

Chapter 4 - Environmental Effects Analysis

INTRODUCTION

Each alternative was evaluated to see if it meets the Forest Plan Goal “To manage the forage resources for an upward vegetate trend in areas in less than “Fair” condition and an upward or stable trend for areas in “Fair” or better condition, while providing for forage productivity and making suitable range available for livestock grazing. Increase the level of forage production where cost efficient and consistent with other resources.”

Further analysis was conducted on the three significant issues identified by the deciding officer, which will be used to evaluate each alternative in this analysis. The significant issues are Meadow Condition, Bank Stability, and Upland Condition (includes hardwood and shrub improvement). The significant issues were further defined by the tracking criteria.

Meadow Condition:

Tracking Criteria:

1. Increased frequency of mid-late seral native meadow decreaser species as well as improved vigor and density for functional non-native introduced meadow grasses (meadow foxtail).
2. Reduction in frequency of early-seral increaser species.

Bank Stability:

Tracking Criteria:

1. Increasing streambank stability over time-related back to Forest Plan objectives and desired conditions of >80 percent stable streambanks in the allotment.
2. Increased vegetative cover on streambanks.

Upland Conditions:

1. Improving trend in density and vigor of native upland forage species.
2. Species composition trends on the allotment show increasing dominance of native species relative to non-native and noxious species.

PHYSICAL AND BIOLOGICAL RESOURCES

Rangeland and Forest Vegetation (forest, hardwood and herbaceous species)

Herbaceous Species (riparian, meadow and upland understory)

Alternative 1 – Proposed Action

Direct /Indirect Effects:

This alternative meets the Forest Plan goal of managing the allotment in a fair condition with a stable trend. It also provides for forage productivity and making suitable range available for livestock grazing. This alternative also addresses the three significant issues identified by the deciding officer.

Management actions proposed through this alternative are designed to address the significant issues outlined for this project.

By authorizing use based on total Head Months, the actual number of cattle on the pasture and actual number of days on the allotment may vary inversely with each other, within the June 10-October 15 timeframe, which increases management flexibility to address resource concerns and meet resource objectives.

Management practices would be instituted that would allow managers to incorporate fluctuations in weather, plant phenology, and soil moisture. Being able to vary the calendar dates when livestock presence on the allotment based on actual resource conditions rather than based on set calendar dates as is currently practiced, will enable managers to better manage for reproduction of desired forage species and improved plant health and vigor. Livestock will be on the allotment for a shorter period during the growing season, which will also promote improved plant vigor for desired forage species in riparian, meadow and upland environments. The existence of Basic Resource Damage as defined in the Forest Plan (see Glossary) based on current streambank instability, mandates application of the more conservative riparian utilization standards described in Table 2-5 and Table 2-6 until bank stability conditions improve enough to fully restore the allotment to Satisfactory Condition. Lower utilization levels and less time on the allotment relative to current practice, together with deferring livestock entry into the allotment until soils are dry enough to resist compaction and streambank alteration, should increase the frequency of later seral vegetative species and increase streambank cover.

Action under this alternative will institute a deferred rotation grazing system. The year to year variability in on and off date for each pasture under this grazing system will protect the phenological stages of plant species, improve species composition, increase those species that are better bank stabilizers and increase facultative wetland species. Plant vigor will be increased and species recruitment will improve. Managers will emphasize delaying cattle use (deferral) until soils have dried on those areas where tufted hairgrass is competing with false hellebore and coneflower in Fry Meadow, which should reduce grazing on tufted hairgrass and improve its competitiveness. Deferral will allow fall regrowth along stream banks to improve bank stability and sediment capture and would likely result in an increase in native sedge communities that are composed of obligate (OBL) wetland species and/or facultative (FACW) wetland species with good to excellent bank stabilization capabilities. On sites where the water table has been lowered through stream degradation, recovery of the water table to its original level may allow the original sedges, and if suited, willows or alder to reestablish (Crow and Clausnitzer 1997).

The Brock Allotment management prescriptions for moist and dry meadows should lead to the following Multiple Indicator Monitoring scores of:

- Greenline Ecological Status of 41 or higher.
- Vegetation Erosion Resistance value of 5 or higher.
- Wetland indicator value of 41 or higher.
- Streambank stability value of 80% or higher.

A query was run on the Blue Mountains Monitoring Database for all monitored sites identified as tufted hairgrass associations. This query suggests a return to a mid-seral tufted hairgrass plant association in wet meadows. Management should decrease the forb species and increase the grass species that are more dependent on wet soils. Results indicated the satisfactory condition phase of this association represented an aerial cover value of:

- Tufted hairgrass (DECE) of 45 percent or greater.
- Of the functional forb species no greater than 20 percent.

- It is also the desire to see a reduction in false hellebore (VERAT) cover to less than 20 percent and a reduction in Western coneflower aerial cover to less than 10 percent.

Assuming that compliance with annual utilization standards, reduced Head Months on the allotment, and annual management strategies, are effective at reducing pressure on palatable upland and wetland native plants may begin to recover from being replaced with unpalatable native and non-native plants. Tufted hairgrass may increase in its presence in the wet meadows.

Cumulative Effects:

The majority of this allotment was originally timbered and silviculture practices are being implemented to reforest this allotment. It is likely that within the next ten years there will be additional reductions in capacity as trees grow to maturity. As grazing capacity is reduced there will also need to be reductions in livestock numbers or seasons of use.

The Lower Sheep timber harvest is planned in the Transitory Pasture and will thin approximately 94 acres in two units. The expected final canopy cover will be 47 percent. It is doubtful if this activity will affect grazing activity or affect forage production on the allotment. Mitigation on the Lower Sheep EA identifies damage to range improvements will be repaired as an on going activity.

Alternative 2 – Current Management

Direct/Indirect Effects:

This alternative would propose no changes to current management. Currently it meets the Forest Plan goal of managing the allotment in a fair and stable condition. It also provides for forage productivity and making suitable range available for livestock grazing. This alternative does not resolve the three significant issues identified by the deciding officer.

There are indications that statistically within the next ten years there may be sufficient modification of the environment to consider the allotment in an unsatisfactory condition.

The Transitory Pasture would continue to be grazed first. This would allow the coneflower and false hellebore to continue to dominate the tufted hairgrass communities. By allowing livestock to graze each year at the same vegetative phenological cycle the undesirable introduced facultative upland species would continue to thrive and the desirable native facultative or facultative riparian species would continue to be replaced. The existence of Basic Resource Damage based on current streambank instability, mandates application of the more conservative riparian utilization standards described in Table 2-5 and Table 2-6 until bank stability conditions improve enough to restore the allotment to fully Satisfactory Condition. Lower utilization levels and less time on the allotment together, should increase the frequency of later seral vegetative species and increase streambank cover but more slowly than would occur under either Alternatives 1 or 3. Upland vegetation would continue to modify from native to introduced species.

The allotment would continue to be grazed during the permitted season as long as utilization and other standards are not exceeded. Livestock would likely meet these standards about two and a half months into the grazing season requiring early removal from the allotment.

Cumulative Effects:

The majority of this allotment was originally timbered and silviculture practices are being implemented to reforest this allotment. It is likely that within the next ten years there will be additional reductions in capacity as trees grow to maturity. As grazing capacity is reduced there will also need to be reductions in livestock numbers or seasons of use.

The Lower Sheep timber harvest is planned in the Transitory Pasture and will thin approximately 94 acres in two units. The expected final canopy cover will be 47 percent. It is doubtful if this activity will affect grazing activity or affect forage production on the allotment. Mitigation on the Lower Sheep EA identifies damage to range improvements will be repaired as an on going activity.

Alternative 3 – No Grazing

Direct/Indirect Effects:

This alternative meets the Forest Plan goal of managing the allotment in a fair condition with a stable trend. It does not make suitable range available for livestock grazing. Because there is no grazing, streambanks will build and vegetative communities will evolve at a natural rate under the natural stressor of this site.

Cumulative Effects:

The majority of this allotment was originally timbered and silviculture practices are being implemented to reforest this allotment. These practices will continue. Completion of harvest on the remaining Lower Sheep timber sale units may temporarily offset the reduction in forage production that will occur as older harvest units are reforested, but a gradual net loss in transitory forage is still expected to occur over time.

The Lower Sheep timber harvest is planned in the Transitory Pasture and will thin approximately 94 acres in two units. The expected final canopy cover will be 47 percent. It is doubtful if this activity will affect grazing activity or affect forage production on the allotment. Mitigation on the Lower Sheep EA identifies damage to range improvements will be repaired as an on going activity.

Hardwoods and Forest Species

Direct/Indirect Effects Common to alternatives 1 and 2:

With the exception of a small number of seedlings trampled each year and some localized soil compaction in heavily used areas, there would be no effects to the re-establishment of conifers in the existing harvest units. Sprouts and seedlings of hardwoods are severely browsed by both domestic cattle and wild deer and elk (and increasingly, probably by moose). Some of the four hardwood exclosures constructed in 2005 in the failed conifer plantations will be put back up in the spring so their vegetation development can be observed. The exclosures that are replaced may also be replanted with new stock. Young hardwoods are likely to survive ongoing browsing only where protected from both livestock and big game. Coniferous reforestation efforts will succeed or continue to fail based on factors other than livestock grazing.

Cumulative Effects common to all three alternatives:

Two stands within the allotment have been designated, marked and sold as harvest units in the Lower Sheep timber sale. The sale is ongoing, and the units are likely to be harvested in 2009. Lower Sheep Unit 80, 70 acres, is prescribed as a commercial thinning. Unit 110, 24 acres, is prescribed as a group selection with some commercial thinning in the stand. Post harvest stocking levels were prescribed using Powell 1999 as a guide. The crown closure of the commercial thinning stands is currently approximately 70 percent. Approximately one third of the crown closure will be removed in the thinning, leaving the stand at approximately 47 percent crown closure. In the group selection unit, several areas of one to two acres will be harvested, leaving small created openings. Although the hardwood exclosures in the old clearcuts fall down every winter due to faulty design, some will be put back up in the spring to protect any surviving hardwoods from further browsing by either big game or livestock and to monitor their development. Restored exclosures may be replanted in future.

Comparison of Alternatives

The following table provides a comparison of the three alternatives relative to the Purpose and Need and Issues and summarizes the environmental effects on forage resources and permittee operations.

Table 4- 1- Comparison of Alternatives Response to the Purpose, Need and Issues

		Alternative 1	Alternative 2	Alternative 3
Manage forage in satisfactory condition		Yes	Yes	Yes
Making suitable range available for livestock grazing		Yes	Yes	No
Manage Meadow condition – increase natives reduce early-seral		Yes	No	Yea
Manage Bank Stability – Bank Stability 80%./ Increase streambank vegetation.		Yes	No/Yes but slower than with other alternatives	Yes
Manage Upland condition – provide for upward trend. Increase native decrease non-native		Yes	No	Yes
Total Acres Authorized		927 Forest lands, 295 Private lands	Same as Alt 1	0
Provide flexibility to adjust to changes in weather, forage condition, or other circumstances		Yes	No	NA
Stocking rates	Head Months/ Stocking	205 HM (81 cow/calf pairs)	340 HM (81 cow/calf pairs)	0 HM
	Total days of use	77 days	128 days	0 days
Operational period	Grazing season	June 10-October 15	June 10-October 15	0 days
Changes to Allotment Facilities	Maintain springs	1	1	0
	Remove springs	0	0	1
	Maintain ponds	8	8	0
	Abandon ponds	0	0	8
	Reconstruct fence	1	1	0
	Maintain fence	7.5 miles	7.5 miles	0
	Remove fence	0	0	8.5 miles

Rare Plants

Effects Common to All Alternatives

Direct/Indirect/Cumulative Effects

There are no sensitive plants, vascular or nonvascular, documented in the project area. Therefore none of the alternatives would have a direct, indirect or cumulative impact on currently listed Region 6 sensitive plant species. Regardless of the alternative selected, the project would have No Impact on any Region 6 sensitive plant species.

Silene spaldingii is **Federally Listed** as **Threatened** under the Endangered Species Act and known to occur on the Umatilla and Wallowa-Whitman National Forests. *Silene spaldingii* occurs primarily in open grasslands with deep Palousian soils. As stated previously, there is no habitat for *Silene spaldingii* in the Brock grazing allotment, therefore, there would be no direct, indirect or cumulative effects on *Silene spaldingii* from any of the alternatives.

Regardless of the alternative selected, the project would have No Effect on *Silene spaldingii*.

Invasive species

Scale of Analysis

This analysis is based on the Brock Cattle and Horse Allotment and areas adjacent or near enough to have a potential effect. The measures used are acres and miles of road, rounded to the nearest acre or mile.

Measurement of the relative effects of grazing alternatives on noxious weeds is based on the number of acres of previously mapped invasive plant sites and newly located sites within or near the allotment, and on the amount of ground disturbance and plant or seed transfer anticipated from the proposed grazing levels.

Alternative 1 – Proposed Action

Direct /Indirect Effects

There would be slightly more herbaceous vegetation left to compete with invasive plants, and slightly less ground disturbance, thus reducing availability of seed beds for new infestations, compared to increasing infestations that are occurring in association with current management. Depending on the grazing levels and seasons of use that are determined by annual utilization monitoring, palatable upland and wetland native plants may begin to recover from being replaced with unpalatable native and non-native plants. Tufted hairgrass may increase in its presence in the wet meadows.

Cumulative Effects

Domestic livestock grazing at a level of 33 percent fewer head months relative to headmonths allowed under current management, fewer cows traveling through and between the pastures, more frequent monitoring of forage utilization throughout the grazing season, monitoring more sites, or monitoring of sites determined to be better representations of use, would all reduce the likelihood of trampling to the extent that bare dirt is exposed. Alternative 1 poses lower risk for creating new infestations relative to risks associated with Alternative 2 and more risk than Alternative 3, depending on how many times cattle are moved onto the allotment and between pastures.

Alternative 2 – Current Management

Direct /Indirect Effects

There would be a slightly less vegetation left to compete with invasive plants, and slightly more ground disturbance to form a seed bed for new infestations, than under the proposed action.

Cumulative Effects

The spread of invasive plants from currently existing populations and off-forest seed sources will continue at the current rates, especially along all travel routes, independent of livestock activities. Public and administrative vehicle travel on roads and trails, together with animal vectors, both livestock and wildlife, will likely continue to be the primary means of seed introduction into the project area. Other vectors may include wind, water and wildfire. Known populations of invasive species will continue to be treated.

A number of new infested sites have been recently found. It is not clear whether the disturbance in the area is promoting the spread of weeds, or whether increased observation of the area by Forest Service personnel familiar with the weeds is the explanation. It does appear that the permittee is not currently recognizing or notifying the Forest Service contact about new infestations.

Effects Common to Both Action Alternatives (1 and 2)

Direct/Indirect Effects

Under both action alternatives, areas already infested with weeds are likely to be used to move cattle, including sites such as the gate from the Transitory pasture onto the 6231 road, the area right around Fry Meadow Cabin, and the 6200-480 road in the Pearson pasture.

Both of the action alternatives include grazing and handling of cattle in or near existing weed sites. The potential for spreading weed populations in each alternative is relative to the amount of activity taking place where seeds and plants could be moved through disturbance. The potential for introducing new infestations is relative to the total amount of disturbance and to the number of times cattle, trucks, horses and dogs enter the allotment.

Cumulative Effects

Native wildlife spreads invasive plants in similar ways to cattle, although they generally are not likely to introduce plants that only currently exist long distances from their grazing ranges. The potential for spreading and introducing weeds is additive for cattle and native wildlife.

Alternative 3 – No Grazing

Direct /Indirect Effects

The only vegetation use and disturbance from trampling would be from native animals. Higher coverage of vegetation and fewer disturbed areas would provide less advantageous conditions for weed spread.

Cumulative Effects

The spread of invasive plants from currently existing populations and off-forest seed sources would likely be reduced. Animal and vehicle vectors would continue to be the primary means of seed introduction into the project area.

Wildlife Habitat

Wildlife issues to be addressed include: Management Indicator Species; Neotropical migratory birds; and Threatened, Endangered and Sensitive species.

Management Indicator Species

American marten are not likely in the area and cattle grazing would not affect potential denning and foraging habitat for this species. Nesting and foraging habitat for pileated woodpecker, northern three-toed woodpecker, and other cavity nesting birds would also not be affected by cattle grazing or associated activities; therefore, further discussion of effects to these species is not necessary.

Rocky Mountain elk

Three habitat components are typically considered for analysis of management effects: forage, cover and road densities. The analysis area for cover is the area within 10 square miles of the allotment, within 20 square miles for road densities. The forage analysis is limited to the area within the allotment itself. Because none of the alternatives would alter road densities or big game cover quantity or quality (see silviculture report), only forage will be discussed further.

Forage quality and quantity influences elk nutrition and therefore health and productivity. This habitat element may be affected by livestock management, and will be used to disclose effects of the different alternatives.

Alternative 1 – Proposed Action

Direct /Indirect Effects:

Because there would be a reduction in the length of time cows spend on the allotment, there would be less direct disturbance to elk and less competition for forage. Direct disturbance to elk from livestock presence would be slight, but would indirectly contribute to other factors affecting elk such as weather and predation. There would be slightly less chance that weeds would be introduced by moving cattle onto the allotment and between pastures (Invasive Plant Species Report). Compared to current management, there would be slightly more vegetation left to compete with invasive plants, and slightly less ground disturbance to form a seed bed for new infestations.

Adherence to the proposed season of use, forage utilization standards, effective removal, and effective monitoring for compliance would minimize the potential effects to big game forage. Adaptive management would allow modifications to the grazing strategy in response to resource conditions.

Cumulative Effects:

Activity associated with harvesting the remaining two units of the Lower Sheep timber sale could cause some temporary disturbance within the allotment. Habitat enhancement projects such as hardwood protection and continued treatment of invasive species would increase both winter and summer forage in the area. Although the hardwood exclosures in the old clearcuts fall down every winter due to faulty design, some will be put back up in the spring to protect any surviving hardwoods from further browsing by either big game or livestock. Rebuilt exclosures may be replanted in the future.

Alternative 2 – Current Management

Direct /Indirect Effects:

Cattle and elk diets show a high degree of overlap during the grazing season (Coe et al. 2004). Livestock grazing could result in forage competition between cattle and elk, especially in the late summer when preferred forage may be limited. This can lead to elk going into breeding and winter seasons with less body fat than necessary to survive or successfully reproduce.

Competition for forage would be higher than with the proposed action, and there would be slightly more opportunities for introduction and spread of invasive plants from cattle, horses, and vehicles. Elk may be occasionally displaced by the presence of cattle, horses, dogs, and humans for a longer period of time compared to the proposed action. Because this allotment is quite small, the direct effects to elk would be slight, but would contribute to other factors affecting elk such as weather and predation.

Cumulative Effects:

Habitat enhancement projects would increase winter forage and restore aspen in the area. Although the hardwood exclosures in the old clearcuts fall down every winter due to faulty design, some will be put back up in the spring to protect any surviving hardwoods from further browsing by either big game or livestock and to monitor their development. Restored exclosures may be replanted in the future.

Alternative 3 – No Grazing

Direct /Indirect Effects:

Eliminating livestock grazing would result in more forage available for elk, less disturbance from cattle and people, and the lowest risk of invasive plant spread. More food would be available for elk, especially in the spring as snow recedes near the winter range. Over time there would be improved meadow and riparian habitat conditions, which would improve forage and cover.

Direct/Indirect and Cumulative Effects Common to All Alternatives

Cattle grazing in this allotment would not affect any key big game use areas such as winter range or calving areas. Cover habitat (hiding and thermal) would not be affected by the presence or use by cattle. Allotment fences and boundary fences are generally three or four strand barbed wire and would not constitute barriers to the movement of big game animals within or outside the allotment.

Activity associated with harvesting the remaining two units of the Lower Sheep timber sale could cause some temporary disturbance within the allotment. Habitat enhancement projects will improve elk habitat both within and outside of the allotment. Future aspen enhancement would help to ensure the future existence of this important habitat. Prescribed burning in the grassy canyons above the Grande Ronde River will increase the palatability and nutritional value of forage on nearby wintering area. Although the hardwood exclosures in the old clearcuts have fallen down in previous winters due to faulty design, the ones that are rebuilt will use a different design that has been successful for many years on the district, and would be made of either wood bucks and poles or of metal livestock panels. The exclosures would be rebuilt in the spring and are expected to be more successful at protecting any surviving hardwoods from further browsing by big game or livestock and will be used to monitor their development. Rebuilt exclosures may be replanted in the future.

Land Birds

The Conservation Strategy for Landbirds in the Northern Rocky Mountains of Eastern Oregon and Washington (Altman 2000) identifies the priority habitat types, habitat features, and focal species. The Brock Allotment contains some of these priority habitat features, but not all are affected by livestock grazing (Table 4-2 displays grazing effects on birds associated with specific habitat features present on the allotment). This discussion covers Regional Forest’s Sensitive Species as well as Forest Plan Management Indicator Species, Old-Growth dependent species identified in the Forest Plan, and neotropical species potentially present.

Table 4-2. Priority bird habitat features present on the Brock allotment and potential for grazing effects in the Brock Allotment.

Habitat Type	Habitat Feature/Conservation Focus	Focal Species	Potential Grazing Effects*
Mesic Mixed Conifer	Large snags	Vaux’s swift	No
	Overstory canopy closure	Townsend’s warbler	No
	Structurally diverse; multi-layered	Varied thrush	No
Riparian	Large snags in riparian woodland	Lewis’ woodpecker	No
	Riparian woodland canopy foliage and structure	Red-eyed vireo	Yes
	Riparian woodland understory foliage and structure	Veery	Yes
	Shrub density Willow/alder shrub patches	Willow flycatcher	Yes
Unique (special) Habitats	Montane meadow	Upland sandpiper	Yes
	Aspen	Red-naped sapsucker	Yes

*No = habitat may be present, but grazing does not affect this feature; Yes = grazing may affect this feature.

Alternative 1 – Proposed Action

Direct/Indirect and Cumulative Effects

Since the degree to which grazing is affecting native bird species on this allotment is unknown, differences between alternatives are difficult to evaluate. In general, the proposed action would cause fewer impacts to birds relative to Alternative 2 because there would be fewer total days of grazing.

Alternative 2-Current Management

Direct/Indirect Effects

The degree to which grazing is actually affecting native bird species on this allotment is unknown. In general, cattle presence would alter or reduce the structure and composition of ground and shrub vegetation used by birds for nesting and foraging. Changes in vegetation could affect the type and availability of insect prey. Generally, birds have nested prior to cattle entering the allotment, however, if still nesting, individual birds could be disturbed by cattle presence, potentially leaving nests unattended for longer periods of time than normal. There would also be a chance that nesting vegetation, eggs, and young would be trampled by livestock. If nests are lost to trampling from cattle or other ungulates, they will likely reneest. Insect prey, foraging and perching habitat are affected but to an unknown degree.

Populations of brood parasitic cowbirds have increased to a point where they pose a potential threat to many bird populations (Robinson et al. 1992). Cowbirds were originally restricted to the mid-continental prairie range of the buffalo herds, but are now widespread due to favorable habitat conditions associated with forest alterations and livestock grazing. Salt licks, corrals, and other livestock concentration areas function as primary cowbird feeding sites. Cowbirds lay their eggs in host nests, allowing unsuspecting native birds to incubate and raise them. The cowbird nestlings compete with the nestlings of the host bird for food and space. Brown-headed cowbirds may be present on the allotment, but the numbers and degree of use in this allotment are unknown. If present, potential host species in this area include Brown Creeper, Dark-eyed Junco, Fox Sparrow, Golden-crowned Kinglet, MacGillivray's Warbler, Western Tanager, and Chipping Sparrow. To the extent that cowbirds are present and affecting host species on the allotment currently, those effects are likely to continue.

Cumulative Effects:

It is possible that the cumulative effect of annual grazing pressure, combined with forest fragmentation, roading impacts, and the spread of cowbird populations may be combining to seriously alter ecosystem processes and vegetative communities on which many Neotropical migratory bird species depend. The Brock Allotment is a very small piece of this puzzle, and the degree to which grazing is affecting native bird species is unknown. Ongoing aspen restoration and potential riparian fencing would help to alleviate some of these effects.

Alternative 3 – No Grazing

Without cattle present, riparian hardwood habitat would likely increase, meadow habitat would improve, and opportunities for cowbird parasitism would decrease.

Threatened Endangered and Sensitive species

Canada Lynx (Threatened)

Direct /Indirect Effects:

There would be no effect to Canada lynx because they are not believed to be in this area. Even if a lynx happened to appear, no direct effects are expected to occur because there are no activities in the area that would contribute to mortality, such as trapping or highway expansions. If a lynx moved into or traveled through the allotment during the summer, human and cattle presence might cause temporary avoidance of the area.

Cumulative Effects

Potential aspen enhancement would maintain or create habitat for key lynx prey species such as snowshoe hare and grouse. Tree thinning in the Lower Sheep timber sale units would not affect potential lynx denning habitat and would not reduce habitat for prey species such as squirrels. Overall, there would be **no effect to Canada lynx**, because the Blue Mountains are considered 'unoccupied' by resident lynx (USFS 2006).

Gray wolf (Sensitive)

Effects Common to Alternatives 1 and 2

Direct and Indirect Effects

Wolves and cattle can co-exist as long as wolves do not become habituated to humans, and do not perceive livestock as prey items. We currently do not know if wolves will return to this area, and we cannot predict what their behavior will be. The Oregon wolf plan (ODFW 2005) outlines what steps may be taken in the event that wolves harass or kill livestock, and includes measures to avoid or reduce the potential for wolf-livestock conflicts. Further details of those measures are available in the Oregon Wolf Plan which is publicly available. It has become range program policy to provide written information to be discussed with permittees on ways to avoid or reduce conflict. That information is provided in Appendix M. Anything beyond simply scaring wolves away currently requires a permit from ODFW, and the Brock Allotment permittee has been made aware of these rules by both Forest range specialists and ODFW biologists (H. Harris, pers. comm., M. Bulthuis, pers. comm). There have been no known instances of wolves killing livestock on the Walla Walla Ranger District to date, and ODFW has been unable to locate wolves on the district in 2009 (H.Harris, pers. comm).

Because wolves in this area are not considered essential to the overall Northern Rocky Mountain population, and there are no foreseeable conflicts with cattle, the Brock Cattle allotment **may impact gray wolf**, but would not cause a trend toward listing on the federal Endangered Species List.

Alternative 3 - No Grazing

Direct and Indirect Effects

Habitat for prey species such as elk may slightly improve if cattle no longer grazed in the area. The chances that wolves might prey on domestic animals would decrease, thereby reducing potential lethal and non lethal control of wolves by authorized agents. Because no conflicts would be expected, there would be **no impact to gray wolf**.

Cumulative Effects common to all three alternatives

Regardless of whether cattle are grazing on allotments, wolves would remain vulnerable to illegal human-induced mortality, because tolerance of wolves by some forest users would not likely change in the near future. In 2007 a wolf was illegally killed a short distance away. Human presence associated with private land ownership nearby combined with presence of forest users engaging in recreational activities, cattle operations, conducting timber harvest within the allotment or engaging in other forest management activities in the area could all contribute to wolf mortality. The degree of vulnerability increases as cumulative forest user activity increases.

The U.S. Fish and Wildlife Service (USFWS) recently completed an analysis of the Northern Rocky Mountain wolf population (USFWS 2009), and determined that the population has recovered. The USFWS concluded that northeast Oregon is non-essential to maintaining the population's viability based on their analysis, and that the Oregon Wolf Conservation and Management Plan (ODFW 2005) is adequate to facilitate the maintenance of, and in no way threatens, the recovered status.

California wolverine (Sensitive) Effects Common to All Alternatives

Direct /Indirect/Cumulative Effects:

Wolverines are not documented in this area, but may pass through undetected and/or stay for short periods. If they happen to be in the area, the presence of cattle and related human activity could cause them to temporarily avoid the area. None of the ongoing or proposed activities will alter prey availability or cause long term movements; therefore, this project will not cause a trend toward Federal listing and there will be **no impact to wolverine**.

Columbia spotted frog -Great Basin population (Sensitive)

Recent research indicates that Columbia spotted frogs in northeast Oregon are part of the Northern population, which ranges from British Columbia southeast into Washington, northeast Oregon, northern Idaho, and Montana (Funk et al. 2008). The Northern population is not considered imperiled, and is not listed as sensitive by the Regional Forester. Since the study did not include frogs from the Umatilla National Forest, we can't say with 100 percent certainty that no Great Basin frogs occur here.

Spotted frogs have been located in several areas of the Walla Walla Ranger District. Ponds and streams within this allotment have been monitored and no spotted frogs have been observed. Most of the waters in the allotment do not provide potential breeding habitat for the frog because they dry up in the summer.

Effects Common to Alternatives 1 and 2

Direct and Indirect Effects

If present, it is unlikely that spotted frogs would be impacted. Livestock would enter the allotment after eggs have hatched (June 1), and research in Eastern Oregon indicates that there is no significant difference in the abundance of recently metamorphosed Columbia spotted frogs between grazed and ungrazed ponds (Bull and Hayes 2000). Adult frogs are highly mobile and able to avoid livestock trampling at ponds or other areas where they are encountered.

Removal of riparian vegetation (grasses and shrubs) through grazing may increase the susceptibility of spotted frogs to predation by reducing hiding cover.

Livestock use of water sources has the potential to introduce sediment, increase turbidity, and introduce livestock feces and urine into potential spotted frog habitat. Cattle grazing would not result in high concentrations of waste in any water source within the allotment, considering numbers of cows and the availability of water. Minor increases in nutrients (i.e. feces) can have a positive effect on growth rates by stimulating production of algae and other vegetation consumed by larval spotted frogs (Howard and Munger 2000).

Cumulative Effects

Permitted use of the cattle allotment combined with timber harvest activity, recreation use, and habitat restoration projects would not likely have any effect to spotted frogs. Because spotted frogs have not been found in the allotment, and cattle grazing would not cause negative effects, there would be **no impact to Columbia spotted frog**.

Alternative 3 – No grazing

Direct /Indirect/Cumulative Effects:

Removal of cattle grazing could increase habitat for spotted frogs. More herbaceous cover may develop in and around ponds and streams, providing food and hiding cover.

Biological Evaluation Summary

Brock Cattle Allotment

June 11, 2009

Table 4-3. Summary of Effects for Threatened, Endangered, and Sensitive Wildlife Species

Species	Status	Species Occurrence and Habitat Suitability	Effects of Alternative*		
			1	2	3
Canada lynx <i>Lynx canadensis</i>	Threatened	Potential	NE	NE	NE
Gray wolf <i>Canis lupus</i>	Endangered	Documented	MI	MI	NI
California Wolverine <i>Gulo gulo</i>	Sensitive	Potential	NI	NI	NI
Townsend’s big-eared bat <i>Corynorhinus townsendii</i>	Sensitive	No Habitat	NI	NI	NI
Bald eagle <i>Haliaeetus leucocephalus</i>	Sensitive	No Habitat	NI	NI	NI
Peregrine falcon <i>Falco peregrinus</i>	Sensitive	No Habitat	NI	NI	NI
White-headed woodpecker <i>Picoides albolarvatus</i>	Sensitive	No Habitat	NI	NI	NI
Lewis woodpecker <i>Melanerpes lewis</i>	Sensitive	No Habitat	NI	NI	NI
Upland sandpiper <i>Bartramia longicauda</i>	Sensitive	No Habitat	NI	NI	NI
Columbia spotted frog <i>Rana luteiventris</i>	Sensitive	Potential	NI	NI	NI
Inland tailed frog <i>Ascaphus montanus</i>	Sensitive	No Habitat	NI	NI	NI
Northern leopard frog <i>Rana pipiens</i>	Sensitive	No Habitat	NI	NI	NI
Painted turtle <i>Chrysemys picta</i>	Sensitive	No Habitat	NI	NI	NI

*NI No Impact to R6 sensitive species individuals, populations, or their habitat.
 MI May impact, but will not likely lead to federal listing as threatened or endangered.
 NE No effect on a proposed or listed species.
 NLAA May affect, but is not likely to adversely affect a listed species.

Soils

Alternative 1-Proposed Action

Direct and Indirect Effects

This alternative reduces cattle use from the current plan by about 40 percent as measured in Head Months. Reduction in grazing pressure would further increase cover height and ground cover percentages such that erosion risk would be reduced and improvement in soil quality continued. To repeat from the existing condition discussion, accelerated erosion outside of the stream bank sections discussed in the hydrology and fisheries sections is very limited to unobservable. Risk of erosion is very low in much of this allotment. Grazing limitations for these soil types are few. Soils in the wet to moist meadows are among the most productive for forage on the Forest. The poorly drained soils in the wet meadow areas stay wetter into the summer longer than better drained soils and are therefore susceptible longer to puddling from hooves, which is likely to continue but to a lesser degree than occurs under current management.

Proposed changes in the grazing system would hasten long term conifer reestablishment in the old clearcuts. This can be expected to accelerate organic matter accumulation and return a more fungi-dominant soil biotic community.

Cumulative Effects

Soil impacts from past management activities including grazing, logging and roading were discussed in the current condition section. Neither new intensive logging nor increased roading are likely to occur for the foreseeable future or over time, once harvest is completed on remaining units of the Lower Sheep timber sale, which is currently under contract (silviculture specialists report). Treatments for invasive species will continue.

Alternative 2- Current Management

Direct and Indirect Effects

Soil quality is generally static or slightly improving on uplands under current grazing system. The wetter soils in meadow areas receive some compaction or puddling from hooves of both livestock and wildlife. Extent of this compaction is limited to concentration areas by water or trails. Effects from current grazing are more fully described in the Existing Condition section. Those effects are expected to continue at current levels.

Cumulative Effects

Overall, soils are static to improving although non-native plant species continue to increase or dominate, especially in meadow areas, as discussed elsewhere. New soil disturbance will occur when Lower Sheep units are harvested, but soil loss from erosion is not expected due to best management practices such as erosion control seeding.

Alternative 3- No Grazing

Direct and Indirect Effects

This alternative would eliminate current impacts due to livestock grazing. Elk use would not decline so some level of compaction from hooves in the wet meadows early season would continue. Patterns of elk use could change, but some increase in ground cover and height of vegetation would likely occur. The

no-grazing alternative would lead to some improved ground cover conditions and depending on elk use, to some reduction in compaction and puddling on the wet meadow soils.

Cumulative Effects

Soil impacts from past management activities including grazing, logging and roading were discussed in the current condition section. Neither new intensive logging nor increased roading are likely to occur for the foreseeable future or over time, once harvest is completed on remaining units of the Lower Sheep timber sale, which is currently under contract (silviculture specialists report). Treatments for invasive species will continue.

Hydrology

Alternative 1-Proposed Action

Direct and Indirect Effects:

This alternative reduces cattle use from the current plan by about 40 percent as measured in Head Months. Forest Plan utilization standards for riparian vegetation and PACFISH green line stubble height standards are prescribed that would limit grazing near streams and channels. Implementation of these standards would lead to improved ground cover especially on Fry Creek adjacent to the clear cuts in Pearson Pasture. Location of Key Sites is important to their effectiveness and the IDT will review and agree to their location.

A bank alteration standard of less than 20 percent alteration would be adopted in this alternative and used to reduce physical disturbance caused by hooves, trailing, and cattle use along all stream channels. Since hoof action in wet areas and bank alteration are the primary riparian impacts in the meadow, implementation of this standard could substantially reduce disturbance on channel banks. In Fry Creek, this standard would reduce direct cattle damage to channel bed and bank and promote vegetative recovery. The degree to which elk may be contributing to this disturbance isn't quantified and would be unlikely to change.

Implementation of green line stubble height standards, riparian utilization standards, and the bank alteration standard would substantially reduce cattle caused disturbance to the two streams in the allotment. To the degree that effects are the results of cattle use, recovery of the bank vegetation and reduction in disturbance would lead to improved channel stability and reduced sedimentation. There is little expectation that these, or any standards would lead to aggradation of Fry Creek in the foreseeable future.

Long-term monitoring using Multiple Indicator Monitoring (MIM) methodology would be used to evaluate changes in channel stability especially along Fry Creek. Provision is made to reduce allowable bank alteration if Forest Plan Satisfactory Range Condition standards of less than 20 percent grazing related bank instability are not met within 5 years.

Cumulative Effects:

To the degree that cattle adversely affect channel stability, it would improve and related accelerated erosion and sedimentation would decrease. Elk use of the area is a component of the channel and bank disturbance of the allotment channels and would not decrease. Past activities including homesteading, haying, ditch development, clearcutting and roading have altered the landscape that these channels drain and have affected many hydrologic components. Intensive logging and roading are unlikely to occur in the foreseeable future and over time. In the long term conifer reestablishment in the old clearcuts will likely control elk use as well as the location of cattle grazing. Downcutting in Fry Creek is not active and

reducing disturbances to the channel will allow some stabilization of the banks and bed. It is unlikely that the channel will re-aggrade in the foreseeable future.

Alternative 2- Current Management

Direct and Indirect Effects

Excessive bank alteration under the current grazing management is preventing channel recovery and putting the tributary in Fry Meadow at risk of geomorphic damage, like headcutting. The degree to which elk contribute to this situation is not quantified. Stubble height and utilization monitoring have not prevented this damage and have not prevented low levels of ground cover adjacent to Fry Creek. This is probably due to the location and number of Key Sites. See the existing condition write-up for more detail.

Stubble height monitoring along the green line of both Fry Creek and the tributary in Fry Meadow would be implemented. The field evaluation for this environmental analysis found unsatisfactory range condition based on channel stability (Satisfactory Range Condition page GL-36) and so riparian utilization standards would decrease to 35 percent from 45 percent. This change in monitoring and in utilization standards would lead to improvements in ground cover near channels and reduce impacts that lead to channel instability. Channel stability would be expected to improve to some degree although not as rapidly or to the degree that would be expected with the standards included in the proposed action.

Cumulative Effects

Grazing by cattle at the current level appears to be preventing the establishment and recovery of streamside ground cover on Fry Creek. Some improvement in conditions would be seen in ground cover and in channel stability with the addition of green line monitoring and a reduction in riparian utilization per Forest Plan standards. Accelerated erosion and sedimentation from the allotment is delivered downstream during spring runoff.

Alternative 3- No Grazing

Direct and Indirect Effects

This alternative would eliminate current impacts; bank alteration and reduced ground cover near channels that is due to cattle use. Elk use would not decline and bank alteration especially along the tributary in Fry Meadow could continue to be substantial. Patterns of elk use could change, but some increase in ground cover would likely occur.

Cumulative Effects

Past actions in the area of Brock Allotment have set the stage for current effects. Downcutting on Fry Creek is due to headcutting from some action or combination of actions taken during homesteading, ditching, roading, grazing, or logging. Clearcut logging methods in this area have led to long term openings that have attracted elk as well as provided the forage for cattle grazing. Although these openings were expected to be transitory, soil damage from logging and other actions as well as site conditions including high ground water areas and frost pockets, have seriously delayed reforestation. The no-grazing alternative would lead to some improved ground cover conditions adjacent to Fry Creek and depending on elk use, to some reduction in bank alteration on the Fry Meadow tributary. These effects would reduce channel instability and sedimentation that is a consequence of the damage to channels.

Fisheries

This analysis of effects for the Brock allotment will center on those Forest Service-Sensitive and federally listed species currently known in the Lookingglass and Grande Ronde/Grossman Creek watersheds and/or in tributaries draining the allotment: Snake River steelhead, Snake River spring/summer Chinook salmon, Columbia River bull trout and redband/rainbow trout. Additional information on these and other species elsewhere in the Grande Ronde subbasin is available in the Specialist Report in the project file.

Alternative 1-Proposed Action

Direct, indirect Effects

The proposed management of the Brock Cattle and Horse allotment would present even less risk of effect to sensitive redband/rainbow trout in Fry Meadow Creek and Sheep Creek than current management, which has produced no detectable effect. The proposed action is likely to cause some bank and channel erosion and to mobilize sediment within Fry Meadow Creek inside of the allotment area, but this sediment is very unlikely to be transported 1.5 miles downstream to occupied redband trout habitat. There is no evidence of sediment accumulation in fishbearing reaches of either Sheep Creek or Jarboe Creek below the allotment. Because flow regimes would not be affected, and there are no other mechanisms for the allotment management to affect stream temperature, temperature would also remain unaffected, as would all other components of aquatic habitat (pool frequency, stream bank connectivity, etc.).

For the same reasons as given for Alternative Two, resident fish and their habitat downstream in Jarboe Creek would remain unaffected, as would bull trout, Snake River steelhead and Snake River Chinook salmon farther downstream in Lookingglass Creek.

Therefore, the proposed management of the Brock Allotment, Alternative 1, May Impact Individuals or Habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species of Region 6 Sensitive redband trout.

Potential habitat for juvenile Chinook salmon and Occupied Snake River steelhead habitat in Sheep Creek is even farther downstream from the allotment (about 3 miles) and no effects whatsoever would be expected there, so Alternative 1 of the proposed Brock Cattle and Horse Allotment Management Plan would have no effect on ESA Threatened Snake River steelhead or Snake river Spring/summer Chinook salmon or their Designated Critical Habitats.

Columbia River bull trout do not inhabit streams in the two subwatersheds potentially affected by the Brock Cattle and Horse allotment. Therefore, Alternative 1 of the Brock Allotment Management Plan revision would have no effect on ESA Threatened Columbia River bull trout or their Designated Critical Habitat.

Because Essential Fish Habitat (EFH) under the Magnuson-Stevens Act coincides with occupied Chinook salmon habitat (three miles or more), Alternative 1 of the proposed Brock Cattle and Horse Allotment Management Plan would have no effect on EFH.

Cumulative Effects

None of the other activities ongoing or which would be concurrent with livestock grazing under Alternative 1 (Lower Sheep timber harvest, ongoing treatments of invasive species) would cumulatively affect any of the listed or sensitive fish, Designated Critical Habitats or EFH, and there is no evidence of management-related sediment or temperature effects in fishbearing reaches of Sheep or Jarboe Creeks, despite decades of soil-disturbing management activities on the allotment.

Alternative 2-Current Management

Direct effects

Since the Brock Allotment is removed by almost 1 ½ stream miles from the nearest fish habitat, and that distance is mostly seasonally intermittent stream channel, there is no opportunity for current allotment management to directly impact R6 sensitive redband/rainbow trout or their habitat. ESA listed steelhead habitat is another 1 ½ miles farther downstream (three miles total distance from the Brock allotment) so direct effects to them or their habitat are also not possible. Habitat of Chinook salmon and bull trout is at least that far away, and possibly even more remote, so clearly, there would be no direct effects to them either.

Indirect effects

The small portion of the allotment that is in the Jarboe Creek subwatershed is drained by ephemeral draws. Ephemeral draws have no defined channel, and very little, or evidence of, channel scour or sediment deposition. Under current management, cattle use of a perennial spring has led to trampling and muddy conditions. The downstream extent of disturbance is about 200 feet, at which point the channel becomes a fully vegetated swale. There is no off-site sediment delivery in the Jarboe Creek subwatershed (S.L. Peterson, pers. comm. 2009). By continuing current management, trampling of the spring and resulting muddy conditions would continue, but since there is no off-site delivery of sediment, resident fish and their habitat downstream in Jarboe Creek would remain unaffected, as would bull trout, Snake River steelhead and Snake River Chinook salmon farther downstream in Lookingglass Creek.

Most of the allotment is in the Sheep Creek subwatershed and is drained by Fry Meadow Creek, a tributary to Sheep Creek. Fry Meadow Creek is perennial in the lower ¼ mile, about 1-½ miles downstream of the allotment. Within the allotment boundaries, it is intermittent, and is dry most of the time that cattle are present. Fry Meadow is drained by an intermittent tributary to Fry Meadow Creek.

Since the current management has not produced any detectable sedimentation effects 1-½ miles downstream in occupied resident redband trout habitat, continuing the same management is not likely to produce sedimentation either, and it would not be expected to have any effects whatsoever three miles downstream in the habitat of ESA listed Snake river steelhead.

The intermittent tributary to Fry Meadow Creek that drains Fry Meadow is much smaller than Fry Meadow Creek. It does not have the well developed meanders common to perennial streams in meadow systems. Dense grass and sedges cover the low profile banks. The channel currently has a few small head cuts and relatively continuous bank alteration, but there is no continuous down-cutting of the channel. This meadow pasture is the first one grazed each season under the current grazing plan. This timing of use probably explains the signs of wet season trailing and bank alteration along its whole length. However, it is unlikely that the moisture regime of the meadow has been affected in any measurable way by the channel work or current channel condition (S.L. Peterson, Pers. comm.. 2009), and therefore there would be no effect whatsoever expected for flow regimes in Fry Meadow Creek or Sheep Creek attributable to current allotment management.

Because downstream flow regimes would not be affected, and there are no other mechanisms for the allotment management to affect stream temperature, temperature in occupied fish habitat would also remain unaffected, as would all other components of aquatic habitat (pool frequency, streambank connectivity, etc.). There is clearly some degradation of a small amount of aquatic habitat in an

intermittent section of upper Fry Meadow Creek. This would affect only aquatic vegetation and probably some aquatic invertebrates that inhabit the stream here seasonally, in the spring.

Cumulative Effects

There is some overlap into these two subwatersheds by the Lower Sheep timber sale. All activities of that project in these two subwatersheds are outside of the RHCAs, and would contribute nothing to cumulative effects with the Brock Cattle Allotment.

Although there have been extensive past management activities in these two subwatersheds, and in at least some cases they appear to have affected aquatic habitat (i.e. past cattle grazing effects to Jarboe Creek in Jarboe Meadow), as explained previously, current management of the Brock Allotment does not appear to contribute to further degradation of aquatic habitat in fish-bearing reaches of any streams in the allotment subwatersheds, so there would be no contribution to adverse cumulative effects in those fish-bearing reaches.

Effects Common to Alternatives 1 and 2

Although present in the Grande River system, Columbia River bull trout, Snake River fall Chinook salmon do not inhabit streams in the two subwatersheds potentially affected by the Brock Cattle and Horse allotment. Although Snake River spring/summer steelhead are present in the lowest reaches of Jarboe and Sheep Creeks downstream of the allotment, current management of the Brock Allotment does not appear to contribute to further degradation of aquatic habitat in fish-bearing reaches of any streams in the allotment subwatersheds, therefore, there are **no direct/indirect or cumulative effects to Designated Critical Habitat or Essential Fish Habitat** in fish-bearing reaches occupied by listed steelhead, bull trout or salmon in the Lookingglass or Grande Ronde/Grossman Creek watersheds, and **No Effect** on Columbia River bull trout, Snake River fall Chinook salmon, Snake River spring/summer Chinook salmon or Snake River spring/summer steelhead.

Effects of Alternative 3 (No Grazing)

Direct, indirect and cumulative effects

Suspending cattle grazing on the Brock Allotment would certainly reduce or perhaps even eliminate on-site effects (contribution of wild ungulates to the ongoing effects in the allotment is not clear) to Fry Meadow Creek, but since off-site effects are not presently detectable, neither would any change be detectable.

Therefore, Alternative three, eliminating grazing, would not be expected to produce any detectable change in sedimentation effects 1-½ miles downstream in occupied resident redband trout habitat, or any effects whatsoever three miles downstream in the habitat of ESA listed Snake river steelhead.

Likewise, because the moisture and flow regimes in the meadow have probably not been altered by grazing, neither would suspending grazing alter the moisture or flow regimes, and because flow regimes would not be affected, and there are no other mechanisms for the allotment management to affect stream temperature, temperature downstream would also remain unaffected, as would all other components of aquatic habitat (pool frequency, stream bank connectivity, etc.).

For the same reasons, resident fish and their habitat downstream in Jarboe Creek would remain unaffected, as would bull trout, Snake River steelhead and Snake River Chinook salmon farther downstream in Lookingglass Creek.

Biological Evaluation Summary

Table 4-4. Summary of Effects for Threatened, Endangered, and Sensitive Fish Species within the Analysis Area

Species	Status	Species Occurrence and Habitat Suitability	Effects of Alternative*		
			1	2	3
Snake River Spring/Fall Chinook salmon	Threatened	Potential	NE	NE	NE
Snake River steelhead	Threatened	Documented	NE	NE	NE
Columbia River bull trout	Threatened	Documented	NE	NE	NE
Interior Redband Trout	Sensitive	Documented	MIIH	MIIH	NI

*NI No Impact to R6 sensitive species individuals, populations, or their habitat.

NE No effect on a proposed or listed species or their Designated Critical Habitat or Essential Fish Habitat.

NLAA May affect, but is not likely to adversely affect a listed species.

SOCIAL AND ECONOMIC EFFECTS

This social and economic analysis addresses concerns that changing permitted livestock levels would affect grazing related jobs and income, and those allotment improvements and changes in livestock management can affect costs to the permittees and the Forest Service. This analysis did not evaluate the costs of livestock transport, veterinary expenses, supplemental feed, employee payment, maintenance and upkeep of ranch property etc. These are normal expenses by the ranch operator and were not requested from the permittee. This analysis did not evaluate the costs or benefits to dispersed recreation from management alternatives for the allotment, based on the fact that opportunities for dispersed recreation in and near the allotment are expected to remain unchanged, as noted earlier in the Wildlife Effects analysis and also due to the impossibility of conducting a cost-benefit analysis for dispersed recreation at this scale, which is best done at Forest Plan scale, which was done in 1990 and under which we still operate.

To evaluate the effects of each alternative the analysis criteria describes the Brock Allotment Economic Conditions section for revenue and employment. The social and economic analysis focuses on the indicators which include the number of permitted head months (HM), the expected revenue for the number livestock grazed, value factored for the time spent on the allotment, changes in associated jobs, and change in cost to the permittees and to the agency. Table 4-5 displays these indicators by alternative. All costs are averaged. They are relative and should be used for comparison, not as expected costs. They represent an example based on current costs that are being used to determine differences in values between alternatives. Table 4-5 is limited to social and economic indicators that could be quantified at this scale.

Table 4-5. Social and Economic Indicators by Alternative

	Alt 1	Alt 2	Alt 3
Number of Head on Allotment / Head on NFS lands	81/65	81/65	0
Days / Months on Allotment	77/2.5	128/4.2	0
HM / HM for 65 head permitted on NFS lands	205/163	340/273	0
Revenue for time livestock graze the allotment *	\$13.2	\$22.3	0
Annual Employment**	0.3	0.3	0
Grazing Fees***	\$219	\$389	0

* Calculations based on 12 month calf (1,000 lb) sold at auction (2007 average sale price of \$78.60 ctw) would equal \$786. \$786 X 81 head X percent time livestock are on the allotment. Costs represented in thousands.

** 0.3 of a year employee for every 1000 HM livestock grazed.

*** HM X 2009 grazing fee of \$1.35

Alternative 1 – Preferred

Direct / Indirect Effects: Compared to Alternative 2 - Current Management, there would be a slight decrease in profitability of this ranching operation on National Forest System Lands. Livestock would use the allotment a shorter period of time. The permitted use would be 2.5 months, shortened by approximately 1.7 months. This will lead to a reduction in value added to livestock on National Forest System lands by approximately 0.4 percent. The approximate value added to livestock production for the period livestock are on the allotment is \$13,200. Additional, and likely more-expensive, pasture or hay would be required to feed off the allotment during the shorter 1.7 months. This could lead to lower net returns for the sale of livestock. If no alternatives pasture or hay is found, livestock may need to be sold before prime livestock weights are achieved or when market prices are low. The costs of employment would remain about the same. It is expected that one individual will be hired for approximately 3.5 months to maintain fences and manage livestock. Grazing fees would be reduced. Billing for authorized use would be around \$219 less approximately \$170.

Compared to Alternative 3 - No Grazing, livestock production on National Forest System Lands would continue thus contributing to local economies and employment. The approximate value added to livestock production for the period livestock are on the allotment is \$3,400 to \$6,200. Livestock would be permitted on the allotment for 2.5 months reducing the need to find alternative pasture or to feed. There would be continued employment adding approximately 3.5 months work to maintain fences and manage livestock. Grazing fees of \$219 would be collected

Cumulative Effects:

Compared to Alternative 2 - Current Management, the permittee may need to reduce herd size if additional pasture land or feed is not available. This would cause a slight reduction in the livestock produced and taxes paid in the county and would contribute to the current downward profitability of the ranching operation. The lower stocking may render this allotment too expensive to justify continued grazing.

Compared to Alternative 3 - No Grazing, livestock would continue to be authorized on the Brock Allotment providing flexibility to the ranching operation. Taxes would continue to be collected for income earned and stability in the ranching profitability would be realized.

Alternative 2 – Current Management

Direct /Indirect Effects:

If resource conditions allow for this period of grazing the alternative would provide for the greatest flexibility and profitability to the ranching operation over both the other two alternatives. This alternative permits 81 head of livestock for a period of 4.2 months. The approximate value added to livestock production for the period livestock are on the allotment is \$22,300. Employment would continue. It is expected that one individual will be hired for approximately 3.5 months to maintain fences and manage livestock. Grazing fees would remain the same. Billing for authorized use would be around \$389 per year. If resources are not available this allotment would continue to be overstocked and livestock would need to be removed when resource conditions reach proper use. Ultimately this alternative would realize similar effects to those displayed in Alternative 1.

If resource conditions allow for this period of grazing the permittee would not need to find additional pasture for 81 head over a period of 4.2 months for a portion of all this use. The maximum revenues could be generated and contribute the stability of the ranching in these counties. If resources are not available this allotment would continue to be overstocked and livestock would need to be removed when resource conditions reach proper use. Ultimately this alternative would realize similar effects to those displayed in Alternative 1.

Alternative 3 – No Grazing

Direct /Indirect Effects:

The National Forest System lands would provide no value to the profitability of this ranching operation. Livestock would not be permitted on the Brock Allotment. This is a 100 percent reduction in value added to livestock on National Forest System lands. Additional and likely more expensive pasture or hay would be needed to maintain the livestock and likely lead to a smaller ranching operation. This could lead to lower net returns. There would be no additional employment generate. No grazing fees would be collected.

Cumulative Effects: livestock would be authorized on the Brock Allotment and no flexibility provided to the ranching operation. There would be no revenue collected thus reducing taxes collected. There would

be a decrease in profitability for the ranch that would contribute to the existing county reduction in profitability to the ranching community.

CLIMATE CHANGE

Soil Carbon and Greenhouse Gas Emissions (GHG)

The scale for this analysis is the allotment, its relative contribution and impact on the global carbon cycle and global climate change associated with greenhouse gas emissions.

Direct/Indirect and Cumulative Effects

Evaluating rangeland ecosystem resilience generally involves defining the capability of an ecosystem or community to withstand stress and/or disturbance and recover to its original condition. Some rangelands are quite resilient if current disturbances and stresses mimic their evolutionary history. However, different types of disturbances interact differently as soils, vegetation and climatic change. It will be impossible to assess the impact of global climate change on rangeland ecosystems without high quality, consistent, assessable soil and vegetation data and models that describe how changes occur in response to stress and disturbance (SRM).

Grazing lands are estimated to contain 10 to 30 % of the world's soil organic carbon. (Schuman, Janzen and Herrick 2002). While some studies have found limited to large reductions in soil carbon and increases in CO₂ flux associated with grazing (Haferkamp and Macneil 2004; Welker et.al. 2004). Studies involving modeling and remotely sensed data indicate that proper grazing can improve ecosystem production as measured by soil carbon storage (Li, Liu and Tan 2007; Steinfeld and Wassenaar 2007; Reeder et.al. 2001; Schuman, Janzen and Herrick 2002). Additional studies similarly conclude that certain levels of grazing may even increase carbon sequestration (Hellquist et.al. 2007; Derner, Boutton and Briske 2005; Derner et.al. 2005; LeCain et.al. 2001; Ganjegunte et.al. 2005; Manley et.al. 1995; (Reeder et.al. 2001) (Schuman, Janzen and Herrick 2002). Complementing these findings, several studies indicate that light to moderate levels of grazing have no overall effect on total carbon sequestration Hellquist et.al. 2007; Ma XiuZhi et.al. 2005; Ingram et.al. 2008; Derner, Boutton and Briske 2005; Stavi et.al. 2008; Owensby, Ham and Auen 2006; Shrestha and Stahl 2007; Ingram et.al. 2007). In fact, intensive rotational grazing appears to be a viable option for green house gas (GHG) reduction and carbon sequestration credits (Bosch, Stephenson, Groover and Hutchins 2008; Steiguer, Brown and Thorpe 2008; NRCS 2007; Li, Liu and Tan 2007; Ingram et.al. 2007; Conant and Paustian 2000; Steiguer, Brown and Thorpe 2008; Streater 2009; Sharrow 2008).

Grazing results in redistribution of carbon on the landscape (Stavi et.al. 2008). It has been noted that livestock waste management represents a potential long-term soil carbon gain (Fellman et.al. 2008). Free ranging livestock deposit manure across the landscape resulting in aerobic decomposition. Aerobic decomposition of manure generates considerably less methane than does decomposition associated with stockpiling strategies employed in more concentrated livestock production strategies (Alberta Agriculture and Food Ag-Info Center; EPA 2005) . This "in-effect" land application of manure also results in a buildup of soil carbon that decomposes much more slowly than occurs when composting (NRCS 2007). That being said, quantitatively or even qualitatively determining the relative effects of the different alternatives for livestock grazing from the Brock allotment on climate change or the effects from climate change on proposed project is speculative. It is doubtful if any meaningful or measurable effects are assessable and therefore not significant. The ongoing and future effects of livestock grazing from this particular 100-acre allotment on global or regional climate change or the effects of global or regional climate change on the Brock allotment, regardless of how the allotment is managed, are speculative. It is

doubtful whether any meaningful or measurable effects are assessable and therefore are not likely to be significant.

Cumulative Effects

Projected climate change impacts from cumulative effects of all activities releasing GHG around the globe include air temperature increases; sea level rise; changes in the timing, location, and quantity of precipitation; and increased frequency of extreme weather events such as heat waves, droughts, and floods. These changes will vary regionally and affect renewable resources, aquatic and terrestrial ecosystems, and agriculture. While uncertainties will remain regarding the timing and extent magnitude of climate change impacts, the scientific evidence predicts that continued increases in GHG emissions will lead to increased climate change (USDA, Forest Service. 2008).

Cultural and Historic Resources

Direct, Indirect and Cumulative Effects

After reviewing all field information and evaluating the potential effects of authorizing livestock grazing on known cultural resources within the Brock Cattle & Horse Allotment boundary, a monitoring report and determination of no effect for the proposed project was completed and sent to both the Oregon SHPO and the CTUIR. The SHPO concurred with this determination 05/01/09.

It is recommended that the project be allowed to proceed with the understanding that if there is a significant change in the grazing strategy this determination may change and should be reevaluated. Also, if any unknown historic properties are discovered during the implementation of this project, the archaeologist shall be contacted and these properties shall be evaluated to determine if they will be impacted by grazing activities. Additional consultation with the SHPO and interested Native American Tribes will also be conducted as needed.

FOREST PLAN CONSISTENCY FINDINGS

Overview

The proposed action would satisfy direction in the Forest Plan and PACFISH for management of all resources considered in this assessment, discussed below. Alternatives 2 and 3 would satisfy Forest Plan direction for most resources, but would not fully satisfy direction for range resources for various reasons discussed below.

Range

Alternative 1, the preferred alternative, is consistent with the Forest Plan direction for range (pg 4-63 and GL-36). It will protect the productivity and make suitable National Forest System Lands available for livestock grazing in coordination with other resource uses. This analysis will provide for the development of a new allotment management plan. Recent condition and trend effectiveness monitoring identifies that the vegetative and soil conditions on upland, riparian and meadow communities are in a satisfactory condition with a static trend. However, as indicated by the Hydrologic Specialist Report this allotment has some basic resource damage where bank instability exceeds 20 percent of the total miles of stream on the allotment and that livestock use was identified as a major contributor. The unsatisfactory condition utilization levels will be applied until this situation is corrected. This alternative identifies desirable riparian objectives and actions needed to meet them. The management of this allotment incorporates forage utilization standards. The alternative identifies a cost-effective program for structural improvements and is consistent with other resource needs.

Alternative 2, current condition, is not consistent with the Forest Plan direction for range. This alternative does not set desirable riparian objectives and actions needed to meet them. Otherwise, it is consistent with the Forest Plan (pg 4-63 and GL-36).

Alternative 3, no grazing, is not consistent with the Forest Plan direction for range in that it would not provide forage for livestock grazing on suitable range. In other descriptions it is consistent with the Forest Plan (pg 4-63).

PACFISH and Fisheries

The Umatilla National Forest Plan (1990) was modified by PACFISH (1995). PACFISH includes specific Riparian Management Objectives (RMO's). However, the Decision Notice for PACFISH stated that where pre-existing Forest Plan direction is more restrictive than PACFISH direction, then the pre-existing Forest Plan direction will take precedence: "These interim standards and guidelines replace existing conflicting direction described in these 15 forest plans except where the forest plan direction provides more protection for anadromous fish habitat (PACFISH EA p 14)" (PACFISH DN, p, 11, VIII). In this instance, the Pre-existing Forest Plan direction and definitions require that total miles of streambanks within an allotment be 80% stable or better for an allotment to meet the definition of Satisfactory Range Condition with respect to riparian conditions (FP Glossary p. GL-36) and is actually stronger direction than PACFISH RMOs in this particular case, as explained below.

One of the PACFISH RMO's addresses bank stability:

Bank Stability > 80% stable (non-forested systems) (PACFISH, 1995, pp C-6)

At the allotment-scale, stream channels would not meet the RMO for bank stability, however the PACFISH RMO's are intended to be applied at watershed scale, not at the allotment scale, and are intended to be applied to larger perennial streams (stream orders 3-7) as stated by PACFISH below.

"All of the described features may not occur in a specific segment of stream within a watershed, but all generally should occur at the watershed scale for stream systems of moderate to large size (3rd to 7th order)". (PACFISH, 1995, pp C-5). Note: Ephemeral and intermittent streams are considered 1st order streams (ie the smallest and non-perennial channels in a watershed. PACFISH RMOs do not apply to streams this size, based on the PACFISH statement quoted), however earlier Forest Plan standards for bank stability do apply to streams this small. Streams such as Sheep Creek and Jarboe Creek are considered 3d order streams (perennial, comprised of two or more smaller 2d order perennial channels conjoining). Stream sizes (orders) increase in numeric value (order) as they become bigger, the inverse is true of watershed sizes where numbers become larger as the watershed size becomes smaller.

In the context of entire watersheds (Lookingglass and Grande Ronde River – Grossman Creek) the conditions in Fry Meadow have little weight, and available information indicates that bank stability still averages > 80 percent at watershed scale, so grazing management in the Brock allotment does not appear to be retarding attainment of RMO's at the scale intended by PACFISH. However, although the current management of the Brock allotment may not be retarding RMOs at watershed scale, it is not consistent with the more restrictive original Umatilla National Forest Plan requirements for Satisfactory Range Condition (GL-36) in that the hydrologist has estimated that bank instability at the allotment scale exceeds 20%, which results in the allotment being defined as possessing Basic Resource Damage in its current condition.

Because the Forest Plan riparian utilization standards for Unsatisfactory riparian Condition would be applied under both Alternative 1 or Alternative 2, both alternatives are consistent with the stronger Forest Plan direction for bank stability at allotment scale and for reduced utilization in the presence of Basic Resource Damage, and are thus consistent with the PACFISH decision notice and its intent.

Therefore, the Current Management (Alternative 2) complies with PACFISH GM-1 as well as with the Forest Plan direction for Unsatisfactory Range Condition:

- GM-1. Modify grazing practices (e.g., accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of Riparian Management Objectives or are likely to adversely affect listed anadromous fish. Suspend grazing if adjusting practices is not effective in meeting Riparian Management Objectives and avoiding adverse effects on listed anadromous fish.

The current management (alternative 2 – no action/no change in management) is also consistent with PACFISH Standard and Guidelines GM-2 (location of livestock handling and management facilities), and GM-3 (Locations of trailing, bedding, salting, loading, watering) as there are no new livestock handling or management facilities inside RHCA's and judging from watershed conditions, existing facilities are not preventing attainment of RMO's or adversely affecting anadromous fish. GM-4 does not apply in this case.

Since the activities proposed under alternative 1 would be of the same type, and at the same or lower intensity, Alternative 1 would comply with the Forest Plan and PACFISH for the same reasons as detailed under Alternative 2 above.

Other Forest Plan Consistency Review

Forest Plan Management Area direction would be met for each of the management area allocations in all alternatives.

Forest Plan and direction for silviculture, invasive species, water, fisheries, wildlife, sensitive plants and soils would be met under all the alternatives:

- The proposed action is consistent with the Umatilla Land and Resource Management Plan direction, as amended, with respect to invasive plants. Compliance with Prevention Standard #1 includes the above discussions of existing condition, the mechanisms of invasive species spread, the prevention measures listed as design criteria, and the risks that remain even after implementation of the prevention measures.
- The proposed action would meet standards and guidelines in the Umatilla National Forest Land and Resource Management Plan for soil resource condition (soil quality) and erosion risk or hazard.
- The analysis and proposed activities in this report are consistent with current forest land management direction for silviculture including the Umatilla Forest Plan and the National Forest Management Act.
- The action alternatives would implement reduced utilization standards in riparian areas and implement green line monitoring along the channels in the analysis area in compliance with PACFISH. These would constitute compliance with the Umatilla National Forest Land and Resource Management Plan for hydrologic and water quality components.
- Effects of the proposed activities to wildlife are not considered significant in the context of the analysis area, the Umatilla National Forest, and the Blue Mountains. Forest Plan wildlife standards within all of the management area allocations within the allotment are being met.

Wildlife species and habitat will not be significantly impacted by permitted activities that are limited in duration and intensity and affect a relatively small area. No adverse effects are expected for any wildlife species listed as Sensitive by the Forest Service, nor those listed as Threatened or Endangered by the U.S. Fish and Wildlife Service.

- This project complies with present Federal regulations and policy pertaining to the management of Sensitive plant and animal species. Biological Evaluations for “endangered”, “threatened”, and “sensitive” plant and animal species were completed for those species currently listed as sensitive on the 2008 Regional Forester's Sensitive Species List. Determinations were made that none of the proposed projects would adversely impact, contribute to a trend toward Federal listing, nor cause a loss of viability to the listed plant and animal populations or species.
- Since the activities proposed under alternative 1 would be of the same type, and at the same or lower intensity, Alternative 1 would comply with the Forest Plan direction for fisheries for the same reasons as detailed under Alternative 2. That is to say, alternative 2 would also be consistent with the Umatilla National Forest Plan.

OTHER LAWS, REGULATIONS AND POLICIES

The project alternatives are also been compliant with the Clean Water Act, the Endangered Species Act, the National Historic Preservation Act, the Migratory Bird Treaty Act and other policies described below. Insufficient data are available to determine the extent to which grazing on Brock allotment may contribute to Climate Change, but the probability is that any contributions are immeasurable and insignificant.

Forest Service Climate Change Strategy

Forest Service Chief Abigail Kimball has recently noted that global climate change is a challenge the Forest Service must rise to meet, and that the Forest Service is “developing a national framework for guiding and directing land management activities in light of expected changes in climate around the globe. In some landscapes, the changes in management will be significant, based on anticipated regional and local effects of a changing climate”.

She also noted that “water scarcity is another emerging challenge wherein the Forest Service can help meet the challenge. Climate change has been linked to declining snow packs, retreating glaciers, and changing patterns of precipitation and runoff. The evidence shows that we are entering a period of water scarcity not seen in our history. The national forests were created in part for ‘securing favorable conditions of water flows’, the importance of which has grown as populations have grown. The Forest Service can make a difference by managing vegetation to restore ecological processes and functions, including the recharging of streams and aquifers.”

<http://www.fs.fed.us/climatechange/documents/strategic-framework-climate-change-1-0.pdf>

The Brock Analysis considered the direct and indirect effects of livestock grazing in the Brock Allotment on both hydrologic function and indirectly on global climate change and concluded that the effects of livestock management in Brock allotment regardless of the alternative analyzed, on climate change, are unmeasurable and are likely insignificant at a global scale.

National Historic Preservation Act, Treaty Rights, Executive Order 12875, Executive Order 13287 and American Antiquities Act of 1906

The Confederated Tribes of the Umatilla Indian Reservation as well as the Nez Perce Tribe were consulted on the Proposed Action and on the two other alternatives. No concerns have expressed by either tribe. According to the State Historic Preservation Office, the proposed action will have No Impact on Heritage Resources and is consistent with the terms of the 2004 Programmatic Agreement among the USFS R6, AHP and SHP, dated June 2004.

Endangered Species Act

Biological Evaluations for “endangered”, “threatened”, and “sensitive” plant and animal species were completed for those species currently listed as sensitive on the 2008 Regional Forester's Sensitive Species List. Determinations were made that none of the proposed projects would adversely affect, contribute to a trend toward Federal listing, nor cause a loss of viability to the listed plant and animal populations or species or their Designated Critical Habitats.

Consultations for Canada lynx, Snake River steelhead, Snake River Basin spring/summer and fall Chinook salmon, Columbia River bull trout, and *Silene spaldingii* are not necessary since determinations have been made that the alternatives would have no effect to those species or Designated Critical Habitats.

Disclosure Statement for Compliance with the Migratory Bird Treaty Act and Executive Order 13186

Activities comply with the Fish and Wildlife Service Directors order #131 related to applicability of the Migratory Bird Treaty Act to federal agencies and requirements for permits for “take”. In addition, the permit is compliant with Executive Order 13186 because the analysis meets our obligation as defined under the January 16, 2001 Memorandum Of Understanding between the U.S. Forest Service and U.S. Fish and Wildlife Service designed to complement Executive Order 13186. The purpose of this Memorandum Of Understanding is to strengthen migratory bird conservation through enhanced collaboration between the Forest Service and the Fish and Wildlife Service, and with state, tribal, and local governments. As required, management practices that could affect high priority species have been identified, and conservation measures to minimize impacts to birds have been considered.

Clean Water Act

The proposed action and alternatives comply with the Clean Water Act and Oregon State Water Quality Regulations by the implementation of Best Management Practices; channel stability guidelines, bank alteration guidelines, vegetation utilization standards, and green line stubble height. These BMPs would reduce damage to channels from cattle and allow recovery of disturbed conditions. Adaptive management components of the proposed action provide for increased protection if improvement does not meet Plan standards within 5 years of implementation.

National Forest Management Act (NFMA)

The analysis and proposed activities in this report are consistent with direction in the Forest Plan. The Forest Plan was developed and revised per guidance from the NFMA.

Floodplains, Executive Order 11988

Executive Order (EO) 11988 requires the Forest Service to avoid “to the extent possible the long and short term adverse impacts associated with the occupation or modification of floodplains...” The action alternatives would control impacts to floodplains with monitoring of standards as described in each

alternative. The no-grazing alternative would avoid impacts to floodplains. The alternatives in this environmental analysis are consistent with this EO.

Wetlands, Executive Order 11990

Executive Order (EO) 11990 requires the Forest Service to “avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands.” The two action alternatives would control and the no grazing alternative would eliminate grazing related impacts to wetlands and is consistent with this EO.

Municipal Watersheds

There is no de-facto or designated municipal watershed in the Brock Analysis Area.

Safe Drinking Water Act

There is no domestic use of water in the allotment and no source water protection areas within the project area.

Civil Rights, Women, and Minorities

The female and minority population associated with the state and counties affected in this target area have been assessed in this analysis. The current holder identifies one of the major ranch operators is female this is contributing to the over 60 percent of female ranch managers in the target area. An assessment of minority-ranch operators in the target area has also been made. This population was identified to be very small. Forest Service does not maintain records on the minority status of permit holders and does not discriminate in the permitting process.

This project does not appear to generate disparate impacts to the civil rights, woman or minorities. The project alternatives given the size of potential social and economic effects are also not like to result in civil rights impacts to Forest Service employees or customers of its programs.

Environmental Justice, Executive Order 12898

Executive Order 12898 on environmental justice requires federal agencies to identify and address any disproportionately high and adverse human health or environmental effects on minority and low-income populations. Hispanic or Latino occupies the largest sector of the minority populations in both counties, Baker 2.3 percent and Union 2.4 percent. The next sector includes those who identified themselves as mixed race 1.7 for both counties. Baker County is represented by and American Indian-Alaska Native population of 1.1 percent. All other minorities sectors exhibit populations less than 1 percent.

Females are listed as the primary operator in over 66 percent and 61 percent of farms respectively in Baker and Union Counties. The current holder of this term grazing permit on this allotment lists dual ownership between husband and wife and would fit into the category as having a female as primary operator. Combining all recorded minority groups as one of three primary operators only 0.07 percent and 0.04 percent of farms respectively in Baker and Union Counties. The Forest Service does not maintain records on the minority status of permit holders or their employees.

The Allotment is located within ceded lands recognized in the June 9, 1855 Treaty between the Cayuse, Umatilla and Walla Walla Tribes, in Confederation, and the United States. Article 1 states, “The above-named confederated bands of Indians cede to the United States all their right, title and claim to all and every part of the country claimed by them included in the following boundaries ... [p]rovided ... the privilege of hunting, gathering roots and berries and pasturing their stock on unclaimed lands in common with the citizens, is also secure to them.” The Confederated Tribes of Umatilla Indian Reservation

(CTUR) have requested to express their grazing rights on the Wallowa Whitman National Forest on an allotment about 20 miles to the southwest of the Brock Allotment. The Forest Service has signed a Memorandum of Understanding with CTUIR and to graze this allotment. If the CTUIR requests to expand the expression of their rights the Forest Service will comply to the extent required to exercise treaty rights.

The poverty rates provide some indication of the percentage of the population in the surrounding communities with low-income. The 2000 U.S. Census Bureau identifies the poverty rate Baker County to be 14.7 percent and 13.8 percent in Union County. This is a little higher than the Oregon State rate of 11.6 percent¹. Ranching employment benefits seasonal help during the spring and summer months. Frequently these jobs employ from the lower income sectors. Both action alternatives could possibly contribute to 0.3 jobs per year.

This project does not appear to generate a disparate impact on minority or low income populations. The project alternatives given the size of potential social and economic effects are also not likely to result in civil rights impacts to Forest Service employees or customers of its programs.

Multiple-Use Sustained Yield Act of 1960 (MUSYA)

The three alternatives considered in detail meet the intent of the MUSYA, in that they ensure that recreation, fish and wildlife, water, timber resources are available for current and future generations, however only the two action alternatives ensure that grazing resources are available for both current and future generations.

Magnuson-Stevens Fishery Conservation and Management Act, Essential fish habitat.

Essential fish habitat applies only to habitat for commercially important fish species. For the Umatilla National Forest these are Chinook salmon. Most named streams downstream of longstanding natural barriers in the analysis area watersheds would be counted as Essential Fish Habitat. The proposed Brock C&H Allotment project would have No Effect on Magnuson-Stevens Act Essential Fish Habitat and consultation with National Marine Fisheries Service is not required.