d)	No grazing for 10-years
Active AUMs	75	75	0
EOU AUMs	0	13	0
Total AUMs	75	88	0
Days on the Allotment	46	45	0
Improvement Responsibility **BLM:** **Lessee:**	4 1	3 2	5 0

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

An alternative that reduced the number of AUMs was discussed during ID Team meetings and was suggested by the public in response to the EA. For analysis purposes, a reduction of 50% would provide for effects that fall between Alternatives 2 and 3 (no grazing).

The IDT had previously discussed an alternative with a proposed 50% AUM reduction, but did not develop it in detail, because there was little detectable difference between the 50% reduction in AUMs alternative and Alternatives 2 and 3 (no grazing). In addition, AUM reduction beyond the current AUMs would leave the authorization as nonviable to a grazing operation (as expressed by the lessee in a meeting with the ID Team). The greatest effects from grazing on the allotment are at watering locations and in riparian areas, in the late season. During hot, dry periods, this is where most palatable forage is located. The rationale for reducing AUMs is expected to produce noticeable positive effects in riparian areas.

There are several ways AUMs can be reduced; AUMs can be reduced by shortening the grazing season while leaving the number of cows on the allotment unchanged. This was not considered because there is no appreciable late season (beyond September 1) grazing except for a minimal number of cows (5) in Pasture 2 of Alternative 2.

AUMs can be reduced by retaining the length of season, but reducing the number of cows that are allowed to graze. This was not considered because evaluation predicts only slight differences between alternatives will occur (see Table 3-6, for example), and the current alternatives are expected to achieve progress toward meeting expected functional standards. A comparison of effects between Alternative 2 and 3 (no grazing) demonstrates the slight range of differences that now exist (*see environmental consequences sections*):

Effect	***Alternative 2 (75 AUM)***	***Alternative 3 (0 AUM)***
Stream temperature	Slight potential change due to possible late season increase in streamflow	Slight potential change due to possible late season increase in streamflow
Sedimentation	Decrease in sediment minimal due to high road densities	Decrease but not detectable
Riparian Vegetation	Slight increase in recovery potential	Recovery over time from the effects of grazing
Aquatic Condition	Short Term—Maintain Long Term—Improve	Short Term—Improve Long Term—Improve

Further, the mitigation proposal (in Alternative 2 and applicable to other action alternatives such as a 50% reduction in AUMs alternative) to exclude use of the pond development in T39S, R2E, Sec. 11, eliminates the most significant riparian impact on the allotment, and the hotspot in Section 3, initiated by the 2008 unauthorized use has fully recovered from the 2009 season-long rest. Since streambank trampling at these few “hotspots” is being eliminated or effectively mitigated and improved, a more significant reduction in AUMs won’t appreciably produce greater effects.

From a cumulative point of view, the differences are noted to be slight between Alternative 2 and Alternative 3 (see Table 3-6 Revised EA P. 17).

CHAPTER 3-AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

A. INTRODUCTION

The Affected Environment describes the existing conditions of the project planning area and associated analysis areas, and sets the environmental baseline for comparing the effects of the alternatives, including the No-Action Alternative. This chapter describes the present conditions of each affected resource (soils, water, vegetation, wildlife, etc.) within the proposed Cove Creek Lease Renewal planning and analysis areas, followed by the estimated environmental effects of implementing the alternatives. The affected environment is described to the level of detail needed to determine the significance of impacts to the environment of implementing the Proposed Action or alternatives.

The impact analysis addresses direct, indirect, and cumulative effects of implementing each of the alternatives on all identified affected resources. Because no new management is proposed under Alternative 1, the no-action alternative, the effects described reflect the direct and indirect impacts shaped by ongoing management including the current Cove Creek Allotment grazing lease. Discussion for Alternative 2, the proposed action alternative, reflects the direct and indirect impacts of authorizing the new version of the Cove Creek Allotment grazing lease. Discussion of Alternative 3, the no-grazing alternative, evaluates the direct and indirect consequences of eliminating grazing on the Cove Creek Allotment.

The analysis areas for actions proposed under this EA vary by resource. For all resources it includes the project area, which encompasses the areas where actions are proposed for the Cove Creek Lease Renewal.

B. CONSIDERATION OF CUMULATIVE EFFECTS

The Council on Environmental Quality (CEQ), in guidance issued on June 24, 2005, points out, the "environmental analysis required under NEPA is forward-looking," and review of past actions is required only "to the extent that this review informs agency decision-making regarding the proposed action." The CEQ stated in this guidance that "[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." This is because a description of the current state of the environment inherently includes the effects of past actions. The CEQ guidance specifies that the "CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions." The importance of "past actions" is to set the context for understanding the incremental effects of the proposed action. This context is determined by combining the current conditions with available information on the expected effects of other present and reasonably foreseeable future actions.

The analysis of the effects of other present and reasonably foreseeable actions relevant to the effects of the proposed action is necessary. How each resource analysis uses the information concerning other present and reasonably foreseeable actions is dependent on the geographic scale of concern and attributes considered during each resource analysis. Reasonably foreseeable actions are considered and analyzed as appropriate specific to each affected resource.

Silvicultural Management

Pre-commercial thinning is planned for several units over the next 2-5 years with manual pruning of the lower branches for improved wood quality, dependent on funding.

Table 3-1. Silvicultural Treatments within the Cove Creek Allotment

Unit	Location	Silviculture Prescription Proposal			
		Vascular/Non-vascular Botany Surveys	Hand Pruning *	Pre-commercial Thinning	Acres
Cove Creek #4	T39S-R2E-11	Summer-2010	Fall-2010/2011	Completed	25
Cove Creek #5	T39S-R2E-11	No Treatment	No Treatment	Completed	29
Cove Creek #6	T39S-R2E-03	No Treatment	No Treatment	Completed	18
Cove Creek #7	T39S-R2E-03	No Treatment	No Treatment	Completed	15
Cove Creek #8	T39S-R2E-9/10	Summer-2010	Fall-2010/2011	Completed	08
Cove Creek #9	T39S-R2E-09	Summer-2010	Fall-2010/2011	Completed	20
Cove Creek #10	T39S-R2E-09	Summer-2009	No Treatment	Fall-2010	13

*Manual pruning will be dependent on funding for 6320 silviculture program in Fiscal Year 2010/2011.

Sampson Cove Timber Sale

Approximately 150 acres of the Sampson Cove timber sale area is within the Cove Creek grazing allotment. Although the future project can be associated with a general geographic area, and would be designed to implement forest health a timber resource management actions/objectives of the Medford District RMP. The proposal is to treat approximately 504 acres of vegetation using a variety of silvicultural prescriptions and harvest methods as described in the Sampson Cove Forest Management Project EA (DOI-BLM-OR-M060-2010-0024-EA). The Decision for this project is under Protest at this time. The cumulative effects analyses completed for this timber sale project considers past, present, and reasonable foreseeable actions at the time of the analysis, including this Cove Creek Grazing Lease Renewal project.

Methane Emissions - Greenhouse Gas Production Resulting from Livestock Grazing on the Cove Creek Allotment

Livestock grazing results in methane emissions as a result of ruminant digestion. Methane emission rates from cattle vary widely and depend on many variables (Johnson and Johnson 1995; DeRamus et al. 2003). Estimates for grazing cattle typically range from 80 – 101 kilograms of methane per year per animal (EPA, 2009) or 6.7 -9.2 kilograms of methane per month. This analysis will assume a methane emission rate of 8 kilograms of methane per animal unit month (AUM). Assuming that methane has a global warming potential 21 times carbon dioxide (EPA 2009, p. ES-3), each AUM results in 0.168 metric tons of carbon dioxide equivalent. Continuing to lease this area (in this example) for grazing use at the authorized level of 1,000 AUMs would result in methane emissions of 168 metric tons of carbon dioxide equivalent per year. Current U.S. emissions of methane from livestock total approximately 139 million metric tons of carbon dioxide equivalent per year (EPA 2009, p. 6-2); current U.S. emissions of all greenhouse gases total approximately 7 billion metric tons of carbon dioxide equivalent (EPA 2009, p. 2-4); current global emissions of all greenhouse gases total 25 billion metric tons of carbon dioxide equivalent (Denman et al. 2007, p. 513). This emission would represent 0.0001% of the annual U.S. methane emissions from livestock, and 0.000002% of the annual U.S. emissions of all greenhouse gases, and 0.0000007% of the global emissions of all greenhouse gases. Carbon storage as a result of changes in grazing practices is likely to be small and difficult to predict, especially where a rangeland health assessment has determined that the Standards for Rangeland Health Standards and Guidelines for Livestock Grazing Management are being met. Therefore, this analysis will assume that changes in grazing practices on allotments would not result in any change in total carbon storage. Livestock grazing

can affect rangeland carbon levels, through changes in plant community and changes in ecosystem processes, but the effects have been variable and inconsistent among the ecosystems studied (Schuman et al. 2009). Some studies have found that grazing can result in increased carbon storage compared to no grazing, because of increased plant turnover and changes in plant species composition (Follett et al. 2001). Many changes in rangeland carbon from different grazing practices do not result in substantial changes in total ecosystem carbon, but are redistributions of carbon, for example, from above-ground vegetation to root biomass (Derner and Schuman 2007). Overall, changes in rangeland carbon storage as a result of changes in grazing practices are likely to be small and difficult to predict. Therefore, this analysis will assume that changes in grazing practices on this allotment would not result in any change in total carbon storage.

Livestock grazing under alternative 2 represents the highest potential methane production of all the alternatives being analyzed in this EA. As the EPA, working in conjunction with the Oregon DEQ, have set project area limits of 25,000 metric tons of Methane production for projects within the Medford District project area, the Cove Creek Allotment falls well below the production limit to be in compliance with the Council for Environmental Quality's directions for Methane production.

Table 3-2. Methane Production (GHGs) From Grazing on the Cove Creek Allotment

Number of Livestock	AUMs	Tons CO2 Equiv./AUM	Methane Production (metric tons)
54 cattle	88	0.168	14.78

C. PROPOSED MITIGATION MEASURE

Two years of rest is recommended to allow for improvement of the function of the streams, wetlands, springs and seeps. This proposed mitigation measure is not considered in the resource effects analyses detailed below. However, if selected by the Responsible Official, the Ashland Resource Area Field Manager, this proposed mitigation would allow for some modest recovery of vegetation on streambanks and in the hotspots in Section 3 and 11. The WQRP recommends improving riparian rooting strength and streambank roughness by allowing historic streambank failures to revegetate. The lessee elected non-use during the 2009 grazing season, therefore one year of rest has occurred. Monitoring of riparian vegetation and bank condition could evaluate the results of the first year of rest and potentially a second year of rest to determine readiness of the allotment to support grazing use with lower potential for effects to riparian conditions than disclosed below.

D. HYDROLOGY

1. Affected Environment

This allotment is in the upper reaches of the Bear Creek Watershed near the divide between the Rogue and Klamath basins in the southern Cascade Range. Mild, wet winters and hot, dry summers characterize the Upper Bear Creek Watershed. Elevation within the allotment ranges from 2500 feet to 4900 feet. Rain predominates in the lower elevations (below 3,500 feet) with the majority occurring in the late fall, winter, and early spring. A mixture of snow and rain occurs between approximately 3,500 feet and 5,000 feet and this area is referred to as either the rain-on-snow zone or transient snow zone (USDI 2000:19) This allotment includes riparian meadows, springs and headwater tributaries to Cove Creek and a section of the mainstem of Dosier Creek. Much of the streambanks in the BLM managed areas are steep, stable and brushy. Within the allotment boundary, on BLM land there are 2.0 miles of perennial streams, 6.1 miles of intermittent streams, and 4.3 miles of dry draws.

a. Water Quality

The Oregon Environmental Quality Commission has adopted numeric and narrative water quality standards to protect designated beneficial uses. In practice, water quality standards have been set at a level to protect the most sensitive uses. Cold-water aquatic life such as salmon and trout are the most sensitive beneficial uses in Bear Creek and its tributaries (ODEQ 2004:5). The Oregon Department of Environmental Quality (DEQ) is required by the federal Clean Water Act (CWA) to maintain a list of stream segments that do not meet water quality standards for one or more beneficial uses. This list is called the 303(d) list because of the section of the CWA that makes the requirement. DEQ's 2004/2006 303(d) list is the most recent listing of these streams (ODEQ 2006a).

The BLM is recognized by Oregon DEQ as a Designated Management Agency for implementing the Clean Water Act on BLM-administered lands in Oregon. The BLM and DEQ have a Memorandum of Agreement (MOA) that defines the process by which the BLM will cooperatively meet State and Federal water quality rules and regulations. In accordance with the MOA, the BLM in cooperation with the Forest Service, DEQ, and the Environmental Protection Agency is implementing the *Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters* (USDA and USDI 1999). Under the Protocol, the BLM will protect and maintain water quality where standards are met or surpassed, and restore water quality limited waterbodies within their jurisdiction to conditions that meet or surpass standards for designated beneficial uses. The BLM would also adhere to the State Antidegradation Policy (OAR 2006b; 340-041-0004) under any proposed actions. The DEQ has determined the Total Maximum Daily Load (TMDL) for Upper Bear Creek. A water quality restoration plan (WQRP) for BLM-administered lands in the Upper Bear Creek Analysis Area (USDI 2008) was prepared by the BLM and approved by the DEQ. Recovery goals focus on protecting areas where water quality meets standards and avoiding future impairments of these areas, and restoring areas that do not currently meet water quality standards.

There are no 303(d) listed streams within the Cove Creek Allotment. However, Cove Creek is a tributary to Walker Creek, a stream listed for exceeding the 55.0^{o}F 7-day statistic for spawning salmonids during October 1- May 31. Walker Creek remains a category 4A stream, water quality limited, TMDL approved. BLM collected summer stream temperature data on Dosier Creek, a tributary to Cove Creek, in 1999 as part of a coordinated effort with DEQ for the Bear Creek TMDL. The 7-day statistic for Dosier Creek of 63.7^{o}F at the section 34/3 border did not exceed either the 1996 or the 2004 temperature criteria. However, the proximity of this single year statistic to the temperature criteria warrants acknowledgement. Stream temperature and sedimentation can be affected by grazing.

Sedimentation associated with channel erosion is ongoing in some portions of the allotment. During BLM stream surveys (USDI 2007), the tendency for streambank failure was evaluated with a "slump potential" rating (Table 3-2). Cove Creek has a high number of slumps present, but it's channel only has 2 percent (496 ft.) of Cove Creek occurring within the allotment boundary, flowing along a steep, rocky, cliff-like scarp, inaccessible to livestock. The rest of Cove Creek's main channel (98 percent) occurs below the grazing allotment's boundary and is inaccessible to livestock from the allotment.

In general, channel stability on BLM-managed lands is expected to improve as Riparian Reserves mature and additional structural material enters the channel area. BLM stream surveys conducted in 2007 in the analysis area (USDI 2007) identify scattered locations in T. 39 S., R. 2 E., Sections 3 and 11 where livestock grazing is contributing to stream sedimentation through trampling of streambanks and springs, but is addressed in the mitigation measures.

In November and December 2008, cows were documented in the riparian areas on private lands within the allotment. The BLM land in the adjacent section (11) is not fenced out. As a result, the riparian areas, wetlands, and springs in Section 11 were heavily over-grazed and hoof-churned during 2008 when cows were on the allotment five months more than permitted. To mitigate the effects of the unauthorized grazing, the lessee cooperated to provide a grazing-rest period in 2009. Subsequent field checks indicate

recovery has occurred (*pers. Com. with K. Kocarek, spring 2009, Cove Creek field notes, 2008 to 2010*).

Table 3-2. Slump Potential Ratings and Slump Presence on BLM-Administered Lands for Stream Reaches Surveyed by BLM (USDI 2008)

Analysis Area	Stream Miles Surveyed for Slump Presence and Potential	Slump Potential Ratings			Number of Stream Reaches with Slumps Present
		Low (% of miles surveyed)	Medium (% of miles surveyed)	High (% of miles surveyed)	
Dosier Creek	.31		100%		none
Cove Creek	7.8	6%	40%	54%	11

Water withdrawals have the potential to greatly impact surface water temperatures within the Bear Creek Watershed (ODEQ 2007a). There are numerous diversions from Dosier Creek and the tributaries to Cove Creek within the allotment area. There are three authorized diversions within the allotment on BLM land. Oregon Water Resources Department records indicate a point of diversion in section 3 NE ¼ NE ¼ for domestic and livestock use. Currently, water flows through these diversion because the catch basis's have filled with sediments from all past-activities and provide no restriction to flow. BLM has two water rights to store water in NW ¼ NW ¼ and SE ¼ SW ¼ of Section 11 for livestock, wildlife, fire suppression, and road operations. The management of water withdrawals is within the jurisdiction of the Oregon Water Resources Department and as such the BLM has no authority in this area.

Riparian Reserves establish protection for all fish-bearing streams as well as nonfish-bearing perennial and intermittent streams, wetlands, lakes, ponds, and unstable areas. Riparian Reserves are adequate to maintain riparian conditions necessary to protect stream shade and restore water temperature over time (USDA and USDI 2005). Over the past 10 years, road construction has declined and road decommissioning and upgrading has increased. Implementation of best management practices (BMPs) during road and logging operations has reduced impacts on water quality. Water quality on federal lands is on an upward trend with reductions in summer stream temperatures and sediment input because of the establishment of riparian reserves, the decline in road construction, increase in decommissioning, and implementation of BMPs.

Management measures used to limit the presence of livestock in stream channels or riparian zones in order to reduce sedimentation (USDI 2006a) will also minimize the amount of bacterial contamination in surface water from BLM-managed lands.

Current conditions resulting from past and present actions are summarized as follows. Mass wasting processes such as landslides and debris torrents continue to be the dominant sediment sources in the allotment. Surface erosion from existing roads on all lands contributes to low levels of sediment input primarily at road-stream crossings and where fill slopes closely parallel streams. Streambank trampling from livestock grazing continues to contribute sediment to streams.

Livestock access and concentration in streams or riparian zones continues to allow the potential of bacterial contamination in surface water from BLM-managed lands in some locations within the allotment, but has not been stated regarding water quality in the paragraph above.

Stream temperatures are on an upward trend (decreasing) on federal land as previously harvested riparian vegetation recovers. However, roads built in riparian areas, OHV use and livestock grazing that damages shade-producing vegetation in riparian areas will continue to contribute to temperature increases. On non-federal lands, near-stream vegetation disturbance/removal and water withdrawals continue to adversely affect stream temperatures (ODEQ 2004).

b. Watershed Analysis Recommendations

The allotment falls within the source water areas for the cities of Gold Hill, Rogue River, and Grants Pass. The surface water source for these four public water systems is the Rogue River. Cove Creek is a

tributary to Walker Creek, a tributary to Bear Creek. Bear Creek is a tributary to the Rogue River. The allotment is located over 38 miles upstream from the closest public water system intake.

A source water assessment is in progress for the Medford Water Commission and assessments have been completed by the DEQ and the Oregon Department of Human Services for the cities of Gold Hill, Rogue River, and Grants Pass. The completed assessments include an inventory of potential contaminant sources within the source water areas. Grazing animals were identified as a potential contaminant source for the Gold Hill, Rogue River, and Grants Pass drinking water protection areas. No other potential contaminant sources that could occur within the allotment were identified in the state source water assessments.

The *Water Quality Restoration Plan for the Upper Bear Creek Analysis Area* (USDI 2008:22) identified several nonpoint source factors that may result in increased thermal loads including: near-stream vegetation disturbance/removal, channel modifications and widening, dams, diversions, and irrigation districts, and hydromodification–water rights.

The *Water Quality Restoration Plan for the Upper Bear Creek Analysis Area* (USDI 2008:25) identifies percent-effective shade targets for major perennial and fish-bearing streams on BLM-administered lands (Table 3-3). Streams are considered recovered where current shade achieves the target shade or is 80 percent or greater. Dosier Creek is considered recovered (Table 3-3). Current shade for Cove Creek is less than the target for BLM-administered lands (Table 3-3) but it's channel is 98% outside the allotment boundary and the portion inside the allotment is on a rocky escarpment, inaccessible to livestock.

Table 3-3. Percent-Effective Shade Targets for BLM-Administered Lands in the Cove Creek Allotment (USDI 2008)

Stream Name	Current Shade[1] (%)	Target Shade[1] (%)	Years to Recovery
Cove Creek	70	91	64
Dosier Creek	84	97	0

[1]/ Current shade and target shade refer to percent-effective shade defined as the percent reduction of solar radiation load delivered to the water surface. Shade values are averages for all BLM stream miles assessed.

The *Water Quality Restoration Plan for the Upper Bear Creek Analysis Area* (USDI 2008:23) identifies the effect of channel morphology on stream temperature. Wide channels tend to have lower levels of shade due to simple geometric relationships between shade producing vegetation and the angle of the sun. Channel widening is often related to degraded riparian conditions that allow increased streambank erosion and sedimentation of the streambed. Natural erosion processes occurring in the Upper Bear Creek watershed such as landslides, surface erosion, and flood events contribute to increased sedimentation (USDI 2000:80). Sediment sources resulting from human activities include roads; logging (tractor skid trails, yarding corridors, and landings); concentrated livestock grazing in riparian zones; residential clearing of riparian zones; irrigation ditch blowouts; and poor irrigation practices (USDI 2000:80).

c. Riparian Condition

Riparian areas (streams, wetlands, springs, and seeps) within the allotment were inventoried in 2007 using BLM's *Process for Assessing Proper Functioning Condition*, Technical Reference 1737-9 (USDI 1993). The process used an interdisciplinary evaluation to rate riparian areas as either "Proper Functioning Condition", "Functioning at Risk", or "Nonfunctional". The ratings are defined as:

Proper Functioning Condition (PFC) – Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; develop ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The

functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation.

Functional—At Risk (FAR) – Riparian-wetland areas that are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

Nonfunctional – Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and thus are not reducing erosion, improving water quality, etc., as listed above. The absence of certain physical attributes, such as a floodplain where one should exist, is an indicator of nonfunctioning conditions.

The Cove Creek Allotment has an estimated 22 miles of stream channels on private and federal lands with 8.1 miles on BLM land (GIS data). Of these, 4.5 miles have been assessed for PFC. The surveys indicate that 3.0 stream miles (67%) within the allotment were found to be Functional at Risk with an upward trend (improving). The surveys indicate 0.5 stream miles (10%) as Functional at Risk with a downward trend (degrading). The surveys rated 0.8 miles (17%) of channels as Non-Functional. Streams classified as Proper Functioning made up 0.3 miles (6%).

According to the BLM stream survey, actively eroding banks and fine sediment percentages were high in the surveyed reaches of the Cove Creek allotment. Within the allotment, 1.8 stream miles on BLM land (24%) were found to have actively eroding banks with the level of erosion greater than 30%. Surveys also showed that 2.6 miles (36%) of the stream reaches had fine sediment levels greater than 30%; this level is above the "desirable" benchmark set by Oregon Dept. of Fish and Wildlife. A one meter exclosure cage was established near a spring in T. 39 S., R. 2 E., in Section 3 to monitor vegetation condition. Photos were taken throughout the 2003 and 2004 grazing seasons to monitor riparian vegetation and soil conditions inside and outside the exclosure. Trampling, soil disturbance, and stubble heights below the recommended 6 to 8 inches were observed outside the exclosure and throughout the spring area. In 2007, extensive trampling, soil disturbance, and stubble heights below 6 inches were observed during stream surveys of riparian areas, wet meadows and springs in T. 39 S., R. 2 E., in Sections 3 and Section 11. During field visits in July and November 2008, hydrology staff documented excessive grazing impacts at these locations and the presence of cows in Section 11 five months beyond the permitted season of use.

2. Environmental Consequences

The potential changes to hydrologic processes and water quality from implementing Alternative 1 (No Action) and Alternative 2 (Proposed Action) are summarized below in Table 3-4 and Table 3-5.

Table 3-4. Potential Changes to Hydrologic Processes due to Grazing

Potential Changes to Hydrologic Processes that Affect Streamflow	Potential Changes to Streamflow
Peak Flows	
• *Reduced infiltration due to compaction: increases surface run off, decreases groundwater, and reduces time to reach peak.*	• *Reduced time to hydrograph peak.* • *Increased frequency of peak flows.* • *Increased magnitude of peak flows.*
Low Flows	
• *Decreased summer streamflow due to water withdrawals for livestock.* • *Lowered water table due to riparian vegetation removal.*	• *Decreased magnitude of low flows*

Table 3-5. Potential Changes to Water Quality due to Grazing

Potential Changes to Processes that Affect Water Quality	Potential Changes to Water Quality
• *Riparian vegetation removal: reduced stream shade, increased erosion, and increased channel width-depth ratio.* • *Streambank disturbance: increased erosion and increased channel width-depth ratio.* • *Water quality contamination due to livestock in streams.*	• *Increased temperature.* • *Decreased dissolved oxygen.* • *Increased turbidity/sediment.* • *Increased bacteria/pathogens.*

Table 3-6 shows a comparison between alternatives of the potential for cumulative effects on stream flows, water quality, and riparian functioning condition.

Table 3-6. Comparison of Alternatives for Cumulative Effects on Streamflows, Water Quality and Riparian Condition

Resource Value Affected	Potential for Cumulative effects on Hydrology by Alternative		
	ALT 1. (No Action)	ALT 2. (Proposed Action)	ALT 3. (No Grazing)
Peak Flows	Low Negative	Low Negative	Slight Positive
Low Flows	Low Negative	Low Negative	Slight Positive
Temperature	Mod. Negative	Low-Mod. Neg.	Slight Positive
Bacteria/ Pathogens	Low Negative	Low Negative	None
Turbidity/ Sediment	Mod. Negative	Low-Mod. Neg.	Slight Positive
Riparian Condition	Mod. Negative	Low-Mod. Neg.	Slight Positive

This table is meant to present a continuum of cumulative effects across the alternatives. Alternative 1, 2, and 3 all present a similar low potential for negative effects to peak flows, low flows, bacteria and pathogens. Alternatives 2 and 3 have less potential for negative effects to temperature, turbidity, and riparian condition than alternative 1. Alternative 2 will slightly improve conditions at the site level and the HUC 7. Alternative 3 will improve conditions more rapidly at the site level and the HUC 7 than alternative 2.

a. Alternative 1 - No Action

Under the No Action Alternative, the grazing lease on the Cove Creek Allotment would be issued at the same animal unit month (AUM) level, the same season of use, and with the same terms and conditions currently in effect.

Grazing animals were identified as a potential contaminant source for the Gold Hill, Rogue River, and Grants Pass drinking water protection areas. This allotment is within the source water areas for the cities of Gold Hill, Rogue River and Grants Pass; however, given the numbers of cattle grazed on this allotment is low and the grazing seasons are short, it is unlikely that this allotment grazed as prescribed under this alternative is a significant contributor to the identification of grazing as a potential contaminant source.

This analysis assumes the season of use is May 1- June 15, unlike 2008, when utilization continued into December. Long-term consequences of continued grazing at current levels (pre-2008) would mean the "hot spots" identified in the BLM 2007 stream surveys would continue to have heavy compaction, eroding banks, and reduced productivity of riparian vegetation. These hotspots include but are not limited to NE corner of Section 3 and the intermittent stream reach (and associated perennial springs) that follows road 39-2E-3.2 road above the quarry in section 3. Soil disturbance, post-holing, churning and compaction from cattle loitering in these areas would continue, threatening the water holding capacity of these ecosystems. The intermittent stream and associated perennial springs would continue to be grazed at the current level of use and would continue to be nonfunctional. Downcutting would continue in the sections of the channel that are unarmored by bedrock and cobble. The stability of the few low gradient areas where sediment is being retained by pieces of large wood, woody riparian species, and riparian

groundcover would continue to be compromised. Under this alternative, impacts to riparian soils would continue to compromise the soil's ability to retain moisture. The extensive post holing, trampling, and degradation to the hillside, seeps and wetlands below the pump chance in SE ¼ SW ¼ of Section 11 would likely continue.

b. Alternative 2 - Proposed Action

Under this alternative the allotment would be modified into two pastures. The release date would be changed from May 1 to May 15. Pasture 1 would authorize 75 AUMs from May 15 to June 30. Pasture 2 would authorize 13 AUMs for 45 days between May 15 and November 15. In pasture 2, the existing water development (#750080) in section 11 would be redesigned to install an off-channel trough and construct an exclosure around the pond.

Grazing animals were identified as a potential contaminant source for the Gold Hill, Rogue River, and Grants Pass drinking water protection areas. This allotment is within the source water areas for the cities of Gold Hill, Rogue River and Grants Pass; however, given the numbers of cattle grazed on this allotment is low and the grazing seasons are short, it is unlikely that this allotment grazed as prescribed under this alternative is a significant contributor to the identification of grazing as a potential contaminant source.

This alternative slightly increases recovery potential for the riparian areas of the allotment. It is possible that a later season-of-use will allow more of the riparian and wetland soils to dry out before the grazing season starts which would minimize soil disturbance. Historic "hot spots" where livestock congregate every year often exhibit soil compaction and hoof prints in areas of high soil moisture where it can be especially detrimental. This alternative would allow more time for soils to recover after a season of grazing. This recovery could include increased riparian species in some areas and increased vigor of streamside vegetation.

Soil compaction from grazing reduces soil porosity, and therefore, the water-holding capacity of soils. Soil water-holding capacity is particularly important in the wet areas and seeps. These areas provide groundwater storage. Cattle use in these areas has changed the fragile soil composition and structure. Trampling by cattle reduces the porosity in wetlands, springs, and seeps and thus reduces the volume of water that can be contained in the macropores. The indirect effect of this compaction is less water storage capabilities and reduced contribution to late-season streamflows. By pushing the season of use forward two weeks under this alternative, a slight reduction in soil compaction in the wetlands, springs, and seeps may improve late-season streamflows. Streamflow influences stream temperature. The temperature change produced by a given amount of heat is inversely proportional to the volume of water heated (USDA and USDI 2005). A stream with less flow will heat up faster than a stream with more flow given all other channel and riparian characteristics are equal.

The exclosure of the water development in Section 11 and installation of the off-channel watering trough on road 39-2E-11.1 will decrease trampling of the water source itself and potentially reduce the degradation of the hillside wetland below the water source.

The increase of herding efforts may reduce the impacts to the hotspots in Section 3 and 11 riparian and wetland hotspots. However, as the allotment dries out livestock will continue to concentrate in the wettest areas of the allotment. The terms requiring active livestock management and maintenance of the 5" stubble height in the riparian areas will be essential to the success of this alternative. Under this alternative, the later season of use, the 5" riparian stubble height term, and increased herding efforts will likely improve the stability of streambanks and slightly decrease grazing-related erosion. Based on field observations after cattle trespass in 2008 and the subsequent year of non-use, it was noted that removing the cattle from the riparian area for a few growing seasons would further improve the current conditions.

The long-term goal of the WQRP is compliance with water quality standards for the 303(d) listed streams in the Upper Bear Creek Analysis Area. The WQRP identifies TMDL implementation strategies to

achieve this goal. Recovery goals focus on protecting areas where water quality meets standards and avoiding future impairments of these areas, and restoring areas that do not currently meet water quality standards. The recovery of water quality conditions on BLM-administered land in the Upper Bear Creek Analysis Area is dependent upon implementation of the BLM *Medford District Resource Management Plan* (USDI 1995). The RMP (Appendix D:172) includes best management practices (BMPs) that are intended to prevent or reduce water pollution to meet the goals of the CWA.

c. Alternative 3 - No Grazing

The elimination of grazing on this allotment would not change the identification of grazing as a potential contaminant in the source water areas for the cities of Gold Hill, Rogue River, and Grants Pass.

The singular action of eliminating grazing in this allotment is not likely to change the water quality listing for Walker Creek. This is because only 2 percent (496 feet) of Cove Creek's main channel occurs within the allotment boundary and flows along a steep, rocky, cliff-like escarpment, inaccessible to livestock. The rest of Cove Creek's main channel (98%) occurs below the grazing allotment's boundary and is inaccessible to livestock from this allotment.

The long-term goal of the *Water Quality Restoration Plan for the Upper Bear Creek Analysis Area (WQRP)* is compliance with water quality standards for the 303(d) listed streams in the Upper Bear Creek Analysis Area. The WQRP identifies TMDL implementation strategies to achieve this goal. Recovery goals focus on protecting areas where water quality meets standards and avoiding future impairments of these areas, and restoring areas that do not currently meet water quality standards. This allotment has both. As stated in the *Water Quality Restoration Plan for the Upper Bear Creek Analysis Area (WQRP)*, current shade is less than the target on BLM-administered lands for Cove Creek.

As identified in the WQRP (USDI 2008:23), stream temperature is affected by both shade and channel modification. For achievement of shade targets, the WQRP recommends allow riparian vegetation to grow up to reach target values. The WQRP also recommends improving riparian rooting strength and streambank roughness by allowing historic streambank failures to revegetate. Removing grazing from the allotment would achieve both these goals.

Streamflow also influences stream temperature. The temperature change produced by a given amount of heat is inversely proportional to the volume of water heated (USDA and USDI 2005). A stream with less flow will heat up faster than a stream with more flow given all other channel and riparian characteristics are equal. Trampling by cattle reduces the porosity in wetlands, springs, and seeps and thus reduces the volume of water that can be contained in the macropores. The indirect effect of this compaction is less water storage capabilities and reduced contribution to late-season streamflows. In the absence of grazing, the storage capacity of the trampled wetlands, seeps, and springs would improve and could improve late-season streamflows and influence stream temperature.

Both the mainstem of Dosier Creek and the tributaries to Cove Creek that flow through have the potential to improve the quality of water in Walker Creek. While Dosier Creek at the section 34/3 border did not exceed either the 1996 or the 2004 temperature criteria, the proximity of this single year statistic to the temperature criteria warrants acknowledgement. This stream system is borderline. Stream temperature is driven by the interaction of many variables. The principal source of heat energy for streams is solar energy striking the stream surface (USDA and USDI 2005). Stream surface shade is dependent on riparian vegetation height, location, and density. The ability of riparian vegetation to shade the stream throughout the day depends on vegetation height and the vegetation position relative to the stream. The woody riparian vegetation and groundcover provide a necessary component of shade for the riparian areas in this allotment, especially in the meadow and wetland areas.

The elimination of grazing on this allotment would allow riparian vegetation to thrive in the perennial and intermittent streams, and the springs and wet meadow areas associated with these systems. Over time,

hoof impacts along the streams and at the springs would heal over. Soil disturbance and churning associated with cattle use in these areas would heal, protecting the water holding capacity of these ecosystems. Increases in riparian vegetation where there is sufficient water to support these species would be expected. Improved riparian vegetation will contributes to rooting strength and floodplain/streambank roughness that dissipates erosive energies associated with flowing water.

E. BOTANY

1. Affected Environment

Conifer communities create a landscape matrix within which the riparian areas and meadows grazed by livestock are embedded. Riparian areas include open wetland areas incorporating sedges and grasses. Shallow soils define open meadows that may be dominated by California oatgrass on clayey sites or Roemer's fescue on soils with more sand or silt. There are also areas dominated by oak woodland which are comprised primarily of Oregon white oak (*Quercus garryana)* with a smaller component of California black oak (*Quercus kelloggii)*. The shrub component is a mixture of buckbrush (*Ceanothus cuneatus)*, serviceberry (*Amelanchier alnifolia*), and deer brush (*Ceanothus integerrimus)*. Ground cover consists of an assortment of grass and forbs including; blue wild rye (*Elymus glaucus)*, Lemmon's needlegrass (*Achnatherum lemonni)*, Idaho fescue *(Festuca idahoensis)*, California oatgrass (*Danthonia californica)*, squirrel tail (*Elymus elymoides)*, prairie junegrass (*Koeleria macrantha)*, California Brome (*Bromus carinatus)*, Secund's bluegrass (*Poa secunda)*, Western buttercup (*Ranunculus occidentalis)*, yampah (*Perideridia sp.)*, harvest brodiaea (*Brodiaea elegans*), slender phlox (*Microsteris gracilis*), tarweed (*Madia sp.)*, lupine (*Lupinus sp.)*, and paintbrush (*Castilleja sp.)* The dry meadows are generally less productive and vulnerable to invasive plant influences from species such as; medusahead (*Taeniatherum caput-medusea)*, soft brome (*Bromus mollis)*, cheatgrass (*Bromus tectorum)*, bristly dogstail (*Cynosurus echinatus)*, bulbous bluegrass (*Poa bulbosa)* and a variety of other weedy species.

The forested portion of this allotment supports a diverse mix of forest plant communities, where invasive plant species are generally confined to road-sides or localized disturbed areas. Utilization is low enough to not disrupt the energy, nutrient, and hydrologic cycles. The dry meadows and oak woodland plant communities support a diverse mix of plant species. However, invasive plant species are scattered in patches throughout the majority of the non-conifer areas, particularly annual grasses. In addition to reducing habitat quality for wildlife, annual grasses have shallower root systems and shorter life cycles than native perennial grasses, and thus have reduced capacity to hold the soil and retain water and nutrients. Furthermore, annual grassland often accumulates a layer of thatch where decomposition and nutrient cycling are different than in native plant communities (Ehrenfeld 2003; D'Antonio and Vitousek 1992). Introduction and establishment of exotic annual grasses occurred in past decades, and current livestock grazing is not intense enough to contribute to additional conversion of native plant communities to exotic annual grasslands.

a. Threatened, Endangered, Survey and Manage and Bureau Special Status Species

The allotment was surveyed for Bureau Sensitive Status plants in the spring of 2007. The allotment is outside the range of federally listed plants; *Fritillaria gentneri, Limnanthes floccosa, Lomatium cookii,* and *Arabis macdonaldiana* (USDI Fish and Wildlife Service, 2003).

Table 3-7. Special Status Species (Vascular Plants)

Species	Status	Occurrences
rhizome bluegrass (*Poa rhizomata*)	BS	3
wooly meadowfoam (*Limnanthes floccosa ssp. bellingeriana*)	BS	1

BS - Bureau Sensitive

Livestock generally seek out grasses and grass-like plants (graminoids) to form the bulk of their diet

(Holechek et al. 1982). *Poa rhizomata* is a graminoid. The *Poa rhizomata* populations occur in areas that receive slight-light utilization. The *Limnanthes floccosa ssp. bellingeriana* population occurs in an area seldom visited by livestock, and thus remains generally unaffected by grazing.

Fungi, lichens, and bryophytes: Currently there are no known occurrences of Bureau Special Status fungi, lichens, or bryophytes within the allotment area.

b. Noxious Weeds

The allotment was surveyed for state listed noxious weeds in the spring of 2007. The following species from the Oregon Department of Agriculture Noxious weed list were found.

Table 3-8. Noxious weeds

Species	Occurrences
yellow starthistle (*Centaurea solstitalis*)	22
Canada thistle (*Cirsium arvense*)	6
Himalayan blackberry (*Rubus discolor*)	1
medusahead (*Taeniatherum caput-medusae)*	Not surveyed

Taeniatherum caput-medusae (medusahead) was not surveyed because of its wide distribution on clayey soils within the allotment. In the non-conifer habitats, medusahead and other exotic annual grasses are present in most meadows, and dominant in some areas. Exotic annual grass infestations are of concern because they alter the ecological functioning of native plant communities, reduce the value of wildlife habitat, and provide inferior forage for wildlife and livestock (D'Antonio and Vitousek, 1992). The areas most likely to experience conversion from native perennial grasslands to exotic annual grasslands have already undergone conversion, and current stocking rates are unlikely to convert additional areas of remnant native grassland. Due to their invasive nature, noxious weeds present on the allotment continue to spread when left untreated. Field visits to the allotment and BLM monitoring data in surrounding areas suggests exotic annual grasses are not spreading rapidly under current grazing regimes. However, areas that experience soil and vegetation disturbance within the allotment are at risk for weed colonization. The BLM weed control program uses herbicides, biological control agents, and hand pulling to treat infestations across the landscape as time, budget, and availability of personnel allow.

Yellow star-thistle (*Centaurea solstitalis)* occurs adjacent to roads and in highly disturbed areas. It occurs throughout the 48 contiguous United States and Canada with a few exceptions in the South and Northeast states. Yellow star-thistle can produce dense stands that displace native species and deplete soil moisture. Yellow star-thistle is listed by the Oregon State Weed Board as a "B" and a "T" noxious weed.

Canada thistle (*Cirsium arvense)* is a perennial with an extensive root system. This prickly rose-purple flowered plant can produce up to 1500 wind transported seeds per flowering shoot. Seed can remain viable in the soil for 20 years. Vegetative reproduction contributes to local spread and persistence. The large fibrous taproot can send out lateral roots as deep as three feet below the ground, from which shoots sprout up at frequent intervals. It also regenerates from root fragments less than one inch in length. There are 6 sites within the Cove Creek grazing allotment. This weed is a native of Eurasia. Detrimental effects include displacement of native species, decrease of plant diversity, reduced forage, and it serves as an alternate host for insects and pathogenic microorganisms that attack various crops. Successful control methods include biological, chemical, and some limited success with mechanical methods.

Medusahead (*Taeniatherum caput-medusae*) is found throughout the project area and adjacent private lands. This grass is common in disturbed, open grasslands but also invades oak woodlands and chaparral communities. It ranges throughout the western states and also in the northeast region. Medusahead prevents germination and survival of native species, ties up nutrients, and contributes to fire danger in the summer. Medusahead is unpalatable to livestock and wildlife except in the short window of its growing cycle prior to seed head formation. This generally occurs early in the spring or in the fall if moisture and

temperature allows a second period of germination.

Himalayan blackberry (*Rubus armeniacus*) is found in the project area generally associated with ditches and other waterways but also frequents other disturbed areas. It is found throughout the western US and is used by humans and wildlife mostly for food. Himalayan blackberry forms dense thickets that decrease usable pasture area for wildlife and livestock.

2. Environmental Consequences

a. Alternative 1 - No Action

Grazing occurs from May 1- June 15, many of the perennial plant species will not produce seed by May 1, much of the allotment is not grazed prior to seed set. In addition, the stocking rate is low enough to still allow 40-80% of the plants to produce seed every year. Grazing by livestock can be used as a method to control the spread of noxious weeds. The early season of use that occurs on this allotment allows livestock to graze invasive species such as annual grasses and yellow starthistle before they set seed and become unpalatable. The current grazing is having little effect on the allotments botanical condition. Plant community health will slowly increase or persist in its current state if grazing is continued under the current grazing authorization. Herbivory of and damage to the wetland vegetation, hydrologic cycle, and soil structure due to trampling and churning in riparian areas would continue. Continued grazing at the current level does not pose a threat to the persistence of Bureau Sensitive plants *Carex serratodens* and *Poa rhizomata* loss of some individuals would not contribute to the need to list these species.

Areas within this allotment that are overly dense would be susceptible to intense stand replacement fires. While this may be a natural process for most plant communities occurring in this allotment, it would open up some areas to weed invasion. Rare plant populations and uncommon oak woodland communities could be lost.

Localized site disturbance would continue to produce conditions favoring noxious weeds and invasive introduced species. These introduced species are superior competitors for available resources thereby displacing and excluding native plants. Livestock would continue to spread weed seed that passes through their bodies or becomes stuck on their hair and hooves. The level at which livestock grazing on this allotment occurs would not significantly change the composition, structure, and rate of weed spread. These weedy species would continue to spread or maintain their current levels particularly roadsides and open areas.

b. Alternative 2 - Proposed Action

The grazing lease would be renewed with a changed season of use and the allotment would be split into two pastures. Pasture 1 would be grazed from May 15- June 30. While many of the perennial plant species will not produce seed by May 15, much of the allotment is not grazed prior to seed set. In addition, the stocking rate is low enough to still allow 40-80% of the plants to produce seed every year. Pasture 2 would be grazed for 45 days between May 15 and November 15. Most of the grazing that occurs in pasture 2 is on private land the BLM pieces (120 acres) are fairly steep and are not favored by livestock. A detriment that grazing will have to plants and their reproductive success in both pastures would be from trampling of the vegetation. Plant community health will slowly increase or persist in its current state if grazing is continued under this system. Removing cattle June 30 would allow plants to restore carbohydrate reserves for growth in the spring.

Delaying turn-out until May 15 would reduce impacts in locations where soils generally remain wet later in the season and it would increase vegetative growth and seed head production before grazing occurs. Herbivory of and damage to the wetland vegetation, hydrologic cycle, and soil structure due to trampling and churning in riparian areas would continue but to a lesser extent than in Alternative 1. The pond in T. 39 S., R. 2 E., in Section 11 would be protected by fencing. Botanical conditions in the fenced area

would be expected to improve with an increase in the percent ground cover by riparian species.

Grazing at this level does not pose a threat to the persistence of Bureau Sensitive plants *Carex serratodens* and *Poa rhizomata* loss of some individuals would not contribute to the need to list these species. This alternative would have the same concerns with fire and noxious weeds as alternative one.

c. Alternative 3 - No Grazing

This alternative would not have any direct effects on botanical resources within the allotment. However, eliminating grazing on the allotment would allow plant community restoration to occur at a slightly faster rate than would occur with the current grazing allocation. In areas where there is a slight to moderate departure from the ecological reference condition it is expected that positive effects to the plant community composition and structure would be visible within 3-10 years depending on climate conditions. Slow displacement of annual grasses (and other introduced invasive species) by native perennial grasses would improve the condition of the natural plant communities, especially the oak woodlands and open meadows. In areas with an extreme departure from the ecological reference condition, no visible benefits from removing livestock grazing would occur because livestock do not use these areas as there is no suitable forage. Furthermore, in expansive areas of non-native grasses there would be little to no seed source for the establishment of native perennial grasses.

Dominance of the grass and forb layer by noxious weeds and invasive introduced species in some plant communities is a result of introduction of non-native species coupled with historic overgrazing by livestock. These introduced species are superior competitors for available resources thereby displacing and excluding native plants. Riparian vegetation would expand without the annual herbivory and physical trampling. This alternative would have the same concerns with fire and noxious weeds as alternative one and two.

F. AQUATIC HABITAT & FISH

1. Affected Environment

Issues and Concerns

- Cove Creek, the main stream draining the Assessment Area, flows into Walker Creek, 3.5 miles downstream of the allotment. Walker Creek, which is Coho Critical Habitat (CCH), is listed for exceeding the 55.0º F day temperature statistic for spawning salmonids during October 1- May 31. Stream temperature can be negatively affected by grazing. Grazing vegetation along perennial channels decreases shade thereby contributing to high summer water temperatures.
- Excessive sedimentation associated with cattle grazing is ongoing in some portions of the allotment. Sedimentation can negatively affects salmonids and other aquatic species.
- Disturbance-intolerant taxa decline with increased average livestock utilization across the Cascade Siskiyou National Monument located approximately 5 miles south of the Cove Creek Allotment. Studies in seeps and springs found that high diversity and species indicative of clean water were compatible with low to moderate ungulate use (Dinger et al. 2007Site level Aquatic Conservation Strategy (ACS) objectives are not being met under current grazing management. The Aquatic Conservation Strategy (Medford ROD 1995) was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. Guidance for grazing management requires BLM to “adjust grazing practices to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives. If adjusting practices is not effective, eliminate grazing.

a. Aquatic Species

Approximately 3.5 miles downstream of the allotment, Walker Creek supports populations of steelhead, listed as sensitive under the State Director’s Special Status Species list (2008). Coho salmon, a threatened species under the Endangered Species Act, have not been observed in Walker Creek but Walker Creek is

considered, by the National Marine Fisheries Service, Coho Critical Habitat (CCH) for the Southern Oregon/Northern California (SONC) Evolutionary Significant Unit. Emigrant Creek supports populations of coho salmon and steelhead approximately 3.7 miles downstream of the allotment boundary. These habitats are also considered CCH and are designated Essential Fish Habitat (EFH) under the Magnuson Stevenson Fisheries Act.

Coho, Coho Critical, and Essential Fish Habitat In 1997, the Southern Oregon/Northern California (SONC) Evolutionary Significant Unit (ESU) of coho salmon (*Onchorynchus kisutch)* was listed as "threatened" with the possibility of extinction under the Endangered Species Act (ESA) by the National Marine Fisheries Service (NMFS). There are no coho salmon within the allotment area.

On May 5, 1999, NMFS designated Coho Critical Habitat (CCH) for SONC coho salmon. Critical habitat includes "all waterways, substrate, and adjacent riparian zones below longstanding, naturally impassable barriers." It further includes "those physical or biological features essential to the conservation of the species and which may require special management considerations or protection...", including all historically accessible waters (F.R. vol. 64, no. 86, 24049). The nearest CCH is approximately 3.5 miles downstream of the Allotment.

Essential Fish Habitat (EFH) has been defined by NOAA fisheries as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." This definition includes all waters historically used by anadromous salmonids of commercial value. There is no EFH within the allotment.

Survey data shows that Keene Creek pebblesnails (Fluminicola n. sp. 16), a Strategic Species on the Special Status Species list (2007) and a Survey and Manage species (ROD 2001), occur upstream of this allotment in both the Sampson and Cove Creek drainages. All populations of pebblesnail are considered at risk because of their endemism, their sensitivity to habitat disturbance, and their life history trait of only breeding once in a lifetime. Pebblesnails are associated primarily with cold springs and headwaters of streams. Pebblesnail surveys have not been conducted on this allotment; however, there is high potential that they exist in the allotment because of the large number of springs found within T39S R2E section 11. Furthermore, this allotment is within one of the four major centers of pebblesnail endemism (Frest and Johannes 2005).

b. Aquatic Habitat

This allotment includes riparian meadows, springs and headwater tributaries to Cove Creek and a section of the main stem of Dosier Creek. The allotment occurs in the Cove Creek 7th field watershed within the upper Bear Creek 5th field watershed. The major streams in the allotment are a perennial tributary to Cove Creek and Dosier Creek. Streams are moderate to high in gradient, and substrate is composed mainly of bedrock, cobble and silt. Generally stream banks have vegetation of alder, willow and other shrubs. Fish production is in large part dependent on habitat quantity and quality (Meehan, 1991). Fine sediment in excessive amounts degrades both stream and aquatic organism health. Excessive sediment can fill in pools, cover spawning gravels, and smother eggs (Meehan et al. 1991). Walker Creek which is directly downstream of the allotment supports populations of steelhead and is considered Coho Critical Habitat (CCH). Walker Creek exceeds state sediment standards for salmonids (ODEQ 2004/2006).

Comprehensive riparian surveys were conducted in 2007 by the Bureau of Land Management within the Cove Creek Allotment. Surveys indicate the majority of streams were in a functional at risk state with an upward trend. The surveys show that some areas had deficiencies in aquatic habitat including elevated sediment levels, high number of eroding banks and in some areas low stream shade. Additionally, the surveys identified a non functioning section of steam in T. 38 S., R. 3 E., in Section 3 that had high sediment and eroding banks. The surveys mentioned very few instances of cattle grazing impacts. Several of these surveys were re-examined again in 2008 with additional surveys for stream bank stability and

stream side hardwood consumption monitoring techniques (Cowley and Burton 2004, See appendix A). Both monitoring techniques indicated heavy use on the perennial tributary to Cove Creek (T. 38 S., R. 2 E., Section 3) and moderate use on Dosier Creek. Much of Dosier Creek was protected by dense vegetation; however, in places where cattle could access the creek, the surveys found heavy utilization on streamside vegetation and hoof shear on stream banks. Bank stability surveys conducted on the tributary to Cove Creek found 35 percent of the reach had unstable stream banks. Bank sheering, channel widening and active erosion were documented in these surveys and these surveys indicated that the 2008 grazing season added to the existing high sediment levels within the survey reaches. Woody species utilization surveys showed moderate to heavy consumption of the one to three year growth of the streamside woody species vegetation. In some areas, riparian woody vegetation was completely consumed. The poor aquatic condition in 2008 appeared to result from unauthorized cows entering BLM lands from the adjacent private land lease in section 11 due to inadequate fencing (See hydro section). Cows from the private lease have access to the two BLM parcels in section 39-2E- 11 (Pasture 2) for approximately 6 months a year. The fence along section 3 was damaged allowing the same cows from same private lease to enter BLM lands in T. 38 S., R. 3 E., in Section 3 (Pasture 1).

Aquatic mollusk habitat in T. 39 S., R. 2 E, Section 11 was evaluated in 2007 and reported to be in good condition. The riparian survey summaries made no mention of cattle impacts on these springs in 2007. In 2008, following the grazing season, several of the springs were reported to be in poor condition due to cattle impacts. Subsequently, several monitoring sites established by BLM hydrology staff have documented areas of post holing and bank erosion in T. 39 S., R. 2 E., Section 11 following the grazing season of 2008.

Studies have not been conducted on the mainstream fish bearing channels to determine if and how much sediment may be contributed to CCH as a result of grazing on this allotment; however, fines generated from bank and channel disturbance would be transported during periods of high stream flow resulting in elevated turbidity levels in CCH. This would occur at a time when turbidity levels are naturally elevated and would not be distinguishable from background levels.

2. Environmental Consequences

a. Alternative 1 - No Action

If unchanged, the grazing regime would most likely maintain the current negative trend in stream sediment and shade (See Soils, Hydrology Section). Long-term consequences of continued grazing at current levels (pre-2008) would mean the “hot spots” identified in the BLM 2008 stream surveys would continue to have heavy compaction, eroding banks, and reduced productivity of riparian vegetation. Areas identified as heavy use areas in 2008 would continue to impact aquatic systems negatively due to a loss of shade and continued erosion as streamside plants would not recover from the 2008 extended grazing season. The poor aquatic condition within the allotment would continue to contribute to high temperatures and sediment downstream in Walker Creek. Without adequate fencing, the aquatic condition would degrade because a greater number of cows would access BLM lands within the allotment for a much greater time than authorized. Displaced and mobilized sediment from the un-vegetated, heavily grazed stream segments would continue to be transported and released into CCH at low levels. However, this amount would not be detectable above back ground levels because of the high sediment levels that are already present in the allotment streams.

It is highly unlikely that this alternative would result in stream bank stabilization and erosion in the riparian area would continue at near current rates (See hydrology and soils sections). In the short term, the aquatic environment will not improve to the base level observed prior to 2008 grazing season because cattle will continue to negatively impact the same areas that showed negative trends in aquatic conditions. These impacts will continue in the long-term until vegetation and stream banks are permitted to recover.

b. Alternative 2 - Proposed Action

Under this alternative the allotment would be modified into two pastures. The release date would be changed from May 1 to May 15. Pasture 1 would have 75 AUM from May 15 to June 30. Pasture 2 would permit 13 AUM for 45 days between the dates May 15 to November 15. In pasture 2, the existing water development (#750080) in Section 11 would be redesigned to install an off-channel trough and construct an exclosure around the pond. The fence separating the two pastures would be repaired so cattle will not pass.

Under alternative two, the aquatic condition within the allotment would be maintained in the short term and would improve in the long term**.** This alternative would allow Pasture 1 (39-2E sections 2-4, 10) more time for soils to recover (see soils section). Pasture 2 would be grazed for 45 days rather than 5 months. Delaying cattle turnout in pasture one would allow riparian and wetland conditions to be dryer than under the current season of use (May 1 to June 15). Delaying cattle turnout would increase vegetative growth and seed head production before grazing occurs (See Botany). In the short term (1-3 years), aquatic conditions would be maintained as riparian areas recover to pre-2008 conditions. Plant species would begin to provide more shade and bank stabilization subsequently decreasing sediment input into streams. In the long term, aquatic conditions would be expected to improve as shade would increase as a result of increased yearly plant growth. This would potentially lower stream temperatures within and downstream of the allotment. Existing high sediment levels would be maintained or improved in the long term as more banks become vegetated, decreasing sediment input to streams. However any decrease in stream sediment would be minimal due to the high road densities in the area.
The proposed fencing project will improve aquatic habitat for pebblesnails and other aquatic organisms in the short and long term. It will most likely take several years for the aquatic habitat to reach conditions found before the 2008 unauthorized grazing season.

In summary, this alternative would reduce site level impacts to aquatic habitats and in turn, reduce chronic downstream impacts to fish habitat. At the site level and likely at the HUC Level 7 level, hydrologic function would be restored and aquatic habitat would improve, meeting ACS objectives.

c. Alternative 3 - No Grazing

Aquatic habitat conditions would improve in the short and long-term. Shrub recovery can be dramatic following the elimination of livestock grazing (Platts and Rinne 1985, Elmore and Beschta 1987). Removing all cattle from the allotment will lead to improvement in the condition of seeps, springs, and streams on and downstream of the allotment area. Macroinvertebrate habitat would improve, including and the Keene Creek Pebblesnail habitat. In the short term, sedimentation would continue as it will take time for vegetation to reestablish on the stream banks. Under this alternative, it would most likely take one to three years for the aquatic conditions to reach the 2007 benchmark levels. Over the long term (over 5 years), riparian vegetation would re-establish, filling in areas of bare ground, stabilizing banks, and increasing shade. Stream temperatures would eventually lower in the allotment and would eventually contribute to lower stream temperatures downstream in fish-bearing streams. Riparian and aquatic habitat conditions in the allotment would improve as trampling and associated fine sediment would decrease while riparian vegetation density would increase. In the long term, sedimentation levels contributing to CCH would decrease, however, the amount would not be detectable due to the high sediment levels that present in the allotment streams.

Cumulative Effects

Historic human activities that have affected riparian areas across the landscape of the project area include timber harvest, grazing, recreation, water diversion, private land development, and road development. The spatial distribution of these activities varies from large (i.e., timber harvest, grazing, and road development) to small (water diversion, recreation).

The greatest cumulative impact to riparian areas in the allotment, on both public and private lands, has been the removal of conifers. Riparian conifers were harvested right up to the waters' edge along streams before riparian buffers were established. Nearly all adjacent private timber lands, including riparian areas, have been harvested.

Livestock grazing has occurred on the allotment for over 100 years. Land in the allotment is mostly forested and does not have typical range conditions. Livestock are limited to grazing in meadows, oak savannah habitat, clear-cuts, and along roads. Riparian areas are typically preferred during late summer and fall by livestock because of the water, ample forage available, shade, and cooler temperatures (Kauffman and Krueger 1984). Livestock grazing, roads and timber harvest are the primary past, present, and future actions, and land uses that could cumulatively impact these resource values in the analysis area.

F. TERRESTRIAL WILDLIFE

1. Affected Environment

The diverse plant communities that support wildlife in the allotment are influenced by two major ecoregions that converge in the southern Rogue Valley, the Cascade and Klamath Mountains. The Cascade Mountains support extensive and productive coniferous forests. While the Klamath Mountains are not as productive because of lengthy summer droughts, they remained unglaciated after the Pleistocene epoch and served as a refuge for many plant and animal species. The Klamath Mountains contain some of the highest biodiversity and number of endemic species in North America. Table 3-9 below lists some of the representative plant communities associated with two sub-ecoregions (Thorson et al., 2003) encompassing the allotment.

Table 3-9. Plant communities in the Cove Creek allotment

Ecoregion	Sub-Ecoregion	Representative Plant Communities
Cascade Mountains	South Cascades	Mixed Douglas-fir and Ponderosa Pine Forest; Mixed Fir and Hemlock Forest; Subalpine Meadows at Higher Elevations
Klamath Mountains	Oak Savanna Foothills	Dry Oak woodlands; Pine/Fir/Oak Woodlands; Grassland Savanna; Willow and Cottonwood Riparian Areas.

Grazing occurs throughout all of the plant communities found in the Cove Creek Allotment. The impacts of grazing in the mixed-conifer communities are most notable in the meadows and riparian areas that are interspersed throughout the more dominant conifer matrix. Grazing impacts in the grassland savanna areas are more widespread due to the abundant grasses found in this zone; but, as in the other communities, grazing tends to be concentrated in the meadows and riparian areas.

Livestock grazing primarily affects wildlife by changing vegetation composition, structure, and function. Grazing can result in a reduction of forage available to native herbivores (e.g. deer and elk), as well as reductions in vegetative ground cover for ground-nesting birds, rodents, and other wildlife species dependent on ground cover for protection, food, and breeding sites. Grazing also reduces water quality in seeps, springs, and streams used by native wildlife. The presence of livestock can also change local distribution and habitat use by native species due to interspecific behavioral traits. Generally, the extent of impacts to individual T&E species and their habitats are unknown.

a. Threatened, Endangered, and Bureau Sensitive Terrestrial Wildlife

Special and unique habitat features that support various wildlife species occur within the Cove Creek Allotment. These habitats include seeps and springs, meadows and snags (USDI 1995). Special Status species that are known or suspected to occur in the allotment are listed in Table 3-10.

Table 3-10. Special Status Species (Terrestrial Wildlife)

Species	Status
northern spotted owl (*Strix occidentalis caurina*)	FT
great gray owl (Strix nebulosa)	SM
Lewis' woodpecker (*Melanerpes lewis*)	BS
pallid bat (*Antrozous pallidus*)	BS
fringed myotis (*Myotis thysanodes*)	BS
northwestern pond turtle (*Actinemys marmorata marmorata*)	BS
foothill yellow-legged frog (*Rana boylii*)	BS
coronis fritallary (*Speyeria coronis coronis*)	BS
mardon skipper (*Polites mardon*)	BS, FC
Siskiyou short-horned grasshopper (*Chloealtis aspasma*)	BS
chace sideband (*Monadenia chaceana*)	BS,SM
Oregon shoulderband (*Helminthoglypta hertleini*)	BS,SM
traveling sideband (*Monadenia fidelis celeuthia*)	BS
Siskiyou hesparian (*Vespericola sierranus*)	BS

BS - Bureau Sensitive
SM – Survey and Manage
FT - Federal Threatened
FC – Federal Candidate

b. Bird Species of Conservation Concern

BLM recently issued interim guidance for meeting BLM's responsibilities under the Migratory Bird Treaty Act and Executive Order (EO) 13186. Both the Act and the EO promote the conservation of migratory bird populations. The interim guidance was transmitted through Instruction Memorandum (IM) No. 2008-050. The IM relies on two lists prepared by the U.S. Fish and Wildlife Service in determining which species are to receive special attention in land management activities. The lists are *Bird Species of Conservation Concern* (BCC) found in various Bird Conservation Regions and *Game Birds Below Desired Condition* (GBBDC). Table 3-11 displays those species that are known or suspected to be present on the allotment.

Table 3-11. Bird Species of Conservation Concern

Species	Species Status
purple finch (*Carpodacus purpureus*)	BCC
olive-sided flycatcher (*Contopus cooperi*)	BCC
rufous hummingbird (*Selasphorus rufus*)	BCC
mourning dove (*Zenaida macroura*)	GBBDC
band-tailed pigeon (*Columba fasciata*)	GBBDC

BCC – Birds of Conservation Concern
GBBDC – Game Birds below Desired Condition

c. Wildlife Species Not Negatively Affected By Grazing

Some of the special status species found in the allotment are not affected by grazing. The suite of species that would not be affected or affected only to a negligible degree includes the following: **Lewis's woodpecker**, **purple finch**, **olive-sided flycatcher**, **mourning dove**, **pallid bat**, **fringed myotis, great gray owl** and **northern spotted owl**. Grazing has little or no impacts on these species because it does not physically reduce their numbers nor does it reduce feeding, breeding and sheltering opportunities. These species are primarily associated with the mixed-conifer communities except for Lewis's woodpecker which is more closely associated with the oak woodland communities.

There is one know location for **northern spotted owls** within the Cove Creek allotment but it was not determined if the pair were nesting. Approximately 35% of this allotment contains nesting, roosting and foraging habitat for this species. Northern spotted owls are unlikely to be affected by the current livestock

grazing because their preferred habitat is dense forest where livestock seldom forage.

d. Wildlife Species That May Be Affected By Grazing

Some species of special interest are susceptible to the physical aspects of grazing, e.g., trampling, rubbing, and water quality degradation, while other species are sensitive to the removal of forage that is required for feeding or breeding.

The **foothill yellow-legged frog** depends on aquatic environments for their entire life cycle. Foothill yellow-legged frogs are associated with low gradient streams. This species is impacted by issues of degraded water quality and habitat. Habitat degradation caused by cattle occurs through streambank trampling; wading in shallow ponds, springs, and streams; and defecation/urination in springs and seeps. Foothill yellow-legged frogs have been documented in the Cove Creek drainage and suitable habitat exists in this allotment.

The **northwestern pond turtle** is known to occur at several locations adjacent to the Cove Creek allotment and potential habitat occurs within the allotment. Pond turtles inhabit ponds, marshes, and slow moving portions of creeks and rivers, which have rocky or muddy bottoms, but must leave the water to dig terrestrial nests and lay their eggs (Brown 1985). These turtles often overwinter in upland settings and have been known to travel up to 500 meters to find a site. Both of these activities are impacted by heavy grazing, and post-holing by livestock.

Livestock grazing impacts the **Mardon skipper** (butterfly) through direct trampling of eggs, larvae, pupae, and adults (Black et al. 2002). Larval and adult nectaring food sources are destroyed by consumption and trampling by livestock. The native bunch grasses, essential to Mardon skippers, regenerate by seeds that are likely consumed during grazing. Soil disturbance and grazing can facilitate the invasion of non-native species (Xerces 2007). **Coronis fritiallary**, another butterfly, is likely affected by similar impacts of grazing. Coronis fritiallary are, to a great degree, reliant on various species of Viola (violets) for several of its life stages. Although no surveys have been conducted for these species in the allotment, suitable habitat occurs and it's within the range of both species.

Rufous hummingbirds are affected by grazing due to the removal of plants and degradation of shrubs used for nectaring.

The **Siskiyou short-horned grasshopper** is known to occur within 3 miles from this allotment and suitable habitat does exist here. It's thought to be dependent on Elderberry for the egg-laying phase of its life cycle, but has been located in areas without elderberry. Suitable habitat occurs within the Cove Creek allotment. Cattle have been documented to impact elderberry and other vegetation through browsing and use as rubbing objects. Siskiyou short-horned grasshoppers are actively feeding and reproducing from July through September and are likely to be impacted by reduction of Elderberry vegetation and by grass and forb resources upon which they depend for food and protective cover. As with the Siskiyou short-horned grasshopper, **band-tailed pigeon** may be adversely affected by grazing due to the impact to blue elderberry which is a preferred food for this species during migration.

The terrestrial mollusk species, **traveling sideband**, **chase sideband**, **Oregon shoulderband** and **Siskiyou hesperian**, are not known to occur but suitable habitat is present and the allotment is within their suspected ranges. Although very little is known regarding the ecology of these species, they are commonly associated with moist areas. These species generally use rock substrate, large woody debris and logs as refugia and cover during the dry months. Due to the concentrated grazing adjacent to several perennial water sources, some habitat quality has been degraded.

e. Big Game Winter Range Area

Most of the Cove Creek allotment is within an area designated by the Medford RMP as Big Game Winter Range for **deer and elk**. This designation is meant to identify areas to promote forage, and hiding and thermal cover for deer and elk (USDI BLM 1995). Grazing has little influence on hiding and thermal cover conditions, but it can affect forage conditions. The effect of grazing in this allotment will have minimal impact to designated Big Game Winter Range; however, heavy grazing during the spring can reduce the availability of high quality forage in the winter because the region's summer droughts encumber regrowth.

High quality forage is important to both deer and elk, especially on winter ranges. Forage conditions are declining in areas inhabited by introduced noxious herbaceous species, such as yellow star thistle, bristly dogstail, and medusa head. These species displace native grasses and herbs which generally provide high quality forage. Also, due primarily to fire suppression, large acreage of important browse species such as wedgeleaf ceanothus have become decadent and are not providing the quality forage that younger plants provide. Proper livestock grazing management can help to avoid negative impacts to native plants and provide quality forage for deer and elk.

2. Environmental Consequences

a. Alternative 1- No Action

Livestock grazing has the potential to have direct and indirect impacts to wildlife by changing vegetation composition, structure, and function (see affected environment 3.4.1-2 for further explanation). Livestock grazing result in a reduction of forage available to native herbivores (e.g. deer and elk), as well as reductions in vegetative ground cover for ground nesting birds, burrowing rodents, and other wildlife species dependent on ground cover for protection, food, and breeding sites. These effects would be especially prevalent in areas of heavy-severe utilization.

This livestock grazing allotment is currently meeting the standards and guidelines for protection of habitat for terrestrial wildlife species (USDI BLM 1997) except in areas of heavy-severe utilization. These areas identified by hydrological survey crews occur in several riparian areas and at the existing water development (project #750080) in 39S. 2E. Sec.11. For all **special status wildlife species**, besides the **foothill yellow-legged frog** and **northwestern pond turtle**, the heavily impacted areas have negligible effects and will not contribute to a trend towards listing and protection provisions under the ESA.

The potential indirect effects to the **northwestern pond turtle** include loss of littoral emergent wetland vegetation to grazing and trampling may make habitat less suitable for hatchlings and juveniles (USDA 2007). Heavy use at one water development (project #750080) could have direct effects due trampling of nests or immediate mortality from being crushed by livestock. Under this alternative, the potential direct and indirect effects will not be significant or trend this species towards listing because southern Oregon supports extensive pond turtle populations (Ashton et al. 1997). The cumulative effects of this alternative and the proposed Sampson-Cove timber sale will not have significant affects because of project design features protecting riparian areas and special habitats like this water development pond.

The potential negative indirect effects to the **foothill yellow-legged frog** due to grazing include modification to breading habitat from streambank trampling and the resulting increase in sediment (please refer to the hydrological, soils and fisheries sections for further discussion on the livestock damage in the riparian areas of this allotment). Increased turbidity also occurs from livestock crossing streams and utilizing the area for shade. The effects of increased sediment may reduce food quality, tadpole fitness and recruitment to the adult stage. The direct effects of livestock trampling can dislodge egg masses, overturn substrate refugia, collapse under-bank habitat and to a lesser degree, cause direct mortality.

The indirect and direct effects to the **foothill yellow-legged frog** from this alternative do not rise to level

of significant because the areas of heavy-severe use are isolated and are only a small percentage of the potential habitat in the Cove Creek watershed. Although the turn-out in this allotment coincides with the latter part of the breeding season, it is likely that this species will avoid areas of disturbance to lay the egg masses. The change in vegetative structure in the areas of heavy use will not have a significant impact. Even though research has shown that this species avoids areas of grazing (Olson and Davis 2007), this species benefits from areas where direct sunlight basking is available. Any threat of direct mortality from trampling when this species may travel overland to adjacent streams is reduced because this usually occurs from November through March, or outside the grazing allotment window. Grazing has been a historic threat to this species but due to riparian mitigations, the threat is now uncertain (Olson and Davis 2007). The cumulative effects of alternative 1and the proposed Sampson-Cove timber sale to this species will not have significant affects because of required timber sale riparian area buffers.

Even though direct mortality can result from trampling and habitat degradation from over utilized riparian areas can have negative indirect effects, the effects of grazing to the **travelling sideband**, **chase sideband**, **Oregon Shoulderband** and **Siskiyou Hesperian** mollusks under this alternative will not be significant. The potential for individuals to be trampled would only represent a fraction of the local population. Most terrestrial mollusk species present at a site utilize refugia that is undisturbed by grazing. This is evident during mollusk surveys when most species presence is confirmed by empty shells. Habitat degradation is isolated to a few locations in the allotment. This impact is difficult to quantify because the habitat degradation represents a negligible amount of suitable habitat present within their known ranges. The cumulative effects of this alternative and the proposed Sampson-Cove timber sale will not have significant affects because of required timber sale riparian area buffers.

b. Alternative 2 - Proposed Action

Any potential direct, indirect and cumulative effects of this alternative will be similar to Alternative 1-No Action. The modifications to the lease under this alternative will have some beneficial effects to the **northwestern pond turtle**, **foothill yellow-legged frog, terrestrial mollusks** and **Big Game Winter Range** habitat. In addition to these modifications, there are other potential administrative actions described in 43 CFR subpart 4130.3-3 and 4180 that can assist in conservation of all the special status species and habitats.

The existing water development (project #750080) in 39S. 2E. Sec.11 would be redesigned to install an off-site trough and construct an exclosure around the pond. This improvement will benefit the **northwestern pond turtle**; because the pond provides habitat for the turtle and therefore the effects of this alternative will now be negligible to the species and would not merit further quantification in this analysis.

During a normal precipitation regime, the modified turn-out date will decrease soil moistures and assist in streambank strength but will not fully eliminate the potential for streambank damage and erosion. Even later turn-out dates were considered but they would coincide with vegetation browning-up at lower elevations and could increase grazing pressure in areas of concern at higher elevations. The effects to the **foothill yellow-legged frog** under this alternative are similar to Alternative 1, the potential effects would be reduced, because the additional terms and conditions and mitigation measures proposed in Alternative 2 would improve riparian habitat conditions within the allotment and herding away from riparian areas would reduce the potential of trampling.

The effects of this alternative to the **traveling sideband**, **chase sideband**, **Oregon shoulderband** and **Siskiyou Hesperian** mollusks are similar to Alternative 1 but, the potential effects will be reduced by the required range improvements and maintenance discussed earlier in this document.

Delaying turn-out until May 15th would enhance vegetative vigor and seed head production before grazing occurs. Removing cattle from the majority of the allotment by June 30th would reduce the impacts of hot season grazing in riparian areas, and provide a greater opportunity for fall green-up that **elk** and **deer**

depend on for winter forage.

c. Alternative 3 - No Grazing

This alternative would be expected to be more neutral or beneficial to the wildlife species of concern. Vegetative succession would occur without impact from grazing, and wildlife populations and distributions would change in response to these habitat conditions. Areas previously impacted by higher utilization of livestock would recover and re-vegetate over time. However, many non-native grasses and noxious weeds would continue to out-compete native species and so vegetative conditions would not necessarily return to native plant communities.

This alternative has the potential to improve habitat conditions for some special status wildlife species. The possibility for livestock damage to riparian habitat from trampling and loss of vegetation would be removed to the potential benefit of the northwestern pond turtle, mollusk and frog species.

G. SOILS

1. Affected Environment

Soils consist primarily of the Bybee, Carney, Heppsie, Medco, McMullin, Tatouche, and Woodseye soil series. The Bybee soil is very deep and somewhat poorly drained. It formed in colluvium derived dominantly from andesite, tuff, and breccia. Permeability is very slow in the Bybee soil. Available water capacity is about 9 inches. The effective rooting depth is limited by a dense layer of clay at a depth of 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The water table, which is perched above the layer of clay, is at a depth of 1 to 3 feet from December through May.

The Carney soil is moderately deep and moderately well drained soil is on alluvial fans and hillslopes. It formed in alluvium and colluvium derived dominantly from tuff and breccia. Permeability is very slow in the Carney soil. Available water capacity is about 4 inches. The effective rooting depth is 20 to 40 inches. Runoff is slow or medium, and the hazard of water erosion is slight or moderate. The water table fluctuates between depths of 3.0 and 3.5 feet from December through April.

The Heppsie soil is moderately deep and well drained soil is on hillslopes. It formed in colluvium derived dominantly from tuff, breccia, and andesite. Permeability is slow in the Heppsie soil. Available water capacity is about 4 inches. The effective rooting depth is 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is high.

The McMullin soil is shallow and well drained. It formed in colluvium derived dominantly from andesite, tuff, and breccia. Permeability is moderate in the McMullin soil. Available water capacity is about 2 inches. The effective rooting depth is 12 to 20 inches. Runoff is medium or rapid, and the hazard of water erosion is moderate or high.

The McNull soil is moderately deep and well drained. It formed in colluvium derived dominantly from andesite, tuff, and breccia. Permeability is slow in the McNull soil. Available water capacity is about 4 inches. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate.

The Medco soil is moderately deep and moderately well drained. It formed in colluvium derived dominantly from andesite, tuff, and breccia. Permeability is very slow in the Medco soil. Available water capacity is about 4 inches. The effective rooting depth is limited by a dense layer of clay at a depth of 6 to 18 inches. Runoff is medium or rapid, and the hazard of water erosion is moderate or high. The water table, which is perched above the layer of clay, is at a depth of 0.5 foot to 1.5 feet from December through March.

The Tatouche soil is very deep and well drained. It formed in colluvium derived dominantly from andesite, tuff, and breccia. Permeability is moderately slow in the Tatouche soil. Available water capacity is about 8 inches. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate.

Areas of concern for livestock are primarily localized areas of compaction and disturbance in riparian meadows.

2. Environmental Consequences

The main effects that livestock grazing has on the soil resource is disturbance leading to increased erosion and increase in bulk density when cattle grazing occurs during wet soil conditions. Cattle can exert both beneficial and detrimental effects on a grazed field. The greatest detrimental concerns, perhaps, are the physical effects of treading. The interaction of several factors will determine the amount of potential damage that may result. Soil moisture content, soil physical properties, type of forage, stocking rate, and number of days grazed all interact greatly in managing to minimize treading damage. The most basic concept is that the application of weight (cattle) to soil which is wet, will compress more soil into smaller volumes, thereby increasing bulk density of soil (weight per unit volume). The effect of compaction is that it diminishes the volume of soil in the plant rooting zone that can store oxygen and water (pore space), thereby limiting rooting volume of the plants. Because the effect of treading is greatest at the soil surface, this can lead to decreased soil permeability of both air and water. Lowered rates of water infiltration may lead to higher rates of surface runoff during heavy rains and to greater soil erosion, a problem often related to overgrazing.

The nature of the forage can also affect the rate at which treading damage occurs. Established forage that has a prolific rooting system in the top 6 to 10 inches of soil (form a good sod), can absorb more treading energy than forage that does not form a dense rooting mass, thereby slowing the rate at which soil damage can occur. Annual grasses have shallower root systems and shorter life cycles than native perennial grasses, and thus have reduced capacity to hold the soil and retain water and nutrients. Annual grassland furthermore often accumulates a layer of thatch where decomposition and nutrient cycling are different than in native plant communities (Ehrenfeld 2003; D'Antonio and Vitousek 1992).

From the positive standpoint, large quantities of dung and urine are deposited within paddocks as a result of intensive grazing management. In addition to nutrient recycling, organic matter in the dung will increase the rate of organic matter buildup in the soil, which also leads to improved soil physical properties. One of the obvious consequences of using cattle to harvest forages is that nutrient content of ingested forages may be transported from some parts of a field to other parts and re-deposited in urine and feces. Most estimates indicate that about 25%, 20%, and 15%, respectively, of nitrogen (N), phosphorus (P), and potassium (K) contained in forages consumed by grazing cattle is retained in their bodies for support of their various metabolic processes. This means that about 75%, 80%, and 85%, respectively, of N, P, and K passes through the animal and are excreted in urine and feces. Most of the nutrients ingested are, thereby, recycled by the animals, perhaps many times. On grazed fields, these recycled animal nutrients are, or can become, available as plant nutrients. One point of concern, though, is that urination and defecation patterns of grazing cattle do not result in recycling of nutrients uniformly over the field. Grazing practices affect the distribution of recycled nutrients.

The cattle turn out date is dependent on range readiness which is primarily determined by soil moisture content being low enough to prevent trampling, soil compaction, decreases in vegetative cover and erosion. The affects to the soil resource as a result of cattle grazing assumes the range readiness is being met.

a. Alternative 1 - No Action

Under this alternative the existing cattle grazing operations would continue. Field observations revealed

that impacts to the soil resource such as trampling and an increase in soil erosion were occurring near the watering areas where the cattle congregate. In these areas, forage is reduced at a higher level than across the general landscape and soil disturbance is very apparent near the water sources. The lack of vegetation and the cattle activity in riparian areas is the main contributing factor to the streambank slumping and associated erosion.

The riparian areas have been substantially impacted by cattle grazing in the recent years resulting in elevated amounts of soil erosion from stream banks. It is highly unlikely that the stream banks will stabilize under this proposed alternative.

b. Alternative 2 - Proposed Action

Under this alternative the existing cattle grazing operations would be modified by separating the allotment into two pastures and each pasture would be grazed for 45 days. The release date for both pastures would be pushed back from May 1 to May 15 to allow the soil moistures to decrease. This will decrease the disturbance leading to increased erosion and increase in bulk density when cattle grazing occurs during wet soil conditions. Moving the turn out date back 15 days would also allow the vegetation to grow longer before grazing occurs. The length of the grazing period would not change (45days/pasture) and herding efforts may reduce the impacts to the riparian area. It is highly unlikely that this alternative would result in stream bank stabilization and erosion in the riparian area would continue at near current rates. This alternative would aid in reducing the bank slumping mainly by herding the cattle away from the high use areas. Removing the cattle from the riparian area for a few growing seasons would substantially stabilize the current conditions (see Proposed Mitigation above).

c. Alternative 3 - No Grazing

This alternative would allow the vegetation to mature, produce seed and contribute organic material to the soil. The increase plant material and addition of organic matter would aid in stabilizing the soil across the landscape and particularly in the riparian areas where grazing has caused increased disturbance. This alternative would allow the riparian areas to stabilize and erosion rates in these areas would decrease.

H. CULTURAL RESOURCES

This project would not result in restricting access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners or adversely affect the physical integrity of such sacred sites. No sites have been identified in the project area.

This project would have no effect on Indian Trust Resources as none exist in the project area.

This project was determined to have no adverse effects on properties listed or eligible for listing on the National Register of Historic Places. This includes Native American religious or cultural sites, archaeological sites, or historic properties. The proposed project would have no adverse effects on known cultural resources.

I. RECREATION AND VISUAL RESOURCES

The grazing allotment is not near any established or developed recreation areas or within a Visual Resource Management Area. Recreation that might occur in the project area would be of a limited and dispersed nature such as people on foot passing through while hunting, exploring the area for wild flowers or mushrooms and activities of this nature. Some limited off-road vehicle recreation, which is currently a legal permitted activity, may occur within the allotment.

J. OTHER EFFECTS

1. **Potential Effects to Public Health and Safety.**

No aspects of the grazing operation have been identified as having the potential to significantly and adversely impact public health or safety.

2. **Environmental Justice**

This project was reviewed for the potential for disproportionately high or adverse effects on minority or low income populations; no adverse impacts to minority or low income populations would occur.

3. **Ecologically Important Areas**

The allotment does **not** involve any ecologically significant areas such as significant caves, National Monuments, Wilderness Study Areas, Research Natural Areas, or areas listed on the National Register of Natural Landmarks.

References

Ashton, D.T., A.J. Lind, and K.E. Schlick. 1997. Western Pond Turtle (*Clemmys marmorata*) Natural History. USDA Forest Service, Pacific Southwest Research Station

Black, S.H., K. Hitt, and M. Vaughan. 2002. Petition to list the Mardon skipper butterfly (Polites mardon) as an endangered species under the U.S. Endangered Species Act. Report submitted to The Xerces Society, Gifford Pinchot Task Force, The Nortwest Environmental Defense Center, Center for Biological Diversity, Oregon Natural Resources Council, Friends of the San Juans, and Northwest Ecosystem Alliance. 25 pp.

Brown, E. R. (ed). 1985. Management of Wildlife and Fish Habitats in Forest of Western Oregon and Washington (two volumes). USDA Forest Service, Pacific Northwest Region. R6-F&WL-192-1985. Pacific Northwest Region, 319 SW Pine, PO Box 3623, Portland, Oregon 97208.

Cowley, E.R. and T. Burton. 2004. Monitoring streambanks and riparian vegetation: multiple indicator monitoring. Available at the Medford District BLM, Medford, Oregon.

D'Antonio, C. M. and Vitousek, P. M. 1992. Biological Invasions by Exotic Grasses, the Grass/Fire Cycle, and Global Change. Annual Review of Ecology and Systematics, 23:63-87.

Denman, K.L., G. Brasseur, A. Chidthaisong, P. Ciais, P.M. Cox, R.E. Dickinson, D. Hauglustaine, C. Heinze, E. Holland, D. Jacob, U. Lohmann, S Ramachandran, P.L. da Silva Dias, S.C. Wofsy and X. Zhang, 2007: Couplings Between Changes in the Climate System and Biogeochemistry. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

DeRamus, H. Alan[a], Terry C. Clement[b], Dean D. Giampola[a] and Peter C. Dickinson[b] , 2003. Methane Emissions of Beef Cattle on Forages (Efficiency of Grazing Management Systems. *Journal of Environmental Quality* 32: 269-277

Derner, J. D. and G. E. Shuman, 2007. Carbon Sequestration and Rangelands: A Synthesis of Land Management and Precipitation Effects. *Journal of Soil and Water Conservation* 62 (2): 77-85

Ehrenfeld, J. G. 2003. Effects of Exotic Plant Invasions on Soil Nutrient Cycling Processes. Ecosystems 6:503-523.

Follet, R. F., J. M. Kimble, R Lal, 2001. The Potential of U.S. Grazing Lands to Sequester Carbon and Mitigate the Greenhouse Effect. Lewis Publishers, CRC Press LLC, 443 pages.

Olson, D.H. and R.J. Davis, 2007. Conservation Assessment for the Foothill Yellow-legged Frog in Oregon. USDA Forest Service, Pacific Northwest Research Station. Corvallis, Oregon.

Oregon Department of Environmental Quality (ODEQ). 2006b. Oregon administrative rules, chapter 340, division 41, internet address [http://ww.deq.state.or.us/wq/wqrules/wqrules.htm]. DEQ, Portland, Oregon.

Oregon Department of Environmental Quality (ODEQ). 2006a. *Oregon's2004/2006 integrated report*. Internet address: [http:www.deq.state.or.us/wq/303dlist/wq2004intgrrpt.htm]. DEQ, Portland, Oregon.

Oregon Department of Environmental Quality (ODEQ). 2004. Draft Rogue basin riparian condition assessment report. DEQ, Medford, Oregon.

Thorp, Robbin. 2008. Ph.D. Professor Emeritus. University of California, Davis. Department of Entomology. Personal communication, 6/2008.

Thorson, T.D., Bryce, S.A., Lammers, D.A., Woods, A.J., Omernik, J.M., Kagan, J., Pater, D.E., and Comstock, J.A., 2003. Ecoregions of Oregon. Reston, Virginia, U.S. Geological Survey.

US Department of Agriculture. 2007. Species Fact Sheets. Last accessed March 12, 2009, from http://www.fs.fed.us/r6/sfpnw/issssp/species-index/fauna-reptiles.shtml

US Department of Agriculture, U.S. Department of the Interior, Bureau of Land Management, and the Oregon Agricultural Exper. Sta.. 1993. Soil survey of Jackson County area, Oregon.

US Department of the Interior, Bureau of Land Management and USDA Forest Service, 1994. Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old Growth Related Species Within the Range of the Northern Spotted Owl.

US Department of the Interior, Bureau of Land Management, Medford District. 1998 and 1995. Stream and Riparian Survey Data. Medford, OR.

US Department of the Interior, Bureau of Land Management. Portland, OR 1997. Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington.

US Department of the Interior, Bureau of Land Management, Medford District 1995. Record of Decision and Resource Management Plan.

US Department of the Interior, Bureau of Land Management 1994. Medford District Proposed Resource Management Plan/ Environmental Impact Statement.

US Department of the Interior, Bureau of Land Management 1994. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl: Standards and Guidelines for Management of Habitat for Late-Successional and Old Growth Related Species within the Range of the Northern Spotted Owl.

US Department of the Interior, Bureau of Land Management, Medford District 1984. Medford Grazing Management Program Environmental Impact Statement.

Xerces Society. 2007. Xerces Society surveys of *Polites mardon klamathensis* in southern Oregon (Summer 2007). 76 pp. On file at the Medford BLM District.