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West Camas Forest Restoration and Timber Sale

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CHAPTER 1- PURPOSE AND NEED FOR ACTION

BACKGROUND

The Sun Valley Management Framework Plan (MFP) identifies areas within the West Camas project boundaries should be intensively managed in order to shift forest stands from being overstocked and diseased to stands that are healthy, vigorous, and can provide for multiple resource uses (Figure 1). As part of intensive management, areas that are capable of producing timber products would be actively managed to protect resources from damaging agents and for production of forest resources. The Fire, Fuels and Related Vegetation Management Direction Plan Amendment (FMDA) also outlines management goals for vegetation within these areas. These goals look to increase the amount of early and late seral forest communities with open structures in order to more closely match historical conditions. The objective for the proposed West Camas Forest Restoration and Timber Sale is to meet the goals set in the Sun Valley MFP as amended by the FMDA.

PURPOSE AND NEED FOR ACTION

The health and productivity of forest communities within the West Camas project area are at risk because of changes in historic disturbance intervals, a shift in vegetative composition, an increase in susceptibility to insects (e.g. Douglas-fir beetle, Douglas-fir tussock moth, and the spruce budworm), and the presently high amount of Douglas-fir dwarf mistletoe (*Arceuthobium douglasii*, referred as dwarf mistletoe throughout the rest of this document). Historically, these forest communities experienced wildfire at regular intervals that influenced their structure, species composition, and function. Wildfires provided a disturbance that maintained a mix of vegetative diversity and reduced tree densities in Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) and ponderosa pine (*Pinus ponderosa*) communities (Hessburg et al., 1999, Hessburg et al., 1994). Additionally, these regular disturbances also provided a means to remove trees infected with Douglas-fir dwarf mistletoe (Hessburg et al., 2008). Historically, these wildfire events would remove the majority of the trees heavily infected with dwarf mistletoe and naturally initiate new stands with mixed species, typically ponderosa pine and Douglas-fir. Fire suppression efforts have limited the opportunity for these types of events to occur and areas have become impacted by dwarf mistletoe to the point that Douglas-fir would not be able to persist or effectively regenerate without the removal of most of the infected trees (Hessburg et al., 1994). Today, high tree densities, dominance of a single species (Douglas-fir), and high amounts of dwarf mistletoe infection limits the viability and production of future forests and puts these forest communities at risk of having uncharacteristic disturbances (e.g. high mortality from insects, dwarf mistletoe and/or large stand replacing fires) (Hoffman et al., 2007).

The overall purpose and goal of the West Camas Restoration and Timber Sale project is to improve the current and future health of forest communities and promote characteristics that would allow stands to be resilient to disturbances such as wildfire, insect outbreaks, and endemic diseases. It is with this purpose that the BLM is proposing alternatives with combinations of silvicultural treatments that would remove diseased trees, promote resistance to insects, reduce threat from uncharacteristic wildfires, establish new regeneration of multiple tree species, increase forest production, and increase structural diversity.

DECISION TO BE MADE

The Shoshone Field Manager would:

- Select an alternative or a combination of alternatives to be implemented.
- Determine if the selected alternative would have significant effects and whether or not to prepare an environmental impact statement
- Determine if the selected alternative is consistent with the current land use plan.

CONFORMANCE WITH APPLICABLE LAND USE PLAN(S)

The proposed actions are in conformance with the Sun Valley MFP (1981) as amended by the FMDA (2008). The proposed actions are consistent with all applicable decisions identified within the Sun Valley MFP, but primarily focuses on; MFP Forestry Decision 1, to intensively manage areas capable of timber production. This includes the thinning of heavily stocked forests as well as the removal of dwarf mistletoe when these actions would facilitate the control of the disease and lead to sustainable forest production. Forest management actions such as thinning and dwarf mistletoe reduction have been identified as appropriate actions within intensively managed areas and can be conducted as commercial harvests, sanitation harvests, or rehabilitation treatments. In addition to the MFP goals, the proposed actions also meet the FMDA management goals listed on page 14 and 15 of the Record of Decision. These goals are:

- 1) Increase acres of early-seral and mid-seral Aspen/Conifer and Dry Conifer cover types (pure aspen and Aspen/Conifer mix) with spatial arrangement of varying age-classes occurring in a mosaic across the landscape.
- 2) Increase acres burned to more closely approximate the historical fire regime. Improve composition and structure of Aspen/Conifer and Dry Conifer types to better represent historical Aspen/Conifer and Dry Conifer cover types.
- 3) Maintain the mix of early, mid, and late seral stands of lodge pole pine forest.
- 4) Maintain fire frequency and size to approximate the historical fire regime.
- 5) Maintain or improve Wet/Cold Conifer types to better represent those historical cover types.

Although the proposed project focuses on forest management goals, the implementation of the proposed actions are also consistent with other MFP decisions some of which are Watershed Decision 1, Watershed Decision 2, and Wildlife Decision 6. These decisions focus on maintaining soil protections to minimize erosion and minimizing stream sedimentation that may result from land uses.

RELATIONSHIP TO STATUTES, REGULATIONS OR OTHER PLANS

Section 7 of the Endangered Species Act (ESA) of 1973 outlines the procedures for Federal agencies to conserve Federally-listed species and their designated habitats. Section 7(a)(2) of the ESA states that each Federal agency shall insure that any action they authorize, fund, carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of their habitats. To comply with this requirement, a Biological Assessment (BA) has been prepared for the proposed West Camas Forest Restoration and Timber Sale

Environmental Assessment (EA) and the potential for affects to Federally-listed and BLM sensitive aquatic species or their habitat have been evaluated. The aquatic species considered in this analysis include those identified on the Idaho Bureau of Land Management Sensitive Species List (BLM IM No. ID-2003-057). The BA concluded the proposed forest health improvements would have No Effect on ESA-listed or BLM sensitive aquatic snails or BLM sensitive fish or their habitat in the Snake River. The BA also concluded the proposed forest health improvements would have No Effect on BLM sensitive Wood River sculpin or Columbia River basin bull trout because neither species occur within the project area (South Fork Lime Creek Watershed). Since these ESA-listed and BLM sensitive aquatic species and their habitat do not occur in the proposed project area, they are not discussed in this EA.

Interior Columbia River redband trout are the only BLM sensitive fish that may be affected by the proposed forest health treatments. The potential impacts from the proposed treatments on redband trout and their habitat are discussed in the EA. The impacts assessment also considered potential impacts to other native non-game fish that are expected to be present in the project area.

The Clean Water Act of 1977, as amended in 1987, provides for the protection, restoration, and the improvement in water quality. The Act enables States to establish programs for regulating and managing point and non-point sources of pollution and directs Federal agencies to comply with State water quality laws. Various Executive Orders and DOI and BLM manuals also direct the BLM to maintain and improve water quality. The proposed forest health treatments would result in the removal of individually marked mistletoe infested trees within the riparian area along the South Fork of Lime Creek. These treatments would be implementing using the guidance from the Inland Native Fish Strategy (INFISH) for Managing Fish-Producing watersheds in Eastern Oregon and Washington, Idaho, Western Montana and Portions of Nevada (USDA 1995). The project would also require limited road reconstruction and use within fish bearing and non-fish bearing riparian areas. The potential for impacts to water quality are discussed in this EA.

SCOPING, PUBLIC INVOLVEMENT, AND ISSUES

This project has been listed on the Idaho NEPA Database since October 20, 2009. Additionally, on this date a scoping packet was mailed to interested public, the purpose of this packet was to inform parties of the proposal and to solicit comments to assist with meeting NEPA requirements. The scoping information was also presented to the Shoshone-Paiute tribe on October 22, 2009 with follow up information also presented on November 25, 2009; January 28, 2010; July 22, 2010; and September 23, 2010. Additionally, the project area was toured and discussed by the TFD Resource Advisory Council (RAC) during their July 2010 meeting. A subcommittee of the RAC further discussed this project and gave recommendations at the September 2010 RAC meeting. Comments received from scoping focused around potential impacts to water quality caused by increased sedimentation into streams, the quality and quantity of wildlife habitat, and the placement and the continued use of existing and temporary roadways. Scoping comment provided suggestions to develop an alternative that did not include new or temporary road construction and to remove roads after treatments were accomplished. Also, comments encouraged the BLM to develop alternatives that did not rely on biomass utilization or pile burning as the only components of removing slash. Other comments expressed concerns over the introduction and spread of noxious weeds, identified the need to assess cumulative

impacts to resources, and suggested that an alternative be considered that expanded aspen treatments outside of commercial stands.

Preliminary issues were identified by an Interdisciplinary Team (IDT) through meetings, field visits, and by resource specialist's review of the proposal. These issues were provided to the public in the scoping packet and many of the public comments reflected what had been previously identified by the IDT. The issues that have been identified for further evaluation within this environmental assessment are listed below with evaluation needs. Rationales for elements not identified for further evaluation are recorded in the Interdisciplinary Team Record Checklist and filed in the decision record.

- Air Quality – Impacts to air quality would be evaluated by the change that occurs as a result of burning residual slash left in treatment units or slash piled at the landings.
- Noxious weeds – The impacts of the potential for noxious weed expansion would be evaluated by the increase of exposure to noxious weed seeds and the amount of disturbance that would facilitate noxious weed establishment.
- Fish including Special Status Species/ Fish Habitat/Water quality/Riparian Zone – Evaluations of impacts to these elements are discussed within their own sections, but as these resources share common elements the assessment of impacts can be applied to each resource. The impacts identified for discussion include changes in sediment delivery into the stream, changes to water temperature, and changes to large woody debris recruitment.
- Wildlife including Migratory Birds and Special Status Species- Impacts to wildlife would be evaluated by species being displaced during critical periods and the ability to meet different wildlife habitat needs.
- Conflicts with Recreational use – Impacts to recreation users would be identified in terms of displacement and a change in recreation opportunities.
- Soil – Impacts to soil would be identified in terms of changes in the soil's physical characteristics and increases in erosion.
- Conflicts with Livestock grazing – Impacts to livestock grazing would be evaluated based on the amount of area closed to grazing during and after operations and the change in the vegetations suitability for grazing.
- Lands/ Access – Impacts would be evaluated based on the ability for BLM to maintain access along established rights-of-way.
- Fuels and Fire Management – Impacts would be evaluated based on changes to fuel characteristics, loading, and the associated changes in fire behavior and effects.
- Forest Resources – Impacts would be evaluated in terms of overall changes in forest health and the ability to provide forest management opportunities in the future.

CHAPTER 2- PROPOSED ACTION AND ALTERNATIVE(S)

Project Design Features

Project design features are specific procedures included in the design of the proposed action and alternatives to minimize negative impacts on the human environment. The following project design features are organized based on the issues identified by the IDT and through public comments. Project design features are used to assure that this project would meet standards,

goals, and objectives set in the Sun Valley MFP as amended by the FMDA; Instructional Memorandums (IMs), State and Federal Regulations, Best Management Practices (BMPs); and other official guidance. These design features although identified for a particular issue, may overlap with other issues and would be considered to address impacts to all issues analyzed. In addition to the below listed design features all BMPs that are associated with the FMDA and/or other applicable plans and laws will also be followed.

Issue 1, Air Quality impacts

- The Management Restrictions described in Appendix Q of the FMDA would be followed to maintain air quality standards. The Management Restrictions concerning air quality state “All fire activities on BLM-administered lands would be coordinated with the Montana/Idaho Airshed Group Smoke Management Program. Under this program, RxFire and WFU could be restricted when regional or local air quality is compromised, or if the project would negatively affect visual quality in Class 1 Airsheds (Yellowstone and Grand Teton National Parks, Bridger Wilderness, Sawtooth Wilderness, and Craters of the Moon Wilderness), Non-attainment Areas, and sensitive receptors” (FMDA, 2008).

Issue 2, Noxious Weeds

- Prior to being brought to the project area, all equipment used to conduct treatments would be required to be free of soil or vegetation that may contain seeds of noxious weeds. To insure this, each piece of equipment must be inspected by an authorized BLM employee.
- All landings, fill and cut slopes, skidding routes, and other disturbed areas would be seeded within a reasonable time following soil disturbance.
- Monitoring would be conducted on seeded/disturbed areas for three years following treatment operations. If noxious weeds are found in these areas they would be handled following standard operating procedures within the Final Vegetation Treatment Using Herbicides on Bureau of Land Management Lands within 17 Western States Programmatic Environmental Impact Statement (2007).

Issue 3, Fish including special status species/fish habitat/ water quality/ riparian zones

- Generally, road improvement, road construction, and harvest operations would be restricted to June 1 through November 30. However, if during this period roads are deemed too wet (roadbed is deforming and sediment production is likely) operations would be suspended until the approval to proceed is given by the field Manager. Conversely, if extended dry periods allow access outside of this time frame the Field Manager may approve provisional operations to occur.
- Dust abatement or surface improvements would be used as deemed necessary on hauling roads to reduce the loss of fine sediment from the road and to prevent potential sediment from entering into streams.
- Out sloped roads should be used when feasible to disperse water at low energy levels. Where out sloped roads are not used, then relief culverts and/or drain dips would be constructed so that drainage is dispersed through filter windrows made of slash.
- At no place would stream protection zones be less than the 75 feet for Class I (fish bearing) and 30 feet for Class II (non-fish bearing) streams as mandated by the Idaho Forest Practices Act.
- Riparian Habitat Conservation Areas (RHCA) would be established generally at 300 feet and 50 feet from fish bearing streams and permanently flowing non-fish-bearing streams, respectively. These distances would be adjusted to conditions on the ground to insure

Riparian Management Objectives (RMO) as listed in the Inland Native Fish Strategy are met. Tree marking within RHCAs would be completed and/or approved by designated Fisheries Biologists and Riparian Specialists to assure resource protection.

- No commercial harvests would occur within 150 feet of South Fork of Lime Creek.
- Any commercial logging that does occur within the RHCA would have trees individually marked. Marked trees should not include trees greater than 24 inches diameter (measured at breast height) with a mistletoe rating less than 4. Trees that are important for structural support within the cut-bank of the lower road should also be maintained. The following circumstances should be present where trees are marked for commercial harvest below the lower road:
 - There is an ecological justification.
 - The trees is not needed to provide shade to the stream.
 - Either the slope is less than 30% or the tree may be felled directly to the road.
- If girdling trees within the RHCA is needed to meet management objectives they should also be individually marked.
- All stream crossing improvements would be required to be approved by the Idaho Department of Water Resources (IDWR) prior to construction and would be subject to the Stream Chanel Protection Act requirements. IDWR would issue a permit identifying approval; the issuance of these permits insures that design and construction of stream crossings would continue to provide a sufficient water flow to allow the migration and movement of fish. No landings would occur within 150 feet of streams or within 300 feet of streams if there are steep slopes present.

Issue 4, Wildlife including Migratory Birds and Special Status Species

- As per Best Management Practices identified within Instruction Memorandum No. 2008-050, the following practices would be applied. Operations would be limited in time and spatial extent to minimize/avoid impacts to migratory bird species of concern. Generally, nesting occurs from May15 to July 15, but dates would be adjusted for specific species identified to be present within the treatment areas. Operations occurring during nesting times that have the potential to impact migratory bird species of concern would require prior approval from the authorized officer and determined annually. Where disturbances cannot be avoided the scale, length, and time of disturbances may be considered mitigating circumstances.
- An average of 2 to 6 overstory snags per acre would be maintained across the project area. In areas where snags are limited trees with declining health may be left and girdled for future snag recruitment. The snags can be in groups or solitary with greater amounts being left within regeneration areas (Agee, 2002).

Issue 5, Conflicts with Recreation uses

- Signs would be posted to identify the time and duration that the area would be closed to or have restriction to recreational uses; the closures and restrictions would be implemented for safety reasons. Additionally, information would be provided to identify other areas that provide similar recreational uses.
- The crews performing work along the access route to FS trail #7058 would maintain safe passage through the area, especially on weekends and holidays.

Issue 6, Soil Impacts

- Design features identified for Fish Habitat and noxious weeds also correspond to soil impacts and would be recognized during analysis.

- Existing skid trails and areas already impacted by grazing and recreational uses would be used, if present, prior to initiating new skid trails. If new skid trails are designated they would be no closer than 150 feet from another skidding route.
- The use of skidding and yarding techniques and equipment that reduce soil disturbance would be required when feasible and available. Additionally, cable systems and unit layouts that provide the capability to suspend logs are preferred for cable units and would be required within designated RHCAs.
- Skidding trails and yarding corridors would be reseeded, properly drained, and closed to travel as needed after treatments are completed.

Issue 7, Conflicts with Livestock Grazing

- Grazing within the allotment would remain available, but not within the treatment areas. Coordination with the permittee would be conducted annually during the projects implementation to identify times and locations where livestock can be trailed through the project area to get to other areas within the allotment. Additionally, continued coordination would be used after implementation to insure the protection of newly reseeded and/or burned areas until the vegetation is well established and meet the following criteria identified within the Twin Falls District Normal Fire Rehabilitation Plan (2004):
 - 1) The amount of bare mineral soil (lacking cover of plants, litter, or biological soil crust) is within 10% of what would be expected for the site (based on the ecological site description),
 - 2) The majority of desired herbaceous perennial plants are producing seed, and
 - 3) The plants must also have a developed root system extensive enough to provide for soil stabilization and prevent uprooting when grazed, especially when soils are moist.

Issue 8, Land/Access

- Notifications to the FS would be given concerning the impact a decision would have on current rights-of-ways (ROW) and proposed ROWs as required per BLM's ROW regulations.

Issue 9, Fuels and Fire Management

- Standard operating procedures for preventing fires caused by the use of mechanical equipment would be required. This would include any additional restrictions issued as a result of prolonged drought or high fire danger.
- Removal and use of slash generated by the treatments is the preferred method for slash disposal and would be encouraged.
- Excess slash left at landings and within the treatment units would be treated with prescribed fire. Prescribed fire treatments, broadcast or pile burned, would have a prepared prescribed fire plan with prescriptive fire behavior that removes small wood material but keeps adequate amounts of larger woody material and the duff and litter layers.
- No burring would occur within RHCAs and follow all other Management Restrictions identified in Appendix Q of the FMDA.

Issue 10 Forest Resources

- Criteria for selecting leave trees and seedling species for artificial regeneration would include enhancing species diversity.

- Minimum stocking levels identified within the Idaho Forest Practices Act would be reached in salvage/regeneration harvest areas within 5 years after operations via artificial or natural regeneration.

PROPOSED ACTION

In order to meet the goals of the Sun Valley MFP as amended by the FMDA, the BLM is proposing a combination of thinning and regeneration/sanitation harvests with forest restoration goals on approximately 300 acres of public land managed by the BLM. These silvicultural treatments would be employed with specific criteria to meet the different needs of each of the stands within the project area. Thinning prescriptions are designed to capture mortality, reduce tree densities, and redistribute site productivity to the remaining trees within the stand. Thinning transfers available nutrients, water, and sun light to already established trees, whereas regeneration/sanitation harvests are intended to free up these resources to allow the establishment of a new generation of trees along with reducing diseases. Regeneration/sanitation harvests would be prescribed in areas that currently have high amounts of disease or have experienced a shift in species composition (i.e. aspen to conifer) as a way to restore forests to more productive and resilient conditions. As part of the proposed treatments the BLM also identifies harvest methods and supporting actions such as improving existing roads, construction of temporary roads, and removal of activity fuels (i.e. prescribed burning).

Vegetation Treatment Actions

The proposed action would include approximately 185 acres of thinning and 115 acres of mixed regeneration/sanitation harvest treatments. The 185 acres of thinning area would be additionally split up into two different types of thinning, some areas would prescribe a traditional intermediate/crown thinning (Units 2, 5, 6a, 8, 9, 12b) the other areas would be prescribed a modified selection thinning (Units 1, 3, and 7).

Intermediate/Crown Thinning

Intermediate/crown thinning would be accomplished by removing intermediate and co-dominant Douglas-fir and leaving dominant Douglas-fir, aspen, lodge-pole and ponderosa pine. The goal of thinning these units is to open stands so the current dominant trees will have adequate resources to maintain resiliency to insects and will not be as prone to mortality resulting from wildfires. Priorities for removal would be given to Douglas-fir infested with dwarf mistletoe; Douglas-fir that have crooks, forks, sweeps, or a live crown ratio less than 30%; Douglas-fir that contribute to ladder fuels; and then any additional Douglas-fir trees needed to meet canopy spacing needs. Following these priorities trees would be removed until the average basal area of remaining Douglas-fir is between 40-60 square feet per acre.

The intent of removing co-dominant and intermediate Douglas-fir is twofold; 1) to allow larger dominant trees room to be productive and stay healthy and 2) to recover timber volume that would be lost as the intermediate and co-dominant trees become suppressed. The intent of prioritizing mistletoe trees over others is to prevent dwarf mistletoe from inhibiting future growth and spreading throughout the stand. A goal of completely eradicating dwarf mistletoe infection is not feasible and it is anticipated that dwarf mistletoe would remain within these units, but treatments would reduce infection levels so that the stand would be viable in the future.

Currently, dwarf mistletoe in these areas occur as incidental infections or as low infection levels with patches of moderate infections. As these stands are thinned, the ability for dwarf mistletoe to spread will increase unless spacing between Douglas-fir trees is greater than 35 to 50 feet or infected trees are removed. The intent of giving trees with poor form or have a low crown ratio the next priority for removal is to favor trees that have the most capability to survive into the future and produce productive offspring. Only Douglas-fir trees are being removed and this will allow the isolated aspen, lodge pole pine, and ponderosa pine to expand and contribute to the stands diversity. In addition to these reasons for tree selection, the target density of 40 to 60 square feet of basal area is to allow remaining trees to grow, allow for 35-50 foot spaces between undetected mistletoe infected trees, and to reduce crown fire potential.

Selection Thinning

The modified selection thinning objectives are to 1) reduce the incidence of dwarf mistletoe, 2) reduce tree density, 3) release second growth trees, and 4) increase and/or maintain species diversity. These thinning objectives would be accomplished by setting priorities for tree removal to trees infested with dwarf mistletoe, intermediate and co-dominate trees within mid-seral single storied structures, sparse overstory trees that are suppressing second growth/advanced regeneration; and Douglas-firs within isolated areas of aspen. Conversely, priorities for retention would be ponderosa pine, lodge pole, and scattered aspen. Following these priorities trees would be removed until the average basal area of remaining Douglas-fir is between 20-60 square feet per acre.

The intent of the thinning prescription and priorities for tree removal are similar to what was described above for the crown thinning units. The difference is the selection units are currently younger; have more of a multi-story structure rather than a single-story structure; and have a greater component of aspen, ponderosa pine, and lodge pole pine. As a result, the prescription would still maintain a few scattered large trees in the overstory but would release the second growth that is on the verge of being suppressed by co-dominant and intermediate trees. The trees that are being released will be greater in diversity having more lodgepole, ponderosa pine, and aspen. This would result in the stand, as a whole, being more resilient to diseases and pests as these health issues tend to be species specific. The prescribed residual density in these units has a greater range with an overall lower target basal area because the stand is younger and the trees are smaller. Opening the areas with smaller trees to a lower basal area will result in similar densities in the long run without any intermediate treatments.

Regeneration/sanitation harvest prescriptions, like thinning prescriptions, also have specific criteria for tree selection depending on the condition of individual stands. Regeneration/sanitation harvests are prescribed to areas severely infested with dwarf mistletoe (Units 4,10, 11, and 12a) and would follow a guideline to remove all trees with a dwarf mistletoe severity rating of three or greater as described by F.G. Hawksworth, 1977. Only the most disease free Douglas-fir, ponderosa pine, lodge pole pine, or Engelmann spruce trees within the units would be reserved from cutting and left to produce seed for natural and artificial regeneration. In addition to relying on seed trees for natural regeneration, artificial regeneration would also be used to increase species diversity and add resiliency to future disease and insect impacts. Ponderosa pine and lodge pole pine seedlings would be inter-planted amongst existing natural regeneration at no more than 100 seedlings per acre, depending on the amount of new and advanced

regeneration present. If necessary, after regeneration is established, natural and/or artificial, Douglas-fir seed trees with mistletoe would be girdled to reduce passing dwarf mistletoe infections into the new regeneration. Figure 2 shows the spatial distribution of the areas proposed for thinning and regeneration treatments. The intent of treating these units this way is to establish a viable stand with multiple tree species.

Treatments within RHCAs

Vegetation treatments conducted within designated RHCA's will be used to meet goals established for the adjacent treatment unit. Under the proposed action less than 36 acres would be treated within identified RHCAs. However, special consideration would be given to maintaining vegetation that meets RMO's identified within INFISH. RHCA's and RMO's were developed as a part of INFISH to address bull trout habitat, but as no bull trout have been identified to occupy the local streams, the intent of using them in the West Camas project is to limit impacts to redband trout and other fish populations. Following the identified project design features, Riparian Management Specialists or Fisheries Biologists would use their professional knowledge and judgment to mark or approve of marked trees within the RHCA's. This approach is being used rather than developing a standard prescription because the RHCA's are composed of ecotones between upland forests and riparian areas and exhibit a variety of conditions and structures that limit the applicability of a standard prescription. Having the specialists on the ground marking or approving of marked trees would ensure that the many different objectives for this area would be met. Generally, trees will be removed if they are contributing to the transfer of dwarf mistletoe, other factors related to declining forest health conditions, or would release healthy vegetation that contributes to species diversity. Trees will not be identified for removal where they are needed to provide future in stream large woody debris, adequate stream thermal cover, or bank stability.

Harvesting Infrastructure

Hauling Routes

As with most forest restoration treatments and/or timber sales, in order to fully meet project goals the BLM proposes to access the project area with equipment and remove the resulting forest products/biomass material with logging trucks. The access routes to the proposed treatment units are shown in Figure 3.

The route to the project area is composed of existing county maintained roadways that cross both private and Idaho Department of Lands (IDL) ownership until they reach BLM-managed lands. No new construction or improvements are being proposed to the route outside BLM ownership, however, a temporary road use permit from the IDL would be required to use the portion of the route across IDL ownership not identified as a county road. At approximately 500 feet to the east of where the route crosses Ear Creek is where normal maintenance ends and the remainder of the route to the west has not been maintained for many years. Beginning at this point and continuing through the project area BLM is proposing to improve approximately two of the three miles of the existing roadbeds to meet hauling requirements. The other mile of existing roadbed would not be improved for hauling but would be used for skidding and yarder access.

Improving the roadbeds would include reshaping the cut and fill slopes, leveling the running surface to a width of 14 feet with an adverse slope less than 10%, and providing cross ditch

drainage where out-sloping roads would not provide adequate drainage. Along this portion of the route two culverts would need to be installed, one to cross Ear Creek and another to cross a small tributary to the South Fork of Lime Creek (SFLC). Additionally, approximately 0.7 miles of temporary road construction would occur. The purpose for this road construction is to have infrastructure that is in the appropriate place for proposed harvesting methods and that is further away from potentially sensitive areas such as RHCAs. The newly constructed temporary road would utilize a combination of full bench and cut and fill construction. This road will primarily be outsloped with drainage dips, but small areas would require relief culverts to be used to provide proper drainage. The temporary construction, like the improved road, would have cut and fill slopes shaped and a running surface width of 14 feet, have adverse slopes less than 10%, and made primarily of native material, but adding rock where needed for stability.

The improvement of existing roadbeds and the construction of temporary roads are intended to provide limited access into the project area for management purposes. These roads would be maintained while management activities are occurring but be physically limited (referred to as closing) after management activities area completed. In preparation of closing these routes, additional cross ditching would be added to insure adequate drainage, roadways would be scarified, and grass seed applied. After all measures are taken to insure the roadbeds are in conditions that would not require regular maintenance, physical access to the roadbed would be limited to allow only motorcycle, bike, horse, and foot traffic past the point at which the route crosses Ear Creek. Additionally, routes that are not needed to connect to Forest Service (FS) trails would be blocked to all motorized and/or mechanized travel (i.e. motorcycles and mountain bikes).

Stream Crossings and Culvert Installation

A component of the proposed forest health treatments includes the installation of two culverts. There would be one permanent culvert installed on Ear Creek (a fish bearing stream) and one temporary culvert installed on an unnamed (non-fish bearing) tributary to the South Fork of Lime Creek (See Figure 3). In general, culvert installations create ground disturbances within and adjacent to the stream channel and can have localized but negative impacts to fisheries resources, riparian condition and water quality (Furniss et. al., 1991). The culvert installations would be conducted according to the guidance from consultation with the U.S. Fish and Wildlife Service for the Stream Crossing Structure Replacement and Removal Program (USFWS 2006). Although this guidance was developed to reduce impacts from stream crossings on Columbia River Basin bull trout and their habitat, it would also reduce impacts to redband trout where road crossings could directly or indirectly affect habitats used by this BLM sensitive fish as well as other native fish.

A site-specific field assessment was used to identify design features and management objectives for the culvert stream crossing on Ear Creek. The assessment was completed using the Stream Simulation Procedure (USDA 2008) which considers a variety of factors (e.g. geology, disturbance history, watershed area, lateral and vertical channel stability) in designing fish passable stream crossings. Stream simulation is a method of designing crossing structures with the aim of creating a channel within the structure that is as similar as possible to the natural channel. Use of this procedure ensures that the stream crossing structure accommodates a range

of flood discharges and sediment/debris inputs, without compromising aquatic organism passage and without having detrimental effects on upstream or downstream channel conditions.

Landings

Harvested logs would first be brought to a landing or along the roadside for processing (delimbed and cut into appropriate lengths) if needed and then loaded on to trucks. This is referred to as primary transportation and would either be accomplished with ground equipment (skidding) or cable equipment (yarding). Cable systems would initially bring harvested logs to roadsides, as the areas with this type of primary transportation system are located on steeper slopes with limited areas for landings. Ground systems can utilize roadsides and/or designated landing areas, and it is proposed to use a combination of both. Designated landing areas and roadside areas used for landings would be identified by the timber purchaser, assessed by resource specialists to ensure resource protections are fully met, and approved by the authorized officer prior to use. Locations that are anticipated to be used as landings are shown in Figure 3. Approved landing areas may be ¼ to 1 acre in size and would cumulatively effect up to 11 ½ acres when incorporating skidding routes and roads. Landing locations would utilize areas outside of riparian areas or wetlands with available open space that are relatively flat and only require minor amounts of vegetation removal. No landings would be within 150' of streams or within 300' of streams if there are steep slopes present. After all operations have been completed each landing and area would be re-vegetated.

Harvesting Methods

Units 1 through 9 would utilize a ground primary transport system (Figure 2). Within these units equipment such as forwarders or skidders would bring harvested trees to a landing or roadside where they can be processed and loaded on trucks. This equipment would follow designated routes; these routes would be located so that they use past skidding trails and areas that have been previously used to remove timber or have been disturbed by recreational and livestock uses, where possible. Trees within these units would be whole tree yarded when trees can feasibly be processed along the roadside or at a landing. Where this is not feasible to process outside of the units then the limbs and tops that are removed from the harvested trees would be hand piled and covered or scattered throughout the unit. If scattered then it would be required that all slash material is within two feet of the ground surface. In addition to ground based equipment for skidding within these units, all units except for unit five can utilize ground based mechanical equipment for falling trees. Areas with greater than 40% slopes within unit five would be restricted to hand falling and skidding on constructed skid trails less than 30%.

Units 10, 11, and 12 are located on steep slopes where the use of ground equipment for primary transport is limited (Figure 2). Therefore, under the proposed action cable yarding systems would be required for the primary transport of harvested material from these units and hand falling would be used to cut the trees. Trees would be whole tree yarded where trees can feasibly be processed along the roadside or there is enough space at the landing. Where whole tree yarding is not feasible, the limbs and tops that are removed from the harvested trees would be scattered throughout the unit so that no portion of the slash material extends two feet above the ground surface or hand piled and covered. The majority of the harvested trees from these units would be yarded uphill to the newly constructed temporary road, however, it would be optional to yard some of the material to the skid trail (unimproved existing roadbed in the lower portion of the

units) and then skid to a landing. Depending on the yarders capabilities and the slope steepness at the landing area, the logs would be decked along the roadside or directly loaded onto trucks. The need for landings and locations of decking and loading areas would be identified after the timber sale contract is awarded and the equipment capabilities are identified. After equipment capabilities are identified, decking/landing areas and associated yarding corridors would be identified depending on the position of tailholds and anchors/backspar trees. Where stumps and trees within the unit are not adequate to provide these, then equipment may be placed off of the main road to provide the support of an anchor or tailhold. The use of this equipment as tailholds may require removal of brush and creating semi-level areas on the upper side of the road.

Slash Removal

Areas that have had whole trees taken to the landing before processing would likely not require slash removal. The majority of the slash from whole tree harvested units would be located at the landing in machine piles. Piles would be required to be free of dirt and rocks and should be made with an excavator type machine rather than a machine with a blade. Efforts to utilize this slash material would be made; this may include the use of grinders/mulchers to turn the material into mulch, hog fuel, or chips and hauled away. If it is determined that the use of this slash material is not feasible then the piles at the landings would be burned.

The most time consuming and labor intensive portion of slash removal would be where trees are processed within the units prior to being brought to the roadsides or landings or in areas that exhibit high fuel loadings prior to treatments. These areas are also likely in the most need of slash removal. A combination of pile and broadcast burning would be used to remove slash in areas where the slash has created a hazard. Broadcast burning would be utilized in areas where high escape risks do not make it impracticable. Hand piling within treatment units would be utilized as an alternative to broadcast burning in areas that have a high escape risk. Slash within broadcast burning areas would be scattered and cut so that the material is within two feet of the ground surface. The areas would also be prepared to accommodate holding prescribed fire within the unit boundaries. The preparation efforts can include vegetation removal and building of hand- lines in strategic areas. After preparations are completed the areas with scattered slash would be broadcast burned. Burns would take place in the fall or spring and be designed to 1) minimize conflicts with smoke management, 2) minimize risk of control problems, 3) minimize the consumption of soil organic matter and surface duff, 4) and minimize the loss of large down wood and leave trees. Slash burned in piles would also be designed to follow the above criteria.

NO ACTION ALTERNATIVE

Under this alternative, no action would be taken and the area would continue to incur current uses and be managed as described in the Sun Valley Management Framework Plan as amended.

ALTERNATIVES ANALYZED IN DETAIL

Alternative 1- No temporary road construction

This alternative was developed as a result of public comments that express concern over the new road construction that is part of the proposed action. Treatment attributes of this alternative would be the same as the proposed action except as follows: 1) no temporary road construction would be completed, 2) no cable systems would be used, 3) thinning treatments would be reduced by 10 acres (Unit 12b), 4) only 12 acres would be treated under the sanitation/regeneration treatment (removing Units 12a, 11, and 10), 5) improvement of the existing roadbed would be reduced by .3 miles, 5) and approximately .8 miles of designated skid trails would not be used. The potential harvest areas and road improvements identified within Alternative 1 are shown in Figure 4 and Figure 5.

Alternative 2- Additional aspen treatments

This Alternative would be an optional addition to treatments identified in the Proposed Action or Alternative 1 and would reduce conifer competition without the removal of forest products. These treatments would be conducted in small isolated aspen stands that are scattered adjacent to and throughout the project area. Planned treatment areas are identified in Figure 8, however, additional areas that are too small to show in this figure may also be treated. The total footprint of the proposed aspen treatments would not be greater than 150 acres.. The objective of these treatments is to remove encroaching conifers that are in the understory and becoming dominant in the overstory. However, dominant trees that are greater than 18 inches in diameter at breast height (DBH), exhibit fire scars, or have obvious wildlife use would not be removed but may be girdled. Encroaching conifers would be removed by felling each tree with a chainsaw, cutting it into manageable pieces, and then scattering it through the stand. Stumps would be cut as flush with the ground as possible, but would not exceed a one foot height above ground on the up-slope side. Also, a minimum of three sides of each tree would be de-limbed so that none of the cut tree exceeds a two foot height above the ground surface. While scattering slash through the area crews would maintain slash accumulations to less than two feet in depth and less than 30% ground surface cover. Crews would ensure that slash is scattered in a discontinuous manner throughout the project site so that it is not in piles or windrows. Additionally, boles and tops would be cut so that they lie flush with the ground. In the event that treatment within these areas lead to slash accumulations that cannot be maintained as described above then small areas would be piled. These areas would be less than 1/2 an acre in every 10 acres and piling would only consist of piling the limbs and tops and leaving the larger tree boles. The piles would be burned when soil moistures are high and limited fire holding is needed.

Alternative 3 – Reroute access to FS Trail #7058

Alternative 3 is also an additional option that can be added to either Alternative 1 or the Proposed Action. Alternative 3 proposes to reroute access to FS trail #7058 by decommissioning approximately 0.5 miles of trail and constructing approximately .3 miles of trail in a new location (Figure 4). The purpose of this proposed alternative is to reduce the amount of stream crossings that are contributing to in stream sediment and widening of the stream channels. The alternative was developed as a result of comments received that requested that BLM use this project to improve water quality by decommissioning any high risk, low use, and user created trails and roads within the project area. Additionally, this alternative is within the scope of this project because these same routes would be utilized as skidding routes during treatment

operations and subsequently water-bared and re-vegetated. Along with insuring proper drainage and seeding the skidding routes that overlap the existing trail, the decommissioning of the trail would include removing berms along the side of the trail, applying seed to the disturbed areas outside of skidding areas, placing woody debris within the path of the trail to discourage use, replanting riparian vegetation within creek crossings, and blocking access to the route (particularly riparian areas) until vegetation is established. The construction of the new trail segment would include creating a full bench trail 18 to 36 inches wide and the soil and vegetation disturbance related to that construction. The area identified for trail construction has been cleared by resource specialists to insure no special status plants or historical resources would be impacted.

CHAPTERS 3&4 -AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The no-action alternative reflects the current situation within the project area and would serve as the baseline for comparing the environmental effects of the analyzed alternatives.

During the analysis process, the interdisciplinary team considered several resources and supplemental authorities. The interdisciplinary team determined that the resources discussed below would potentially be affected by the proposed action. The project file displays the complete list of resources and supplemental authorities that were considered and the reasons why additional resources were not analyzed further.

FOREST RESOURCES

The primary goal of the West Camas Forest Restoration project focuses on improving the current forest health and providing characteristics to maintain forest health into the future. The forest communities within areas proposed for treatment are currently composed of mostly dense and/or dwarf mistletoe infested stands of Douglas-fir that include small areas of aspen, ponderosa pine, lodge-pole pine, sub-alpine fir, Engelmann spruce, and sagebrush- grass associations with Douglas-fir encroachment. The majority of the forest structures are dense mature stands or areas with dense young second growth; conversely, there are limited amounts of mature-open conifer and young aspen stands that historically also occupied the area.

The 2009 Forest Vegetation Information System (FORVIS) inventory has identified dwarf mistletoe throughout the entire project area however, the amount and severity of the infection varies. Figure 7 shows the distribution and relative amount of dwarf mistletoe infection. The primary host of Douglas-fir dwarf mistletoe is Douglas-fir and the disease would proliferate where Douglas-fir is the dominant species, i.e. the West Camas project area (Hawksworth and Weins, 1996; Tinnin et al., 1982). The main symptom of infection is large systemic growths referred to as “witches brooms” and are the result of induced prolific bud and branch stimulation. The trees growth and energy is concentrated into these areas limiting nutrients and water to other areas in the tree. As a result of infection, growth rates and defense capabilities of individual trees are reduced relative to the amount of the infection and the rate of mortality increases (Tinnin et al., 1982). The stands within the project area are dominated by Douglas-fir and that

has allowed dwarf mistletoe to spread across the entire project area, with 100% infection in some areas. Within heavily infected areas, overstory trees are top killed with heavy witch's brooms on lower branches and understory trees are stunted and exhibit a shrub like structure. Under circumstances where only Douglas-fir regeneration is present and overstory trees are severely infected, stands would not be able to produce viable future generations making long term management under these conditions unsustainable. Also heavily infected mistletoe areas increase the potential of uncharacteristic wildfires and insect outbreaks not only within the heavily infected areas, but throughout the project area (Hessburg et al., 1994).

Timber Production Capability Classification (TPCC) assessments identified the stands within the project as having a high or moderate production capability, meaning their possible timber production is estimated between 50 and 120 cubic feet/acre/year (or 0.25 and 0.6 mbf/acre/year). The 2009 FORVIS inventories identified stands within the project area as currently having an approximate gross volume between 3.5mbf and 7mbf per acre in trees with a DBH greater than 8 inches. The TPCC has identified a potential timber production, however un-assessed environmental and biological factors play a role in a stands ability to meet the predict production. A primary influence of current stand structure and site productivity throughout the project is Douglas-fir dwarf mistletoe, and this is especially true of the 115 acres identified for regeneration/salvage treatments where inventory data has identified that greater than 75% of trees with a DBH of 12 inches or larger are infected with dwarf mistletoe.

Although dwarf mistletoe is a big influence on productivity and health, it is not the only influence; where dwarf mistletoe is not the primary management concern high tree densities are. The project area exhibits high tree densities within mature stands as well in areas of second growth and encroachment, with some areas approaching 400 trees per acre. FORVIS 2009 inventories measured basal areas within mature stands averaging approximately 130 square feet per acre, with the majority of the basal area coming from trees with DBH measurements greater than 21 inches. Radial growth in the last ten years were measured in dominant and co-dominant trees and varied from 0.4 inches to 1.5 inches. Additional stand information is available within the project folder.

No Action- Forest Resources

Direct and Indirect Impacts

In mature single story stands with high tree densities (Figure 2- Units 5, 6a, 2, and 8), competition is currently slowing individual tree growth and in some instances resulting in tree mortality. With no action, growth would continue to slow and become stagnate until mortality or disturbances open the stand (Hessburg et al., 1994; Hadfield et al., 2000). The structure of these stands would not change dramatically without a disturbance and as the trees continue to grow competition would increase and so would the chances of stand-level disturbances (Hadfield et al., 2000; Tinnin et al., 1982; Peterson et al., 2005). These events are more likely to occur as individual trees become larger and continue to be stressed and in-turn the stand becomes more susceptible to mortality due to Douglas-fir bark beetle, Douglas-fir tussock moth, spruce budworm, drought, and stand replacing crown fires (Jenkins et al., 2008).

In stands with high amounts of younger second growth (Figure 2- Units 1, 3, 7, 9, and 12b) the competition between younger individuals is not currently having a large impact on growth and

mortality, but it eventually would if these stands mature with their current densities. In general, the competition would primarily limit growth and the production of wood fiber, but once high levels of competition are reached, as are exhibited in mature areas within the project boundaries, the ability of individuals to survive periods of drought, insect attacks, and other diseases would also be reduced (Hadfield et al., 2000).

The main issue that would impact forest health in the above discussed units as a result of the No Action alternative would be the continued competition caused by high tree densities; however, these areas also currently exhibit some, if only minor, levels of dwarf mistletoe infection. Dwarf mistletoe initially would continue to spread slowly within these areas, but as the level of infection increases the rate of spread would also increase (Geils and Mathiasen, 1990). Under a no action alternative the areas that have either low or minor amounts of dwarf mistletoe infection would reach maturity, but as these areas continue to age in the absence of a disturbance the incidence and severity of dwarf mistletoe would also increase and the stands would eventually exhibit a structure similar to Unit 12a.

While levels of competition and dwarf mistletoe infections are increasing within the units discussed above Unit 12a would begin to exhibit an increase in mortality caused by the stress resulting from the higher levels of competition and dwarf mistletoe infections. Additionally, treatment units that currently have high amounts of severely infected trees and related mortality (Figure 2- Units 11, 10, 6b, and 4) would continue to see an increase in tree mortality. In these areas it is predicted that over the next 10 years that 15% or up to 41 trees per acre (over 4,000 trees within these units) would suffer mortality as a result of the high levels of dwarf mistletoe (Hawksworth and Weins, 1996). The trees most likely to die are young trees with stem infections or older trees that have large witches' brooms in the lower crown with dead tops. Although some of the infected trees would be dying the dwarf mistletoe would persist in the trees that remain and Douglas-fir regeneration would continue to be infected as long as mistletoe remains in the overstory (Hadfield et al., 2000). These areas would maintain a degraded state with little forest production until areas eventually burn or a tree species other than Douglas-fir becomes established.

Cumulative Impacts

The same forest health issues, high tree densities and dwarf mistletoe, are similar in much of the forest areas on BLM, IDL, FS, and private lands surrounding the treatment areas. Therefore, the future forest health characteristics in the surrounding areas would be similar to what has been described under direct impacts. Additionally, under the no action alternative active fire suppression would continue to limit fire growth within the area and that would not only allow forest vegetation to continue to mature into dense stands with areas of high disease, but also forest cover would increase in areas where it did not persist in the past, i.e. some aspen stands and sagebrush steppe communities (Hann et al., 2008).

Proposed Action- Forest Resources

Direct and Indirect Impacts

Generally, as a direct result of the proposed action there would be less incidence and lower severities of dwarf mistletoe infections and remaining trees and new regeneration would incur

less stress as a result of less competition. Forest structure would change within the project area increasing the acres of young newly regenerated forest structure and the amount of mid to late seral open canopy structures. Additionally, the proposed action would lead to higher species diversity, greater amount of understory cover, sustainable tree growth, and forest communities that are more resilient to natural and anthropogenic disturbances.

Thinning treatments for Units 12b, 9, 8, 6a, 5, and 2 are primarily addressing competition of mature trees within a closed canopy stand, and secondarily reducing the occurrence and potential spread of dwarf mistletoe. The thinning in these units is designed to make more growing space available for the residual trees by removing a portion of the canopy. Growing space is an important factor for trying to prevent mortality caused by competition and when trying to improve tree and stand vigor. These units have approximately 130 square feet of basal area, with approximately ¼ of the trees having low severity mistletoe infections. The infected trees would be the first trees selected for removal and the other 30-40 square feet of basal area selected for removal would be from intermediate and co-dominant trees with low crown ratios or other characteristics that would reduce the trees ability to continue growing. The trees left would result in a mid-seral open canopy single story stand (Hann et al., 2008). Under these conditions with occasional mixed severity disturbances (resulting in minor amounts of mortality) and in the absence of stand replacement disturbances these stands would eventually produce a late seral open canopy forest structures. In the absence of any future disturbance these stands would become late seral communities with a closed canopy (Hann et al., 2008).

Thinning treatments for Units 1, 3, and 7 are also addressing competition and providing growing space for residual trees, but the current structure within these units vary from mature canopy cover with second growth trees intermixed to young dense mid-seral structures. Additionally, because some areas within these units have upper canopy dominant trees infected with dwarf mistletoe they would be removed to favor intermediate trees or advanced regeneration. Given these stand characteristics trees would be selected for removal not based on their crown position but would be selected to leave trees that have the most potential for sustainable growth and that would contribute to the units overall resiliency and diversity. The result of thinning this way in these units would be a mixture of stand structures that together would represent a multistory stand with areas of unsuppressed regeneration, open mid-seral structures, scattered aspen pockets and a few large mature trees (some maybe left as snags if infested with dwarf mistletoe). As with the crown thinning units, depending on what disturbances occur in the future these units would continue to grow and open canopies would eventually become closed (Hann et al., 2008). However, the trees that are in these closed stands would be providing mature structures that are limited on the landscape now.

The proposed action identifies Units 12a, 11, 10, 6b, and 4 for regeneration/sanitation harvests. These areas presently have the highest occurrence and the highest severity of dwarf mistletoe. The objective of treatments is to reduce the mistletoe infestation in order to allow new regeneration and uninfected advanced regeneration a chance to mature. In these units all overstory trees with mistletoe infections would be removed, unless otherwise marked for snag retention or determined suitable for a seed tree; however, dwarf mistletoe infected seed trees and snag retention trees would be girdled to prevent infection of regeneration. In units 11, 10, 6b, and 4 this would essentially be removing all overstory Douglas-fir trees and would result in leaving

approximately 10 uninfected Douglas-fir trees per acre in unit 12a. Other trees left within the area would include advanced regeneration of all species and scattered mature ponderosa pine on the upper slopes and lodge pole pine and Engelmann spruce on the lower slopes and bottoms. In addition to tree removal within these units trees would also be planted. Regeneration sampling would be conducted the year following the conclusion of harvest operations, and areas with low regeneration would be hand planted the following year. Hand planted seedlings would be either lodge pole pine or ponderosa pine depending on micro-site characteristics and seed availability. Inter-planting seedlings would result in increasing the species diversity within the area and would allow these units to be more resilient to insects, dwarf mistletoe, and other damaging agents in the future (Hadfield et al., 2000). These young stands without a severe disturbance would eventually form mid-seral close canopy structures with multiple species. These stands would be able to be thinned in approx. 40 to 50 years and would then continue on to produce late-seral structures with an open canopy (Hann et al., 2008).

Cumulative Impacts

Forest vegetation resources change with time, and as identified under the cumulative effects of the No Action Alternative, areas adjacent to the project area would continue to mature and be impacted by disease, insects, weather changes, and possibly wildfires. Currently, there is no additional forest vegetation changes presently occurring or proposed to occur within the future on lands within or adjacent to the West Camas project area. However, there has been past harvests that have occurred within the project area and on lands adjacent to the project area. In the late 1960's and 1970's several harvests occurred on FS-managed lands to the east and south of the project area. These harvests were clear-cut units approximately 20 to 30 acres that removed the majority of mature trees. These areas have been replanted and now have early- to mid seral structures of both closed and open canopies. Similar clear-cuts were accomplished during the same time period within the project area. These past harvest units lie between Units 10 and 6b and Units 7 and 4, and account for approximately 17 and 4 acres, respectively. The units now have a dense mid-seral structure resulting from regeneration of hand planted lodge pole pine and ponderosa pine and also natural regeneration from Douglas-fir and ponderosa pine. Additional partial cut units were harvested within the project area and are contained within Units 10, 11, and 7. The changes in forest structures that are described under direct and indirect effects would add to the changes that have already occurred and would provide structure diversity to the landscape and also forest management options in the future.

Alternative 1- Forest Resources (No temporary road construction)

Direct and Indirect Impacts

The impacts resulting from alternative 1 would be similar to what was described for impacts of the proposed action except no actions would occur in Units 12a, 12b, 11, and 10. These areas would result in conditions that are described under the no action alternative. Generally, this alternative would be treating areas with high tree densities and regenerating small areas where dwarf mistletoe is severely degrading the stands. Overall, less early-seral forest structures would directly result from this alternative.

Cumulative Impacts

The results of Alternative 1 would be similar to results identified within the proposed action, except less early-seral structures would be created. Instead of these early-seral structures, the areas that are not treated/harvested under this alternative would continue to create structures identified within the no action alternative. The overall cumulative impact would be less structural diversity and less management options in the future then compared to the Proposed Action.

Alternative 2 – Forest Resources (Additional aspen treatments)

Direct and Indirect Impacts

The impacts associated with Alternative 2 would be in addition to any other selected alternatives as discussed throughout this EA. The additional aspen treatments proposed within Alternative 2 would reduce the amount of conifer encroachment into aspen stands. This would result in treated aspen stands being sustained on the landscape without depending on wildfire or other natural disturbances to remove the conifers. As the areas being targeted within this alternative are not currently heavily suppressed by conifers the forest structure would not change dramatically and the aspen vigor would be similar to what it is now. However, this would prevent any degradation to aspen health that would result directly from conifers suppressing these aspen stands in the future.

Cumulative Impacts

Past actions identified under the cumulative effects of the proposed action as well as past wildfires have removed conifers from aspen stands and allowed them to regain vigor and regenerate. Though these were unintended consequences of past actions the results combined with this alternative lead to greater amounts of aspen being maintained on the landscape in resilient conditions.

Alternative 3 – Forest Resources (Reroute access to FS Trail #7058)

Direct and Indirect Impacts

This alternative alone has minor impacts to forest resources. The impacts associated with this alternative would occur as a result of selecting the additional actions within the proposed action or Alternative 1. However, the newly constructed trail segment would be within forested areas and may result in indirect effects that are caused by the increase in human activity within these areas.

Cumulative Impacts

As this alternative has very minor impacts to vegetation within the project area, these changes would not add extensively to impacts that occurred within the past or are proposed.

AIR QUALITY

The airshed within the project area is comprised of relatively clean air. Nevertheless, when stable air allows for inversion conditions to occur, particulate pollutants originating from agricultural operations, motorized vehicles, wildfires, and wood burning stoves can become trapped in the

area for an extended period of time. The air throughout the region is refreshed as high and low pressure systems move through the region allowing the air to move and dilute existing particulate matter. Additionally, local adiabatic winds also allow for air to clear on a daily basis when heated air rises allowing pollutants to be dispersed by trade winds.

No Class I or Class II airsheds exist within the project area. The closest Class I airsheds are the Sawtooth Wilderness Area and the Craters of the Moon Wilderness Area which are approximately 25 miles north and 60 miles east, respectively. Additionally, the Craters of the Moon National Monument, also to the east, is a Class II airshed.

No Action- Air Quality

Direct and Indirect Impacts

There would be no direct or indirect impacts to air quality as a result of the selection of the no action alternative. No impacts are expected to occur as there would be no actions that result in an increase in the dispersal of particulate matter or other pollutants into the air.

Cumulative Impacts

As discussed in the paragraph above, currently air pollutants are resulting because of agricultural operations, the use of motorized vehicles, wildfires, and wood burning stoves. These activities are all expected to continue into the foreseeable future. Of these activities wildfires are the most likely to raise pollutant amounts, mainly in the form of particulate matter, to levels that could result in unhealthy conditions (Sandberg et al., 2002). This is because wildfire events release large amounts of smoke within a relatively short period of time. However, as wildfire events are not continuous air quality would return to previous levels once fires are put out. Several large fires have occurred the past few years north of the project area that have contributed to short term impacts to air quality; these fires occurred in July and August.

Proposed Action- Air Quality

Direct and Indirect Impacts

Impacts to air quality as a result of the proposed action would occur from using fire to remove slash. Although the preferred method of removing the slash would be to remove it from the area to be used as a biomass product, this might not be feasible. If it is not possible to use the biomass the slash would be burned either in piles or by broadcast burning the treatment units. Thinned units are expected to produce approximately 8.5 tons of slash less than 3 inches in diameter per acre and 9.8 tons of slash greater than 3 inches in diameter per acre. (All slash estimates used within this document were based off of monitoring data of past treatments and crown weights given within Fahnestock, 1967) Regeneration units are expected to produce approximately 12.2 tons of slash less than 3 inches in diameter per acre and 10.0 tons of slash greater than 3 inches in diameter per acre. Assuming a 75% reduction in fuels less than 3in in diameter and 33% reduction in fuels greater than 3in diameter, the total amount of slash burned would be approximately 1,777 tons (9.6 tons per acre) for thinning units and 1,431 tons (12.4 tons per acre) for regeneration units (Grahm et al. 1999). Burning this amount of slash would release 32 tons of PM10 (particulate matter less than 10 micrometers) into the airshed (Sandberg et al., 2002). However, it is not anticipated that all burning would occur within the same day or even the same year. The release of particulate matter would occur in short periods of burning

over a 1-3 year period and the amount of smoke being released within any given 24 hour period would not surpass the recommendations of the Idaho/Montana Airshed group. This would result in periods of haze and a decrease in local air quality, but these impacts would be of short duration (not lasting more than 24-48 hours). Additionally, because the smoke emissions would be released in short durations, the remoteness of the treatment location, and the normal wind directions it is not anticipated that the air quality would decrease within any populated or sensitive areas.

Cumulative Impacts

Particle mater released from the burning of the slash created during the treatments would be added to particle matter already existing or being released into the air from other sources i.e. agriculture operations, motorized vehicles, wildfires and wood burning stoves. However, the Idaho/Montana Airshed Group assesses current air conditions and anticipated smoke dispersal prior to giving their approval for smoke dispersal and therefore smoke would not be released during times that it would reduce the air quality below acceptable limits.

Alternative 1- Air Quality (No temporary road construction)

Direct and Indirect Impacts

The impacts of Alternative 1 would be similar to the proposed action, but would result in less total particulate matter being released into the air. Alternative 1 may burn up to 1,680 tons of slash from thinning units and 148 tons of slash form regeneration units. The burning of this slash would release approximately 18 tons of PM10 into the air. Even though the total smoke and resulting particle matter would be less under this alternative the relative impacts to air quality after each burning period would be approximately the same. This is because the same amount of burning would occur during a 24-hour period.

Cumulative Impacts

Cumulative impacts would again be similar to the proposed action with less overall emissions.

Alternative 2 – Air Quality (Additional aspen treatments)

Direct and Indirect Impacts

This Alternative would increase the amount of slash that is burned by no more than 5.8 tons resulting in 122 pounds of PM10 being released into the air. This amount would not be a noticeable increase to the proposed action or alternative 1 and any additional amounts of smoke would still require the approval of the Idaho/Montana Airshed Group and would not be approved during times when burning would cause air quality to become unhealthy.

Cumulative Impacts

The cumulative impacts would be the same as the proposed action and Alternative 1.

Alternative 3 – Air Quality (Reroute access to FS Trail #7058)

Direct and Indirect Impacts

Alternative 3 would not increase the amount of slash being burnt and therefore would not cause impacts to air quality above what is discussed under the proposed action or Alternative 1.

Cumulative Impacts

Cumulative impacts would also be limited to that discussed in the proposed action or Alternative 1.

NOXIOUS WEEDS

A Forest Vegetation Information System (FORVIS)/fuels inventory was conducted in 2009 and did not measure or note any noxious weeds or non-native invasive plants within the foot print of the proposed treatments. However, Canada thistle (*Cirsium arvense*) and diffuse knapweed (*Centaurea diffusa*) have been observed within the project area. The occurrences of these noxious weeds are primarily along roadways and in areas with high disturbance frequencies i.e. existing roads and trails. Currently, the BLM and Camas County have active programs to control weeds listed on Idaho's noxious weeds list. The programs include spot chemical applications and the placement of biological control agents.

No Action- Noxious Weeds

Direct and Indirect Impacts

Under the No Action alternative noxious weed conditions are anticipated to stay as they are currently. Canada thistle and knapweed would continue to exist within the project area and the potential for these weeds to increase and other weeds to become established would remain. Currently, the main vectors for bringing noxious weeds in to the project area are vehicles used for recreation and livestock use. Under the No Action alternative, treatment of noxious weed populations would continue as authorized under the Final Vegetation Treatment Using Herbicides on *Bureau of Land Management Lands within 17 Western States Programmatic Environmental Impact Statement (2007)* and impacts associated with controlling noxious weeds are addressed in that document.

Cumulative Impacts

Cumulative impacts within this section address how the current actions plus additional actions within the project area would affect the establishment of noxious weeds. Prolonged travel in and out of the project area along established routes either for recreation, as part of permitted grazing, or any other use increases the potential of noxious weeds establish within the area (Gelbard and Belnap, 2003). However, these activities have not contributed to establishing high amounts of noxious weeds within the area thus far. Additionally, wildlife can bring in noxious weed seed as they migrate or weed seed can also blow in and become established without anthropogenic disturbances, but again, this has not presently led to high amounts of weeds within the project area (Fornwalt et al., 2003).

Proposed Action- Noxious Weeds

Direct and Indirect Impacts

There would be an increase in the exposure to noxious weeds during the treatment operations and within the few years after operations have concluded. However, after objectives are achieved the potential for the establishment of weeds within the project area would be no greater than the current potential and would be similar to areas that are not treated (Fornwalt et al., 2003). As a result of the proposed action there would be an increased potential for noxious weed species to become established in areas where there is soil disturbances that expose mineral soil and where there is a temporary reduction in native plant competition (Wayman and North, 2007; Metlen and Fiedler, 2006; Dodson et al., 2008). Additionally, there would be an increase in exposure to weeds brought in from outside the project area by harvesting machinery. Project design features require machinery to be washed and inspected for weeds prior to arriving at the project area, which should reduce exposure from these sources. Areas where establishment conditions and exposure to a seed source are most likely to occur is along improved and newly constructed roadways, along skidding/yarding routes, and at landing areas (Gelbard and Belnap, 2003). These disturbances would result in the potential for weeds to become established or increasing on approximately 11.5 acres. These disturbed areas would continue to have an increased potential for noxious weed establishment until vegetation via seeding or natural regeneration is established; this is estimated to take up to 3 years post treatment operations (Fornwalt et al., 2003). In addition to road construction, increases in potential weed establishment would occur within areas burned as part of slash removal. This could be as much as 225 acres assuming all units are broadcast burned following a prescription that maintains a mosaic burn pattern. However, vegetation broadcast burned under the prescribed conditions would become re-established the next growing season prior to the introduction of noxious weeds from outside the area (Wayman and North, 2007; Dodson et al., 2008). Pile burning would generally reduce the amount of area that vegetation and soil cover are removed, but it would take longer to reestablish vegetation on the impacted areas. Pile burned areas would be reseeded and like landings and roadways it is expected to have vegetation reestablished within 3 years.

Although exposing mineral soil in these areas would increase the potential for establishment of noxious weed species, inventories and field observations did not measure or note the occurrence of these species within the footprint of proposed treatments, which lessens the potential for establishment (Fornwalt et al., 2003). Additionally, as the treatments are completed and disturbed areas re-vegetated and monitored for weeds there would be less areas being continually disturbed and more weeds being treated leading to less opportunities for weeds to become established (Fornwalt et al., 2003; Gelbard and Belnap, 2003). Furthermore, in the event that invasive non-native species are noted during monitoring they would be treated following procedures described in the *Final Programmatic Environmental Impact Statement Vegetation Treatments using Herbicides on Bureau of Land Management Lands in 17 Western States (2007)* while populations are small.

Cumulative Impacts

During the treatment operations it is expected that some travel into the area would still occur from livestock and recreational users. Therefore, the amount of new exposure to weeds would be in addition to what is currently occurring. Additionally, treated areas would have increases in understory vegetation that could be utilized as forage by livestock or wildlife. This could lead to

an increase in weed establishment potential in areas that are not currently being exposed to foraging livestock or wildlife.

Alternative 1- Noxious Weeds (No temporary road construction)

Direct and Indirect Impacts

Alternative 1 would have similar results as the Proposed Action concerning temporarily exposing the area to noxious weeds; however, the overall area of increased exposure would be less. Alternative 1 would result in approximately 8 acres that would be disturbed as a result of road construction/improvement, skidding/yarding trails, and landing areas. Additionally, approximately 110 acres would temporarily experience an increased exposure caused by burning slash. Again this assumes broadcast burning all slash under a prescription that promotes a mosaic burn pattern.

Cumulative Impacts

As with direct and indirect impacts, cumulative impacts would be similar to what is identified under the Proposed Action.

Alternative 2 – Noxious Weeds (Additional aspen treatments)

Direct and Indirect Impacts

This alternative would additionally increase the amount of area potentially exposed to noxious weeds above what is discussed within the Proposed Action and Alternative 1. Traveling in and around aspen stands could bring weed seed in from outside areas, but as in the first two actions discussed it would be required that all equipment, including chainsaws, would be inspected for weed seed prior to the equipment arriving on the site. This would limit weed seed as a result of the project operations that include cutting down encroaching conifers. Additionally, this alternative would not result in burning everywhere that is treated as most of the area would have cut trees lopped and scattered. However, some burning would occur and this is expected to have similar impacts as discussed in the proposed action. Burned areas would be reseeded to establish vegetation after burning and conditions during burning would be prescribed to reduce the severity of impacts to the soil, so it is anticipated that increased exposure to noxious weeds would be temporary and would not continue after vegetation in disturbed areas is established.

Cumulative Impacts

The cumulative impacts for this alternative would be the same as those described within the proposed action.

Alternative 3 – Noxious Weeds (Reroute access to FS Trail #7058)

Direct and Indirect Impacts

Trails in general increase the chance for noxious weeds to spread due to continual soil disturbance and potential seed transport. This alternative would result in the net reduction of approximately 0.2 miles of trail surface, and thus reducing the amount of area that has an increased potential to establish noxious weeds (removing 0.5 miles of existing and constructing

0.3 miles of new trail). Additionally, the removal of the 0.5 miles of existing trail would reduce crossings in riparian areas. This would limit opportunities for the further spread of Canada thistle into new areas. This is particularly true as Canada thistle has a better chance of becoming established in wet areas that are disturbed frequently (Prather, Robins, Morishita, Lass, Callihan, & Miller, 2002).

Cumulative Impacts

This Alternative would reduce routes available for single track use by 0.2 miles out of approximately 3.5 miles that are currently used. This equals about a 5.7% reduction of total trails within the project area, but the impacts of the other 3.3 miles of trail would remain and are described in the No Action Alternative. However, travel management in the area may become different than described, as the Shoshone Field Office is currently assessing travel planning needs in the project area that would further identify how and where travel routes should be managed. As the no action alternative and this alternative assume the current travel designation of open, any change by a travel management plan would only lessen the areas that are impacted by off road travel.

FISHERIES RESOURCES

Interior Columbia River redband trout (*Oncorhynchus mykiss gairdneri*) are the only BLM sensitive fish that occur within the proposed project area (South Fork Lime Creek (SFLC) Watershed). Redband trout, a subspecies of rainbow trout, are native to most of Idaho and are found in most rivers and streams below Shoshone Falls (Behnke 1992). Like other species of trout, habitat needs include undercut streambanks, instream woody debris, pool habitats with clean spawning gravel and dense overhanging streamside vegetation. Population declines in redband trout can be attributed to habitat degradation, fragmentation, and non-native fish introductions into redband trout occupied streams. The current range wide abundance of redband trout in Idaho is unknown (IDFG 2005).

In-stream habitats capable of supporting fish are present within the proposed project area in the SFLC and Ear Creek. The SFLC drains into Lime Creek, then Anderson Ranch Reservoir, and ultimately into the Boise River. U.S. Forest Service fisheries sampling identified redband trout and sculpin to be present within the project area (USFS 1978, 1999, 2000, 2001, 2007; unpublished data). Although these surveys did not identify the species of sculpin present, there is not likely to be Wood River sculpin, which are known to only occur in the Big Wood and Little Wood River watersheds (Meyer et. al. 2008). Redband trout were observed through all reaches sampled and sculpin were only observed in the lower portions of the SFLC. Multiple age classes of redband were observed indicating they are successfully reproducing in these streams. In 2010, the BLM also observed redband trout in the SFLC and Ear Creek during field reviews for the initial planning of the proposed forest health treatments.

The Idaho Division of Environmental Quality (DEQ) includes a portion of the Lime Creek watershed on its list of impaired water quality, specifically for elevated water temperature. This portion of the watershed is approximately 13.5 miles downstream. The latest Final Integrated Report by the DEQ identifies the streams within the project area as meeting beneficial uses and the 7-day maximum stream water temperature recorded in upper SFLC ranged from 59°F to 61°

F (USFS 2001, 2007; unpublished data). These temperatures are within preferred ranges for redband trout and approximately 20° F below temperatures that have been identified by Wydoski and Whitney as survivable for short periods (IDFG 2005). During field visits all age classes of redband trout were observed nearby the project area indicating they are successfully reproducing within this portion of the SFLC. However, upstream portions of the SFLC and its tributaries may be only marginally suitable for redband during low water periods within the fall; during this time it is likely that many individuals would move downstream.

Ear Creek is a perennial fish bearing stream which drains into the SFLC. Ear Creek is a relatively small headwater stream with a narrow floodplain. It is dominated by woody vegetation and has a moderate stream gradient. Ear Creek is approximately 1.5 feet wide and 6 inches deep. The dominant stream substrate is fine sand and silt with lesser amounts of cobble and boulder. There are few pools present in upper Ear Creek which limits the potential for this stream to support fish. Redband trout juveniles were observed in Ear Creek during preliminary field review of the two proposed stream crossings (August, 2010).

There are two stream fords across Ear Creek and one on an unnamed tributary to Ear Creek. The stream channel is over widened at these fording areas, but along other portion of the stream the channel is narrow and has willow, aspen, dogwood and other riparian woody vegetative species are maintaining streambank stability. An unauthorized culvert failed at the lower stream ford, which caused streambank erosion, channel instability and sediment loading to the stream. The culvert failure and current recreation use have contributed to the reduced habitat quality for redband trout below the stream crossing.

No Action – Fisheries

Direct and indirect Impacts

In the No Action Alternative, no treatments would occur to reduce mistletoe infested conifers in the SFLC watershed. The existing timber stands would remain in their current overstocked condition. Mistletoe infestations would remain untreated within these timber stands and would likely spread to adjacent trees that are not currently infested. Over time, the health of the existing timber stands would decline and would be at an increased risk for wildfire. Redband trout populations and their habitat in the SFLC and Ear Creek would be at an increased risk for loss or degradation if a wildfire were to burn through the Riparian Habitat Conservation Area (RHCA). Because the redband trout in the SFLC and Ear Creek are not disconnected from other downstream suitable fish bearing habitat, these fish could avoid the direct impacts from a fire by migrating downstream of the wildfire affected area. The existing fish bearing habitats would be altered by the wildfire and would likely have large amounts of fine sediment and LWD introduced into the stream channel in the years after the fire. Once instream channel conditions had recovered to a condition that could support fish, redband trout could migrate back into the burned area and recolonize the stream. In the short-term, fish populations would decline after the fire but could actually be increased in the long-term after the stream channel had recovered.

Proposed Action – Fisheries

The proposed action would include approximately 185 acres of thinning and 115 acres of mixed regeneration/sanitation harvest that would be applied to 14 treatment units. Of these units, nine are located in upland areas and are more than 300 feet from fish-bearing streams (Figure 2). The guidance in INFISH (1995) recommends avoiding ground disturbing activities within 300 feet of fish bearing streams in order to maintain stream channel condition. However, INFISH also allows the use of site-specific analysis to ensure management actions within 300 feet of fish bearing streams would not result in negative impacts to fisheries, riparian, and water resources. Forest health treatments that are more than 300 feet from the SFLC and Ear Creek would have a minimal potential to directly or indirectly impact stream conditions (i.e., LWD abundance or recruitment, streamside vegetation, water temperature, instream fines). Portions of the remaining five proposed units (Units 3, 5, 9, 10, and 11) would have forest health treatments or associated infrastructure that would occur within 300 feet of the SFLC, Ear Creek or their tributaries. The potential impacts of work completed within these units are described below. The impacts would lead to an increased potential to introduce sediment into the RHCA, to reduce LWD recruitment to the stream, and to reduce thermal cover; therefore, having some potential impact on individual redband trout or their habitat. However, by using the project design features and BMPs, the proposed operations and resulting impacts would be minor compared to impacts that are described by Reiman et. al. (1997) in their exploration of impacts to fish after large fires. Reiman et. al. (1997) concluded that redband trout have the “ability to adapt and recover from changes in their environment associated with intense wildfire”. This is especially true after disturbances if re-founding is possible from local refuge or overlapping generations (Reiman et. al, 1997). It is not anticipated that the described impacts in the following sections will move redband trout or other fish species towards federal listing or cause a loss of viability, as 1) impacts from the proposed operations would be less than what was observed by severe wildfires and 2) because redband trout populations within the West Camas project area have the ability to re-enter the area from local refuge and overlapping generations.

Direct and Indirect Impacts to Ear Creek

Forest Health Treatments

The Proposed Action would include four treatment units in the Ear Creek Watershed. Units 1, 2, and 7 are more than 300 feet from the stream and a small portion of the eastern boundary of Unit 3 is less than 300 feet from an unnamed tributary to Ear Creek (Figure 2). Forest health treatments more than 300 feet from Ear Creek would have a minimal potential to directly or indirectly impact instream conditions (i.e., LWD recruitment, water temperature, instream fines). The proposed tree removal within 150 feet of an unnamed perennial tributary to Ear Creek would only remove mistletoe infested trees. Since most of the trees would remain on site, potential LWD recruitment to the stream would be maintained. Although some streamside shading may be reduced within the RHCA, the existing aspen and willow on site are expected to benefit from increased light and to maintain streamside shading and thermal insulation for the unnamed tributary to Ear Creek. For reasons already discussed removing several trees from the RHCA is not expected to directly or indirectly effect redband trout or fish bearing habitats in Ear Creek.

Access Roads

There is approximately 1.2 miles of constructed road in the project area within the Ear Creek Watershed (Figure 3). Approximately half of these road miles would be maintained or improved

as part of the Proposed Action. Project roads could have short-term impacts to redband trout or their spawning, rearing or migration habitat. The road segments with the greatest potential for impact to streams would be those areas where road work occurs within the RHCA (Figure 3). Impacts to streams would primarily include sediment loading to the stream channel, an increased potential for petroleum products to enter the stream, and impacts due to stream crossing (described below). BMPs such as water barring, installing drainage dips, re-vegetating roadways and out-sloping the road surface would reduce but probably not completely eliminate the potential for roadbed or fill materials to enter the stream. Road improvements that are outside of the RHCA would pose less of a threat to fish bearing habitat, but some amount of sediment from these roads could eventually end up in Ear Creek during severe weather events. However over the long term, potential for sediment to be introduced into the stream will be reduced. A reduction in sediment introduction will come as a result of removing stream fords and reducing OHV traffic on approximately 0.6 miles of roadways within the Ear Creek watershed.

Stream crossings

Accessing the proposed treatment units would require improving one stream crossing on Ear Creek. This crossing is currently a stream ford that contributes to continual disturbance that has led to increases in fine sediment and erosion of the stream bank and old road fill. A culvert would be installed at this location (Figure 2), constructing this crossing would result in localized streambank disturbance, removal of riparian vegetation, and sediment introductions to Ear Creek. The culvert has been designed using the Stream Simulation Procedure (USDA 2008) which uses watershed and stream channel conditions to design fish passable crossings. The culvert would be installed using guidance from the current Endangered Species Act consultation for stream crossing structures in fish bearing streams (BLM 2005; FWS 2006). This guidance was developed for watersheds containing Columbia Basin bull trout, but it would also reduce the potential for impacts in other fish bearing streams. BMPs specific to redband trout, such as measures to avoid instream work during critical spawning and egg incubation (May through June), would also be used.

Improving the proposed stream crossing is expected to result in fewer impacts to redband trout habitat (i.e., direct and indirect sediment inputs, streambank alteration, loss of riparian vegetation, potential risk for introducing petroleum products) than if heavy equipment and support vehicles forded the stream. Although all impacts to fish bearing habitat from the installing culverts/streams crossing cannot be eliminated, the identified guidance documents and procedures would reduce the amount of disturbance to the extent possible. Again, for reasons already discussed the impacts from the construction and use of these crossing is not expected to result in a measurable, long-term decline in redband trout populations or fish bearing habitat condition in the Ear Creek watershed.

Landings

In the Ear Creek watershed, there would be approximately 3.5 acres of ground disturbance due to the construction and use of log landings and skidding routes. Log landings would be sited where topography is flat, there is limited vegetation removal required, and where surface erosion could be prevented from entering fish bearing streams. Due to the distances of most potential landing areas from Ear Creek it is not expected that these will contribute to impacts to redband habitat. However, a potential landing site near Ear Creek in an area previously used as a landing is

located within a distance that sediment from the landing could reach the stream (Ketcheson and Meghana, 1996). This area is already disturbed and possibly contributing to sediment in the stream near a fording area. The use of this area would prevent the need to disturb additional areas, and would incorporate BMPs and project design feature guidance that would reduce impacts already occurring. The use of the potential landing would only be used as long as project design features and associated BMPs are adequately preventing sediment from impacting fish bearing habitats. Regular inspections following procedures in BLM Handbook H-5460-1 would be used to identify if this requirement is being met. If it is determined that landing or skidding operations are resulting in sediment entering streams, a suspension of applicable operations will be issued until actions leading to sediment control are being employed. After operations are completed, landings and skidding routes would be re-vegetated using BLM approved seed and have drainage structures constructed to minimize erosion. This would prevent the landings and skidding routes from being a long-term source of sediment to fish bearing habitat in Ear Creek or its tributaries.

Burning of Slash

The harvest units in the Ear Creek watershed would have slash piles burned or broadcast burning to reduce fine fuels after forest treatments are completed. All burning would be implemented under a site-specific controlled burn plan which would include measures to avoid impacts to fish bearing streams. Because slash burning would not occur in an RHCA, impacts to redband trout or fish bearing habitat in the Ear Creek watershed are not expected.

Direct and Indirect Impacts to the South Fork of Lime Creek (SFLC)

Forest Health Treatments

The proposed action would include a total of eleven forest health treatment units in the SFLC Watershed: Units 4, 6a, 6b, 7 and 8 are more than 300 feet from the SFLC and portions of Units 5, 9, 10, 11, 12a and 12b are less than 300 feet from the SFLC (Figure 2). The potential impacts to fish bearing habitat in the SFLC from removing mistletoe-infested trees that are more than 300 feet from the RHCA would have a minimal potential to directly or indirectly impact instream conditions (i.e., LWD abundance or recruitment, streamside vegetation, water temperature, instream fines). Removing trees from these areas is not expected to have a measureable effect on redband trout or fish bearing habitat in the SFLC.

The SFLC is the only fish bearing stream where mistletoe infested trees are proposed to be removed from the RHCA (Units 5, 9, 10). In order to meet resource objectives (i.e., prevent spread of mistletoe while maintaining streamside shade and LWD recruitment), individual trees would be hand-marked for removal. This would allow enough standing trees to remain on site to maintain LWD recruitment, streamside shading and thermal insulation for the SFLC. Although some streamside shading may be reduced within the RHCA, the amount of standing Douglas-fir trees left on site would be sufficient to maintain overhead shading and thermal insulation in the short and long-term. The potential impact from removing these trees is not expected to reduce redband trout populations or result in a measurable reduction in the quality or quantity of fish bearing habitat in the SFLC.

Access Roads

There are approximately 2.4 miles of constructed road in the project areas within the SFLC Watershed (Figure 3). To access the treatment units, approximately 1.4 miles of road would be maintained or improved and ¾ mile of new road would be constructed. At project completion, these roads would be scarified and seeded and have proper drainage installed to reduce the potential for surface erosion to the extent possible. Access to the road would be limited to motorcycle, bike, horse, and foot traffic at Ear Creek (Figure 3). The potential impacts to redband trout and their habitat from the road network (i.e., construction, use, maintenance, reclamation) in the SFLC watershed are similar to those described for the Ear Creek Watershed (i.e., sediment inputs, streambank alteration, loss of riparian vegetation, potential risk for introducing petroleum products). Although some localized impacts to redband trout habitat could occur, impacts are not expected to reduce redband trout populations or instream habitat conditions in the SFLC in the short or long-term.

Stream Crossings

Under the Proposed Action, there would be one culvert installed on an unnamed tributary to the SFLC. The potential impacts to redband trout and their habitat would be similar for this crossing as described for the culvert crossing in the Ear Creek watershed except that this crossing would be on a non-fish bearing stream. Any potential impacts to the SFLC from installing this culvert would be related to indirect impacts from sediment and are likely to be short-term in nature.

Landings

There would be approximately 8 acres of ground disturbance associated with designated landings in the SFLC watershed. All of these landings would occur in areas previously used as landings or adjacent to roads and would be more than 300 feet from the SFLC. Due to their distance from streams, these landings are expected to have minimal, if any, impacts to redband trout or fish bearing habitat. This distance, combined with post project seeding, is expected to prevent the landings from being a short or long-term source of sediment to fish bearing habitat in the SFLC.

Burning of Slash

The treatments units in the SFLC would have slash piles burned or broadcast burning to reduce fine fuels after the treatments are completed. All burning would be implemented under a site-specific controlled burn plan which would include measures to avoid impacts to and fish bearing streams. Because slash burning would not occur in an RHCA, impacts to redband trout or fish bearing habitat in the SFLC are not expected.

Cumulative Impacts for Proposed Action

This cumulative impacts assessment considers the effects of past, present, and reasonably foreseeable actions on Federal, State, and private lands within the SFLC watershed. This watershed includes land administered by BLM's Shoshone Field Office, Forest Service, State lands, and several parcels of private land. Management actions and activities within the watershed that have influenced instream and riparian condition in the past and have the potential to influence these resources in the future were considered in this cumulative impacts assessment.

Stream channels and riparian areas are focus areas for many uses and, as a result, have the potential to become locally degraded over time. Factors that have contributed to current riparian condition include livestock grazing, recreational uses, road construction and use, and increases in

the amount of noxious weeds and invasive plants. All of these factors have reduced functional condition of fish bearing streams and the riparian areas which support them. Human activities are expected to continue to influence instream and riparian condition in the future. Activities on State and private land may continue to influence instream and riparian condition on public land. As human population increase, these impacts are also likely to increase over time.

Human activities that have contributed to the existing condition within the West Camas Forest Restoration project area include recreational use, OHV use, hiking trails, camping, livestock grazing, road building and timber harvest. Wildfires have also burned in the watershed and have contributed to instream conditions. Timber harvest and the continual recreational use of supporting road systems have contributed fine sediment into fish bearing streams, locally reduce streamside vegetation at stream crossings and impacted indicators for water quality (i.e., sediment, water temperature). Some road sections, especially those that are within the RHCA, have directly or indirectly introduced fine sediment into stream channels and reduced instream and riparian condition over time. All of these activities have contributed to the baseline conditions in the SFLC watershed.

Management actions related to the proposed action would result in similar activities as those which have already occurred in the watershed and could also negatively influence the condition of instream (fish-bearing), riparian, and water quality within the SFLC Watershed. It is expected that the project design features to maintain fish passage at road crossings, reduce erosion from road surfaces, manage recreational uses, and maintain forest health to reduce the risk of wildland fire would reduce the potential for cumulative impacts to aquatic resources over the long-term.

Alternative 1 - Fisheries (No temporary road construction)

Direct and Indirect Impacts

In Alternative 1, forest health treatments would occur in Units 10, 11, 12a and 12b (Figure 4). There would be 0.3 fewer miles of road reconstruction and 0.8 mile fewer skid trails, but the number of stream crossings would remain the same. All of the treatment units and road miles that would not occur in the alternative would be in the SFLC watershed (Figures 4, 5).

The potential impacts to redband trout and fish bearing habitat from the proposed treatments in the Ear Creek watershed would be the same as described for the Proposed Action except Alternative 1 would have fewer acres of forest health treatment in the RHCA (Unit 9, 10) and less upland road construction (Figure 5) than would occur in the Proposed Action. This would result in a reduced potential for direct impacts resulting from fine sediment that is introduced into fish habitat as a result of treatment operations. The existing roads in the treatments units that would not be improved to reduce surface erosion would remain in their current condition. These roads would continue to be a potential source of sediment to the SFLC in the long-term.

Cumulative Impacts

The human uses that have impacted instream and riparian conditions in the SFLC watershed are the same as those described for the Proposed Action. The potential for the proposed forest health treatments to result in cumulative impacts to fisheries, riparian and water resources for

Alternative 1 would be a combination of the impacts that identified in the Proposed Action and the No Action Alternative.

Alternative 2 – Fisheries (Additional aspen treatments)

Direct and Indirect Impacts

Alternative 2 proposes the same forest health treatments (e. g. removal of mistletoe infested trees, road construction, stream crossing construction, landings, and burning of slash) as the Proposed Action. Therefore, the potential affects to redband trout and fish bearing habitat are the same as described for the Proposed Action.

Alternative 2 differs from the Proposed Action in that it includes an additional management action to reduce conifer competition within select aspen stands that are scattered throughout the project area (Figure 1). The identified conifers would be felled by hand crews and would not be removed as forest products. Conifers threaten the health of aspen stands by competing with aspen for light, water and nutrients. As conifer density increases, aspen density is reduced.

The use of chainsaws to drop or girdle conifers within aspen stands would promote the long-term maintenance of the aspen stand while having minimal disturbance to aspen roots or soil resources within the clones. Although some of these treatments would occur within riparian areas that contain fish-bearing streams, the treatments would be implemented in a manner that would not disturb instream habitat conditions or directly affect redband trout or fish bearing habitat. Proposed aspen treatments within 300 feet of redband trout bearing streams are expected to increase the occurrence of aspen, which is an important component of streamside shading, leaf litter and other nutrients for fish bearing streams. Aspen treatments that are more than 300 feet from redband trout occupied streams are not expected to have any direct or indirect affects to redband trout or fish bearing habitat.

Cumulative Impacts

The human uses that have impacted instream and riparian conditions in the SFLC watershed are the same as those described for the Proposed Action. The potential for the proposed forest health treatments to result in cumulative impacts to fisheries, riparian and water resources for Alternative 2 would be the same as described for the Proposed Action. The additional management action to reduce conifer encroachment into aspen clones is not expected to result in any additional cumulative impacts to fisheries, riparian or water resources.

Alternative 3 – Fisheries (Reroute access to FS Trail #7058)

Direct and Indirect Impacts

Alternative 3 proposes the same forest health treatments (e. g. removal of mistletoe infested trees, road construction, stream crossing construction, landings, and burning of slash) as the Proposed Action. Therefore, the potential affects to redband trout and fish bearing habitat are the same as described for the Proposed Action.

Alternative 3 differs from the Proposed Action in that it includes an additional management action to relocate the recreational access to FS trail 7058. This would be accomplished by

decommissioning approximately 0.5 miles of trail and constructing approximately 0.3 miles of trail in a new location (Figure 6). The proposed re-route would eliminate two stream fords; one on Ear Creek and one on an unnamed tributary to Ear Creek. Re-establishing woody riparian vegetation at these fords would restore streambank stability and streamside shading and would eliminate a source of channel instability for Ear Creek and its unnamed tributary. The amount of instream fines would be expected to decrease at the crossings as streambank stability improves and riparian vegetation is restored. This would directly improve redband trout habitat at and below the Ear Creek crossings and reduce an indirect source of sediment to redband trout habitat from the unnamed stream.

Cumulative Impacts

The human uses that have impacted instream (fish-bearing), riparian and water quality conditions in the SFLC watershed are the same as those described for the Proposed Action. The potential for the proposed forest health treatments to result in cumulative impacts to fisheries, riparian and water resources for Alternative 3 would be the same as described for the Proposed Action. The additional management action to eliminate two stream fords by re-routing the access to a Forest Service trail would eliminate two areas with point source impacts to instream condition, riparian, and water quality condition which would reduce the potential for cumulative impacts to these resources over the long-term.

RIPARIAN AREAS AND WETLANDS

Riparian areas and wetlands are generally associated with streams, rivers, and springs/seeps and are broadly distributed across the BLM managed lands within the Shoshone Field Office. Riparian areas are vegetated areas along rivers and streams that provide a transition zone between aquatic and upland areas as well as cover and food for wildlife and fish. These areas also provide water quality benefits by filtering nutrients from runoff, maintaining stream temperature by providing shade, and controlling erosion. Wetlands are areas where surface and sub-surface waters result in saturated soil conditions throughout most of the year. Wetlands are commonly associated with riparian areas, such as in wet meadows, but can also be found in upland areas in association with springs and seeps. These wetlands often provide surface and subsurface water to downslope streams and rivers. In general, the area along streams where the woody and herbaceous plant community is influenced by the presence of surface and sub-surface water can be referred to as the RHCA. Human activities within the RHCA have the potential to directly and indirectly influence riparian condition

The proposed project area contains one primary riparian area (South Fork Lime Creek (SFLC)), one secondary riparian area (Ear Creek) and several intermittent or ephemeral stream channels. The baseline condition of these streams was assessed using the current BLM protocol for Proper Functioning Condition (PFC) Assessments (BLM TR 1737-15). The PFC assessment evaluates the physical characteristics of the riparian ecosystem and identifies areas where the riparian area is at PFC, Functioning at Risk (FAR), or Non-functional. The BLM 2009 PFC assessment identified the SFLC as being at PFC and Ear Creek as being FAR. The rating of PFC indicates all of the physical processes of a stream are in balance (i.e., erosion and deposition forces) and are capable of sustaining stream channel condition. The rating of FAR means the existing condition of the soil, water or vegetation characteristics makes the stream susceptible to

degradation. The FAR rating for Ear Creek was influenced by the presence of unimproved stream fords which provide a source of sediment and instability to the stream.

Field observations indicate that large woody debris (LWD) is abundant in the SFLC and Ear Creek. The riparian areas for both streams are dominated by mature Douglas-fir, lodge pole pine, ponderosa pine and cottonwood. These woody species provide abundant LWD to stream channels and help to dissipate energy during high flows which helps maintain channel stability. The amount of instream LWD, combined with the relatively moderate stream gradient (approximately 3-5%), indicate the frequency of pool habitat for rearing redband trout is likely to be within the natural range of variability for these stream. The availability of LWD and moderate gradient are sufficient to support good pool quality, but the erosive soils and historic land practices in the watershed have likely reduce pool depth due to sediment loading. The abundant LWD combined with presence of large boulders is maintaining streambank stability in most areas.

The amount of instream fine sediment in the SFLC is naturally high due to the erosive nature of the granitic parent geology in the watershed. Historic management actions have also contributed fine sediment to streams from activities such as historic livestock grazing, logging, road construction, and OHV and other recreational uses. A Wolman Pebble Count completed by the U.S. Forest Service in 2001 indicated in stream fines (streambed particles <8mm) on upper SFLC near the Bremner Trail crossing to be 48%. At the same site, surface fines (<6mm) were measured at 36%. Substrate embeddedness data is not available but is expected to be high in the SFLC. Elevated in stream fines are also present in Ear Creek although quantifiable data is not available.

No Action - Riparian Areas and Wetlands

Direct and Indirect Impacts

In the No Action Alternative, no treatments would occur to reduce mistletoe infested conifers in the SFLC watershed. This could result in an increase in wildfire frequency or severity over time as there would be more heavy fuels in uplands that could carry a wildfire into riparian areas. The risk for wildfire to negatively impact a riparian area would vary by the functional condition of the riparian area. Riparian areas and wetlands are often resilient to the effects of wildfire when they are functioning properly and have adequate riparian vegetation. These areas may burn, but with low to moderate intensity due to the presence of water-loving plants which raise the water table through their deep root masses. The regeneration of aspen clones, cottonwood, and willows are promoted by light severity fire. These plant species are well adapted to the effects of wildfire and are and can maintain stream channel condition as the riparian vegetation recovers from a fire (Rieman 2007, Burton 2005).

Riparian areas and wetlands that have burned are at an increased risk for the invasion of noxious weeds and invasive plants. The presence of noxious weeds, which are effective at colonizing disturbed areas, are a threat to riparian vegetation and may facilitate more frequent fire in riparian areas and wetlands than historically occurred. The occurrence of noxious weeds or invasive plants could slow the recovery of riparian vegetation after a fire particularly in riparian areas that are functioning at a reduce condition (FAR). Permitted and non-permitted public land

uses can also increase the risk for the spread of noxious weeds and invasive plants into riparian areas after a burn.

Proposed Action – Riparian areas and Wetlands

Direct and Indirect Impacts

The potential impacts from the Proposed Action on riparian areas and wetlands are included in the description of potential impacts to fish habitat. In general, the potential impacts to riparian areas and wetlands would occur where roads cross the RHCA. The potential impacts in these areas would include a localized reduction or loss of riparian vegetation and streamside shading, streambank alteration or other ground disturbance that destabilized soils within the floodplain, or localized changes in floodplain dimension (i.e., channel width, depth, floodplain function) and the potential introduction of petroleum products into the RHCA. The BMP identified for the construction of stream crossings would reduce the potential impacts from roads on RHCAs to the extent possible, although some level of impacts could not be avoided. All of the road crossings for this project would occur in areas where roads already cross the RHCA. Use of these already disturbed areas would avoid having additional disturbance in new areas within the identified watersheds. Improving the existing crossings to facilitate the proposed forest health treatments is not expected to reduce the current riparian functional condition ratings for the SFLC (PFC) or Ear Creek (FAR).

Cumulative Impacts

The cumulative impacts to Riparian areas and Wetlands are identified with cumulative impacts to fisheries resources.

Alternative 1 – Riparian Areas and Wetlands (No temporary road construction)

Direct and Indirect Impacts

The potential impacts to riparian areas and wetlands in the Ear Creek watershed for Alternative 1 would be the same as those described for the Proposed Action. There would be a reduced risk for riparian areas or wetlands to be impacted in the SFLC because of the fewer acres of forest treatments and miles of road construction, but most of the reduced acres occur in upland areas that are more than 300 feet from RHCA. The removal of individually marked trees from the RHCA in Units 9 and 10 is not expected to have measurable effects to riparian conditions for the SFLC because marking would occur in a manner that would maintain streamside shading, thermal insulation and LWD recruitment within the RHCA. The current PFC rating for the SFLC is not expected to be reduced as a result of the proposed forest health treatments under Alternative 1.

Cumulative Impacts

The cumulative impacts to Riparian areas and Wetlands are identified with cumulative impacts to fisheries resources.

Alternative 2– Riparian Areas and Wetlands (Additional aspen treatments)

Direct and Indirect Impacts

Using chainsaws to reduce conifer competition within aspen clones would allow for aspen to persist or expand within the RHCAs in the project area without creating ground disturbance within the clones. Aspen are an important component of riparian areas which maintains soil nutrients, streamside shading, and subsurface water conditions. Riparian and wetlands resources would benefit from this additional management action in Alternative 2. The proposed removal of conifers from aspen clones within the project area would benefit aspen in the long-term.

Cumulative Impacts

The cumulative impacts to Riparian areas and Wetlands are identified with cumulative impacts to fisheries resources.

Alternative 3– Riparian Areas and Wetlands (Reroute access to FS Trail #7058)

Direct and Indirect Impacts

Eliminating the road crossings from the Ear Creek and unnamed riparian areas would result in direct benefits to riparian condition for these streams. The stream fords are a source of disturbance to these riparian areas. The repeated crossing of vehicles creates wave action that destabilizes stream banks and reduces or eliminates riparian vegetation at the crossings. Soils from damaged stream banks are deposited in the stream channel which contributes to stream channel widening and instability at and below the crossing. Eliminating these stream fords and relocating the trail into upland areas would allow riparian conditions and stream channel functions to recover at the crossings. Planting woody vegetation at the crossings would expedite the recovery of vegetation that stabilizes streambanks, dissipates energy at high flows, and provides thermal insulation to the stream. Eliminating these stream crossings, although localized, would improve riparian function and condition for these streams in the long-term.

Cumulative Impacts

The cumulative impacts to Riparian areas and Wetlands are identified with cumulative impacts to fisheries resources.

WATER RESOURCES

The water quality standards for the State of Idaho are the benchmark standards that Idaho Department of Environmental Quality (DEQ) uses to protect, maintain, or improve surface water resources in Idaho. These standards are designed to protect the beneficial uses of water including cold water fishes, recreation, and agriculture. Idaho DEQ has responsibility for protecting water quality within Idaho and enforcing specific water quality standards for each beneficial use (IDAPA 58.01.02).

The DEQ identifies streams with impaired water quality in the State of Idaho. The indicators used by DEQ to identify streams with impaired water quality (303(d) listed streams) include sediment, water temperature, streamflow alteration, and nutrients. A portion of the Lime Creek watershed is on DEQ's list of impaired water bodies, specifically for elevated water temperature. This portion of the watershed is approximately 13.5 miles downstream from the West Camas

Project area. The latest Final Integrated Report by the DEQ identifies the streams within the project area as meeting beneficial uses and the 7-day maximum stream water temperature recorded in upper SFLC ranged from 59°F to 61° F (USFS 2001, 2007; unpublished data). These temperatures are within preferred ranges for redband trout (a beneficial use) and approximately 20° F below temperatures that have been identified by Wydoski and Whitney as survivable for short periods (IDFG 2005).

Historic disturbances that have directly or indirectly contributed fine sediment to the SFLC include timber harvest (road and landing construction, skid trails, culverts installation and removal) and recreation (OHV use, stream fording, camping in the RHCA). Road density in the SFLC watershed are estimated to be 0.8 mi/mi². Approximately 31% of the roads in the watershed are in riparian areas. It is also estimated there are 0.77 mi/mi² of trails in the watershed, with approximately 50% in riparian areas. Most of these roads are associated with past logging operations, but impacts from motorized recreation have increased in recent times and contribute to impacts. These uses have resulted in six perennial stream crossings in the project area; four of these crossings are fords and two are user created wood bridges.

No Action - Water Resources

Direct and Indirect Impacts

In the No Action Alternative, no treatments would occur to reduce mistletoe infested conifers in the SFLC watershed and water quality continue to be impacted by the current uses that are occurring. The existing timber stands would remain in their current overstocked condition and would be at an increased risk of wildfire. If a wildfire were to occur in the upper SFLC watershed, water quality would likely be reduced during the fire and in the initial years of vegetation recovery after the fire. The greatest impacts to water quality would be from an increase in water temperature due to a loss of streamside shading and thermal insulation, and from introductions of fine sediment that are eroded from upland areas that are denuded of vegetation. Additional impacts to water quality could also occur if the fire is severe enough to result in changes in peak flow or runoff regimes. In the long-term, potential impacts to water quality from a wildfire would be reduced once riparian and upland vegetation has recovered.

Although the vegetation and watershed would recover from impacts from a wildfire, it is anticipated that impacts from the current uses, such as OHV use of existing fords, would continue or possibly even increase. Under the no action alternative, no direct impacts causing a decrease in water quality would occur, however, the no action alternative would also not do anything to reduce the current impacts that are occurring.

Proposed Action – Water Resources

Direct and Indirect Impacts

The Proposed Action has the potential to affect water quality indicators for sediment and water temperature. Impacts to these indicators would occur where treatment operations would occur within the RHCA. Ground disturbing activities that mobilize sediment could include skid trails, landings, haul routes, and/or stream crossings. The amount of sediment that is eroded from these areas would vary by the degree of disturbance, slope and annual precipitation, and the BMPs

used to stabilize soils after the project is completed. Forest health treatments that occur outside the RHCA would have a reduced potential to impact water quality.

Changes in water temperature regimes that would reduce the ability of the streams to meet beneficial uses as fish habitat are not expected to occur as a result of the proposed forest health treatments (Reiman et. al, 1997, IDFG 2005). The thinning of trees from the RHCAs within the proposed harvest units would be implemented in a manner that would maintain streamside shading and thermal insulation for the SFLC and Ear Creek. Harvesting only strategically marked trees would ensure streamside shading needs are met for either of these streams.

In all of the proposed treatment units, some surface vegetation would remain on site which would intercept precipitation and reduce the potential for surface erosion from these units. Landing areas would temporarily be in a disturbed condition but would be reseeded to reduce the potential for erosion once they are no longer needed. Stream crossing areas would pose the highest risk for sediment related impacts to water quality. The BMP for stream crossings that would be used to reduce impacts to fish bearing habitats would also reduce impacts to water quality (Ketcheson and Meghan, 1996). Although some impacts to water quality would occur at these crossings, they are expected to be less than if heavy equipment and support vehicles were to ford streams. The BMPs and design specifications for stream crossings would ensure stream crossings would not constrict the stream channel and contribute to downstream erosion of the stream channel. This would ultimately reduce the potential for sediment related impacts to water quality at and below the proposed crossings.

Measurable changes in streamflow regimes are not expected to occur as a result of the proposed forest health treatments. Tree removal would be limited to what is necessary to meet project objectives of removing mistletoe infested trees and restoring appropriate timber stand density and health. Under these objectives, enough trees would remain on-site to maintain infiltration of surface water within the harvest units. Therefore, changes in streamflow or run-off regimes are not expected to occur in the Ear Creek or SFLC watersheds.

Cumulative Impacts

The cumulative impacts to water resources are identified with cumulative impacts to fisheries resources.

Alternative 1- Water Resources (No temporary Road Construction)

Direct and Indirect Impacts

The potential impacts to water resources in the Ear Creek watershed for Alternative 1 would be the same as those described for the Proposed Action. There would be a reduced risk for impacts to water quality in the SFLC because of the fewer acres of forest treatment and miles of road construction. A majority of the reduced acres occur in upland areas that are more than 300 feet from RCA, so the potential for impacts from these units was already reduced. Overall, there is less potential to impact water quality in Alternative 1 than under the Proposed Action.

Cumulative Impacts

The cumulative impacts to water resources are identified with cumulative impacts to fisheries resources.

Alternative 2- Water Resources (Additional aspen treatments)

Direct and Indirect Impacts

Reducing conifer density in aspen stands within the project area would have minimal, if any, impact to water resources. The use of hand crews and chain saws would not result in ground disturbance which could directly or indirectly introduce sediment into surface water. Water temperatures would be maintained by the aspen after conifers are removed, so impacts to water temperature regimes are not expected. Water resources, both in the quality and quantity of water, would likely benefit from the proposed aspen treatments.

Cumulative Impacts

The cumulative impacts to water resources are identified with cumulative impacts to fisheries resources.

Alternative 3- Water Resources (Reroute access to FS Trail #7058)

Direct and Indirect Impacts

Eliminating the road crossings from the Ear Creek and unnamed riparian areas would result in direct benefits to water quality for these streams. Stream fords are a known source of impacts to water quality because they introduce sediment to streams, remove streamside vegetation that maintains water temperatures, and can be a source of contaminants to surface water (petroleum products such as gas, oil). Eliminating these stream fords and relocating the trail into upland areas would reduce recreation related impacts to water quality in Ear Creek and the unnamed tributary and would contribute to the improvement in water quality in these streams in the long-term.

Cumulative Impacts

The cumulative impacts to water resources are identified with cumulative impacts to fisheries resources.

WILDLIFE INCLUDING MIGRATORY BIRDS AND SPECIAL STATUS SPECIES

Threatened, Endangered, and BLM Sensitive Species

BLM policy directs State Directors to designate sensitive species in cooperation with State fish and wildlife agencies (BLM Manual 6840). The Idaho State Office updated these designations in 2003. Special status species include species listed or proposed for listing under the Endangered Species Act (ESA) and species designated as sensitive by the BLM State Director.

Several sensitive wildlife species associated with conifer woodland habitat occur within the project area (Table 1). Potential for occurrence is based on the presence of suitable habitat and/or documented occurrences (IDNHP, 2009). Habitat, ecology, and issues related to the

species are summarized in the *Comprehensive Wildlife Conservation Strategy* (<http://fishandgame.idaho.gov/apps/cwcs/index.cfm?category=6>). Those species that are threatened, endangered, and BLM Sensitive, and that are *not* migratory birds are discussed below.

The gray wolf occurs in parts of Idaho characterized by a mosaic of dry and mesic conifer and subalpine forest, as well as grassland and shrubland habitats. Large areas are required by individual wolves (Mech 1970). Den sites are often in wooded, protected sites near water. The gray wolf is a carnivore that primarily depends on ungulates as a food source. Smaller mammals and scavenging (Forbes and Theberge 1992) supplement the diet, particularly during wolf denning and rendezvous site activities (Paquet and Carbyn 2003). Wolves are considered a keystone species in the ecosystems in which it occurs. Wolves were relisted on August 5, 2010, and federal protection under the ESA was reinstated. Federal laws and regulations as described in the ESA once again apply statewide. The population of wolves that occur south of Interstate 90 are considered an experimental, nonessential population, and wolf/ livestock interactions are guided by rules in section 10(j) of the ESA. The Moores Flat pack has been documented to range into the western half of the project area.

In Idaho the Canada lynx inhabits montane and subalpine coniferous forests typically above 4000 ft (McKelvey et al. 2000). Habitat used during foraging is usually early successional forest. Dens are usually in mature forests (Groves et al. 1997a). Individuals are wide-ranging and require large tracts of forest. The Canada lynx preys on the snowshoe hare, particularly during the winter, as well as a variety of birds and other small mammals. In the critical habitat designation (Federal Register Volume 74 Number 36, 2009), the United States Fish and Wildlife Service (USFWS) did not designate habitat within the Shoshone Field Office, and Canada lynx are managed by the BLM as a type 2 species; managed to minimize the likelihood and need for listing under the ESA. However, habitat in the Sawtooth National Forest immediately (0.5 mile) north of the project area is part of a lynx analysis unit and has been mapped as potential lynx habitat (David Skinner (USFS); pers. comm. 2010).

The northern leopard frog is associated with permanent water sources during all life stages. Populations occur in a variety of wetland situations, including marshes, pond margins, and slow moving sections of streams and rivers (Makela, 1998). In southern Idaho, populations have been reported in the Snake River and its tributaries; however, data regarding population trend in southern Idaho are limited, but localized declines are suspected. For example, the northern leopard frog was at one time the most commonly encountered amphibian in Twin Falls County, however surveys during 1994 and 1995 failed to detect populations at historical locations (McDonald 1996). Another survey, revealed previously undetected populations in southern Idaho (Makela 1998). Surveys from 2005-present (IDF&G) also have not identified any leopard frogs; however, the project area contains potential habitat.

Western Toads are widely distributed in Idaho and can be found in appropriate habitat throughout most of the state. Western Toads are largely terrestrial but can generally be found within a fair proximity to water. Their habitats range from mountain meadows to brushy desert flats, and they hibernate in burrows during the winter months. The Idaho National Heritage Program (IDNHP) reports several occurrences within the vicinity of the project area, and in both

2006 and 2007, IDF&G surveys reported 12 occurrences within the project area vicinity and within similar habitat types.

Common garter snakes are found statewide, typically near water but also in open meadows and evergreen forests. The IDNHP reports 6 occurrences in similar high elevation, wooded habitat, and surveys conducted by IDF&G from 2005-2009 reported two sighting just south of the project area. The project area contains suitable habitat.

Table 1: Wildlife Species by BLM Status.

Federally Listed and BLM Sensitive Animal Species that may occur in the project area.		
Common Name	Scientific Name	General Habitat
Type 1 – Threatened (T), Endangered (E) & Candidate (C) Species		
Gray Wolf	<i>Canus lupus</i>	Mountainous areas dominated by coniferous forests
Type 2 - Rangewide/ Globally Imperiled Species		
Canada lynx	<i>Lynx canadensis</i>	Montane and subalpine coniferous forests
Northern Leopard Frog	<i>Rana pipiens</i>	Permanent water sources on the plains, foothill, and in montane zones
Redband Trout	<i>Oncorhynchus mykiss gibbsi</i>	Cold headstreams, creeks, and small to large rivers and lakes (Discussed within Fisheries section above)
Type 3 - Regional / State Imperiled Species		
Northern Goshawk	<i>Accipiter gentilis</i>	Occurs in a variety of habitats, but prefers dense conifer or aspen near water for breeding. Also in low woodlands, riparian forest, and sagebrush communities.
Flammulated Owl*	<i>Otus flammeolus</i>	Pine and oak forests
Calliope Hummingbird*	<i>Stellula calliope</i>	Mountain meadows (riparian) and open forests
Lewis' Woodpecker*	<i>Melanerpes lewis</i>	Dry open woods, orchards, farmlands, and foothills
Wouldiamsons Sapsucker*	<i>Sphyrapicus thyroideus</i>	Coniferous forests
Woldow Flycatcher*	<i>Empidonax trailii</i>	Shrubby swamps, riparian areas, deciduous shrubland
Hammond's Flycatcher*	<i>Empidonax hammondii</i>	Wet montane forests; aspen groves
Olive-sided Flycatcher*	<i>Contopus borealis</i>	Montane coniferous forests
Loggerhead Shrike*	<i>Lanius ludovicianus</i>	Desert shrub, shrub steppe, and grassland communities
Sage Sparrow*	<i>Amphispiza belli</i>	Shrub steppe
Brewer's Sparrow*	<i>Spizella breweri</i>	Shrub steppe, prairies, fields, and farmyards
Western Toad -(Northern Rocky Mountain Group only)	<i>Bufo boreas</i>	Near springs, streams, meadows, and woodlands
Common Garter Snake	<i>Thamnophis sirtalis</i>	Near water- wet meadows, marshes, and prairie swales, irrigation and drainage ditches, damp woodlands, and farms
Type 5- Watch List Species		
Blue Grouse	<i>Dendragapus obscurus</i>	Coniferous and hardwood forests
Great Gray Owl	<i>Stix nebulosa</i>	Coniferous forests
Cordilleran Flycatcher*	<i>Empidonax occidentalis</i>	

Federally Listed and BLM Sensitive Animal Species that may occur in the project area.

Common Name	Scientific Name	General Habitat
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Cassin’s Finch*	<i>Carposacus cassinii</i>	
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Type 1. Federally Listed, Proposed and Candidate Species: Includes species that are listed under the Endangered Species Act, proposed or candidates for listing.

Type 2. Rangewide / Globally Imperiled Species: Includes species that are experiencing significant declines throughout their range with a high likelihood of being listed under the Endangered Species Act in the foreseeable future due to their rarity and/or significant endangerment factors.

Type 3- Regional/State Imperiled Species- These are species that are in danger of becoming extirpated from Idaho in the foreseeable future if factors contributing to their decline, or habitat degradation or loss, continue.

Type 5- Watch Species- Includes species that are not considered Idaho BLM sensitive species, but current populations or habitat information suggests that species may warrant sensitive species status in the future.

**indicates migratory species*

Migratory Landbirds

Executive Order 13186, signed January 10, 2001, lists several responsibilities of Federal agencies for the conservation of migratory birds and their habitats. A Memorandum of Understanding (MOU) between the BLM and USFWS (WO-230-2010-04) defines BLM responsibilities under the Migratory Bird Treaty Act. The MOU directs the BLM to coordinate with the Fish and Wildlife Service to develop conservation measures and monitor the effectiveness of the measures to minimize, reduce, or avoid the unintentional *take* of migratory birds to the extent practicable. Additionally, the BLM is required to evaluate the effects of project level actions and identify where take reasonably attributable to the agency’s actions may have a measurable negative effect on migratory bird populations, and focusing first on species of concern (listed in Table 1), priority habitats, and key risk factors. In situations where it is anticipated that actions would result in a measurable negative effect to migratory bird populations the BLM would implement approaches lessening such take.

In June and July, 2010, the Idaho Bird Observatory (IBO) conducted both breeding bird counts as well as target forest raptor surveys. IBO detected 759 individuals and 59 species during their surveys. Seven of the species detected are listed by the BLM, Idaho Department of Fish and Game (IDFG), and/or US Fish and Wildlife Service (USFWS) as species of concern. Specifically, the Brewer’s Sparrow is listed as BLM Type 3, USFWS species of concern, and as Species of Greatest Conservation Need (SGCN) by the state of Idaho (IDFG 2005). Additionally, while not listed by the state, northern goshawk is a BLM Type 3 species and a USFWS species of concern. Of species listed only by the BLM, Hammond’s flycatcher is a BLM Type 3 species while dusky grouse, red-naped sapsucker, green-tailed towhee, and Cassin’s finch are all listed as BLM Type 5 species.

BLM Type 3 Migratory Species- Conifer Habitat Association

The project area contains a low-elevation mixed conifer forest described by Idaho Gap Analysis (2000) to contain Douglas-fir forests, but also includes a number of other conifer species. Idaho Partners in Flight (PIF) listed 83 bird species that use this habitat as breeding habitat, of which 35 use it as a primary breeding habitat. Nine high priority species use this habitat as their primary breeding habitat.

BLM Sensitive type 3 migratory bird species that rely on conifer habitat and could potentially be present within the proposed project area include: northern goshawk, flammulated owl, Williamson's sapsucker, Lewis' Woodpecker, Hammond's flycatcher, and Olive-sided flycatcher.

Suitable nesting habitat for northern goshawks is normally characterized by relatively mature forests with moderate to high canopy closure and somewhat open understories (Woodbridge and Hargis, 2006). This is a species requiring mature forest for nesting and would utilize conifer and/or aspen forests (Carlisle and Kaltenecker, 2009). Within one mile of the project area, the USFS has documented active goshawk nests. Breeding pairs in the area have tended to 'bounce' between several nest sites all within approximately ½ mile of each other. In June of 2010, a nest on state land directly south of the project area was active with two nestlings; however, broadcast surveys throughout the project area did not detect any goshawks or their sign. IBO (2010) observed that although a few stands contained mature forest potentially suitable for nesting goshawks, much of the project area was likely unsuitable for nesting goshawks due to younger age and/or dense packing of trees.

In Idaho, flammulated owls are widely distributed throughout the montane forested portions of the state. Groves et al. (1997) considered this species abundant in certain localized habitats of Idaho. In Idaho, Groves et al. (1997) found flammulated owls occupying mid-elevation old-growth or mature stands of open ponderosa pine, Douglas fir, and stands co-dominated by these 2 species. Flammulated owls are obligate cavity nesters, using natural cavities and (more commonly) old woodpecker holes in large trees and snags.

Williamson's sapsucker breeds throughout most of central Idaho, and are found in montane coniferous forests, especially fir and lodgepole pine. During migration and in winter, the birds are also found in lowland forests. The sapsuckers nest in tree cavities and in standing snag/hollow tree. Birds would sometimes return to the same tree, but not the same cavity, year after year. Williamson's sapsucker is relatively rare in the SFO, and the IDNHP does not report any occurrences; however, the project area contains suitable habitat, particularly for breeding. IBO (2010) potentially detected one individual, but a visual sighting was not confirmed.

In Idaho, Lewis' Woodpeckers breed throughout the state (Stephens and Sturts, 1998) in ponderosa pine forest, open riparian woodland dominated by cottonwood, and logged or burned ponderosa pine forest. They may prefer ponderosa pine forests at medium to high elevations and open riparian forests at low elevations. Lewis' Woodpeckers are cavity nesters, using large snags (12 in; 30 cm dbh), and selecting trees that generally are well decayed. There are no recorded observations within the project area, but there are scattered parcels of suitable habitat, and surveys conducted by the IBO in 2009 have documented nesting pairs in very similar habitat types.

Hammond's flycatchers are typically associated with mature forests with canopy closure, usually coniferous forest but sometimes also in mature aspen stands. In 2009, IBO detected a total of five Hammond's Flycatchers during surveys on Bell Mountain (an area with similar habitat to the project area). In 2010, IBO detected 17 Hammond's Flycatchers during counts within and

directly adjacent to the project area. All were detected in areas with mature Douglas-fir forest nearby, although aspen was also present at many of the count sites where this species was detected.

Olive-sided flycatchers are normally associated with higher elevations and/or open coniferous forests. A single individual of this species was detected (by song) while walking between survey sites in the Hailey Creek drainage during 2009 surveys. During project specific surveys in 2010, no individuals were detected.

BLM Type 3 Migratory Species- Riparian Habitat Association

Idaho Partners in Flight (2000) consider riparian habitat a high priority for management for bird species based on the priority species that use riparian areas as their primary habitat, the total number of species that rely on this habitat, the naturally small amount of this habitat that occurs in Idaho and the West, losses of riparian habitat in both quantity and quality, and current and future threats. Of the 243 bird species breeding in Idaho, 113 (46%) use riparian habitat as nesting habitat. Many of the other 130 species also use riparian habitat as a source of water, as migratory corridors, or for other purposes. Of the 119 neotropical migratory landbirds, 68 (57%) use riparian habitat. Within the project area, there is diverse landbird habitat along the creeks in the area where a mix of conifer forest, riparian, and sagebrush steppe habitat types meet. It has also been shown that these *edge* habitat types support high songbird species abundance and richness (Hunt, 2007).

BLM Sensitive type 3 migratory bird species that rely on riparian habitat and could potentially be present within the proposed project area include: Calliope hummingbird and wouldow flycatcher.

The Calliope Hummingbird occurs throughout Idaho during the breeding season (Stephens and Sturts 1998), except for non-forested and extreme arid portions in the southern part of the state. The Calliope Hummingbird is associated with open coniferous forests, montane meadow-shrublands, riparian thickets of wouldow and alder, burned areas, and wooded hillsides (Hutto 1995; Baicach and Harrison 1997). It nests in riparian areas and open forests at the edge of meadows. The Calliope Hummingbird prefers forested areas with open canopies, areas near water or wet meadows, but has also been reported in open wouldow or sage meadows near coniferous forest and in moist wouldow and alder thickets (Ehrlich et al. 1988).

Wouldow Flycatchers breed in riparian habitat that has a midstory of wouldows or alders and an intact lower layer (ground to 5 or 6 ft). The shrubs should be 6-7 ft tall at a minimum. Shrub thickets interspersed with openings are used more than large continuous stands (Sanders and Flett 1988; Harris et al. 1988). Open water or saturated soils are found on most Wouldow Flycatcher territories (Harris et al. 1988; Sanders and Flett 1988). Wouldow Flycatchers nest near openings; large continuous patches would be used mostly around the edges. The creeks within and directly adjacent to the project area contain such habitat, and incidental observations along the SF of Lime Creek have been documented (IDNHP, 2009).

BLM Type 3 Migratory Species- Sagebrush steppe Habitat Association

Approximately 100 bird species can be found in sagebrush habitats (Trimble 1989). Some of these are sagebrush obligates (dependent on sagebrush habitat) or near-obligates (occurring in both sagebrush and grassland habitats). Sagebrush obligate birds include the Sage Sparrow, Brewer's Sparrow, Sage Thrasher, and Sage Grouse.

BLM Sensitive type 3 migratory bird species that rely on sagebrush steppe habitat and could potentially be present within the proposed project area include: Brewer's sparrow, sage sparrow, and loggerhead shrike.

The Brewer's sparrow is a shrubsteppe obligate species, closely associated with big sagebrush (*Artemisia spp.*; Paige and Ritter 1999). An Idaho study found Brewer's Sparrows more likely to occur in sites with high shrub cover and large patch size (Knick and Rotenberry 1995). There are patches of suitable habitat interspersed and adjacent to the project area. IBO has been surveying sagebrush steppe habitat types within the SFO since 2005, and Brewer's sparrows are widespread. During 2010 project area specific surveys, IBO detected 10 individuals. Within the project area, Brewer's Sparrows are confined to more open patches of shrubsteppe surrounding and in between areas of forest.

The Sage Sparrow is a sagebrush obligate associated with sagebrush shrublands dominated by big sagebrush with perennial bunchgrasses. On a broad scale, it prefers shrublands with tall shrubs and low grass cover, where sagebrush is clumped in a patchy landscape (Wiens et al. 1986; Peterson and Best 1985a). A landscape analysis by Knick and Rotenberry (1995) found Sage Sparrows most likely to use sites with high sagebrush cover, spatially similar patches, large patch size, low disturbance, and little fragmentation. Sage sparrows are considered relatively rare in Idaho; IDNHP only reports 5 observations within the SFO area, and the IBO reported eight individuals in 2008 and 13 in 2009 in surveys conducted in Laidlaw Park, and no individuals were detected in project area surveys in 2010.

The Loggerhead Shrike is found in open country wherever there is low vegetation for foraging and scattered shrubs and trees for nesting and roosting, often around ecotones between open cover types. Hunting perches are an important component of the habitat. The Loggerhead Shrike occurs in sagebrush shrublands, arid scrub, prairies, mountain meadows, desert shrublands, juniper and pinyon-juniper, mountain mahogany, riparian, and shelterbelts (Yosef 1996). Loggerheads are one of 3 shrub-steppe neotropical migrants declining in Idaho (Groves et al. 1997). The IDNHP reports indicate that the species is relatively common across the field office area within the appropriate habitat type. The IBO (2009) found 7 individuals in breeding bird point counts in a shrub steppe area north of Shoshone, but no sightings were reported in the project area surveys in 2010.

BLM Type 5 (Watch) Migratory Species- Mixed Conifer Habitat Association

The BLM state director lists several bird species as type 5 or watch species that include species whose current population or habitat information suggest that the species may warrant sensitive species status in the future. All of the species BLM lists as watch species are listed as species of greatest conservation need by the IDF&G.

BLM type 5 migratory bird species that rely on coniferous habitat and could potentially be present within the proposed project area include: Cordilleran flycatcher and Cassin's finch.

Cordilleran flycatchers are found in wooded areas ranging from riparian woodlands through aspens into coniferous forest zones. The species range would extend into shrub steppe during nonbreeding season, and they are also found in shady canyon bottoms. In winter months, the species is found primarily in mixed woodlands and forests. Cordilleran flycatchers are particularly attracted to aspen stands during the breeding season, and the project area has multiple patches of aspen interspersed with the conifer stands proposed for thinning.

Cassin's finches are found in open, montane coniferous forests at higher elevations. During migration and in winter, also found in deciduous woodlands, second growth, scrub, brushy areas, partly-open situations with scattered trees, and occasionally in suburbs near mountains. The IDNHP records indicate the finches are rare within the SFO area, but the IBO documented 9 individuals in one breeding season while conducting inventories within the Wood River Valley in 2009. Breeding and migratory habitat types are present within the project area, and in 2010 IBO detected 40 Cassin's finches which was the 6th most common species detected during the counts.

BLM Type 5 (Watch) Resident Species- Mixed Conifer Habitat Association

BLM type 5 permanent resident bird species that rely on coniferous habitat and could potentially be present within the proposed project area include: blue grouse and great gray owl.

Blue grouse are found primarily in coniferous forests (especially fir), mostly in open situations with mixture of deciduous trees and shrubs. They spend winters in open coniferous forests of various categories of age and tree density. Blue grouse are common within the Sawtooth National Forest and thus the project area (D. Skinner, pers. comm, 2010). IBO counted five individuals in the area in 2010.

Great gray owls are found in coniferous and hardwood forests, especially pine, spruce, paper birch, and poplar; also found in second growth, especially near water. In Idaho, the owls are found at lower elevations and in agricultural areas during winter, and in conifer forests in spring and summer, most commonly near extensive meadows. Great gray owls nest in broken-top snags or use abandoned stick nest of other species, especially Goshawks. Occurrences with the SFO area are rare with IDNHP reporting only four individuals. Suitable habitat, particularly for breeding birds, exists within the project area.

Big Game

The IDF&G has identified important seasonal and year-round mule deer, elk, and pronghorn habitat throughout the state. Big game (deer and elk) utilize the project area extensively and approximately 1/3 of the area has been identified as crucial elk winter habitat. This area provides habitat for deer, elk, and bear. All of these species may be found during the spring/summer/fall seasons but are generally expected to migrate to lower elevations during periods of high snow or when forage is not available during the winter. Deer from this area migrate and move to the south slopes of the Bennett Hills and elk may do likewise but are less susceptible to snow depths. Additionally, the area is important calving and fawning habitat for both mule deer and elk.

No Action- Wildlife

Direct and Indirect

In the short term, the baseline conditions that currently exist for wildlife as described above would remain the same if no action is taken by the BLM. The habitat type and condition would remain the same and any impacts currently occurring would continue. For example, the roads and trails would continue to be used for recreational purposes as well as hunting which causes some disturbance to wildlife. In the long term, as more trees become diseased and more densely stocked, there is potential for severe wildfires would increase. These wildfires could reduce suitable habitat for some species. Alternately, there are other species of wildlife that would ultimately benefit from the change wildfire would create in the area.

Proposed Action- Wildlife

Direct and Indirect

Threatened, Endangered, and BLM Sensitive Species

If the project proceeds as described under the Proposed Action, approximately 300 acres of coniferous woodland, aspen, and riparian habitat types would be affected, and both improvements to existing roads and construction of new roads would occur. In the short term, during thinning and harvest activities, the area would be disturbed and presence of humans and equipment and the associated level of use would increase.

Gray wolves are currently under the protection of the ESA. During the project activities, wolves would likely avoid the area. However, after the project is completed and the habitat has improved by removing infected trees and opening the stands to healthy regeneration, the area could provide more prey and become more suitable for the species.

Canada lynx are impacted by habitat degradation, fragmentation, and loss. Increased road density causes habitat fragmentation and also leads to increased human disturbance (IDF&G, 2005). The proposed action would increase the number of roads slightly, and improve others, increasing access. The increase in human presence during harvest activity could cause Canada lynx to avoid the area. However, timber management practices that increase habitat complexity by creating a variety of seral stages, may also eventually improve habitat.

There is potential habitat for northern leopard frog, western toad, and common garter snake, but all three species are also closely associated with open water. Thus, the only potential impact from the proposed action would occur where/ when stream crossings occur.

For both the migratory and resident bird species that nest in the area, the retention of large trees and snags is critical. The project design features identify that an average of 2 to 6 trees per acre would be left within the treated areas. These trees would be of different size classes and are intended to resemble the historical snag distribution (Agee, 2002). Providing these snags will ensure that the bird species that use these habitats have areas to nest.

In the long term, after the harvest and thinning occurs and the stands accomplish a more natural spacing, populations of birds of conservation concern are expected to show a slight to moderate

increase. Opening the understory to increase light to the forest floor would allow for an increased shrub and forb component, potentially increasing species utilized as food by granivorous birds (seed and berry eaters), as well as creating a greater mix of understory plant species utilized by insects, which are preyed upon by insectivorous bird species. Retaining the larger trees, as well as dead and dying trees with cavities present, would retain the important nesting substrates used by many of the migratory bird species.

Migratory Landbirds- Conifer Habitat Association

The eight BLM sensitive type 3 and type 5 migratory bird species that utilize coniferous habitat (northern goshawk, flammulated owls, Williamson's sapsucker, Lewis' woodpecker, Hamond's flycatcher, olive-sided flycatcher, cordilleran flycatcher, and Cassin's finch) would be attempting to nest within the area between approximately May 15 and July 15, depending on local weather conditions. As stated within the project design features, any operations occurring during nesting periods that could potentially impact migratory bird species of concern would require prior approval by the authorized officer on an annual basis. Additionally, large trees and snags which are most typically used for nesting substrate are also identified within the project design features to be retained therefore maintaining habitat for these species.

Openings in the canopy and understory that would occur from harvest and thinning would benefit northern goshawk and flammulated owls, species that prefer more open flyways among larger diameter trees and snags. Flammulated owls suffer from loss of suitably large snags and snag density for nesting (PIF, 2000); thus, proper retention of snags across the project area would benefit the species.

Williamson's sapsucker and Lewis' woodpecker may be temporarily disturbed by human equipment presence during the active phase of the project, but would likely not be directly impacted by the removal of Douglas fir trees during the nesting period because they prefer to nest in aspen and ponderosa pine. In the long term, the project aims to open stands for more diversity including ponderosa pine and aspen which are preferred for nesting; thus, the species would eventually benefit from this action.

Hammond's flycatcher population numbers are positively correlated with old growth stands greater than 30 acres in size (Sedgewick, 1994). If the proposed commercial harvest could allow for healthier, larger trees, the species could eventually benefit.

Olive-sided flycatchers in Douglas-fir forests of west-central Idaho increased in abundance following commercial removal of all marketable trees >25 cm diameter at breast height (Altman and Sallabanks, 2000). Studies have shown that if snags of several species are retained for nesting, singing perches, and foraging, the species numbers increased. Given the design of the treatments, once the direct disturbance of harvest operations are removed, the birds could see more suitable habitat and increases in population size.

Resident Landbird Species- Conifer Habitat Association

There are two permanent resident type 5 BLM sensitive species that occur within the mixed conifer habitat (blue grouse and great-gray owl) that would also be nesting in the area between approximately May 15 and July 15. Temporary displacement of species that are permanent residents of the project area could occur as a result of the project activities. However, completion of

the project would result in the removal of both infected and smaller diameter trees, leaving larger nesting trees and allowing for more natural regeneration of forest stands.

Migratory Landbirds- Riparian and Shrub Steppe Habitat Association

The BLM sensitive type 3 and 5 species that utilize the riparian and shrub steppe habitat within the project area (Calliope hummingbird, wouldow flycatcher, Brewer's sparrow, sage sparrow, and loggerhead shrike) would also be in the nesting phase of their life cycle between approximately May 15 and July 15. In general, the species would experience indirect impacts due to disturbance created by the increase in human and equipment activity from the harvest and thinning operation since these species prefer habitat that is interspersed and directly adjacent to the conifer stands that would be harvested and thinned. However, these species would forage and travel within the conifer stands, experiencing some direct impacts during the harvest. In the long term, the project aims to increase the health and diversity of the stands which could improve forage habitat for those species that nest in the riparian and shrub steppe areas close by.

Big Game

The time period between approximately November 14 and April 30 can be a critical portion of the life cycle for both mule deer and elk. There is potential for there to be some overlap during late fall between big game wintering animals and thinning operations. The proximity and level of disturbance could negatively impact the big game species; however, operations would be unable to continue during the most stressful period of winter. One of the long term results of the project would aid in reaching the IDFG management action to improve aspen habitat in winter, summer, and transitional habitat.

Cumulative Impacts

Cumulative impacts are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such actions. The geographic scope of the proposed thinning project is approximately 300 acres which includes the federal, private and state lands.

The bounds for the cumulative impacts to wildlife, including threatened, endangered and BLM sensitive species, includes the project boundary as well as a 4 mile buffer based on wildlife's ability to move through these areas throughout the year in order to acquire all of their life cycle and dietary needs.

The BLM SFO is currently assessing travel needs within the project area. The official designation of roads and trails would eliminate the increase in route densities, off-road travel, and the associated increase in access and disturbance.

The USFS has recently completed the summer portion of a travel management plan for the Fairfield Ranger district. These lands are directly adjacent to the north of the project area, and trails that cross BLM are routinely used to access FS trails. The designation of the forest trails would likely benefit wildlife by eliminating off-road travel and educating the public regarding designations and motorized versus non-motorized travel.

The USFS has applied to the BLM for a ROW to access trails on FS lands. If granted the ROW would formalize the current use of trails that cross BLM, and would allow for less redundancy in

routes. The project area falls within hunting unit 44, and the IDF&G allows for various hunting opportunities of both big game and game birds. These activities occur on an annual basis and inevitably put pressure on those wildlife species that are pursued.

Both the BLM and the USFS permit grazing by both cattle and sheep in and around the project area. This continued activity can add impacts to wildlife by directly competing for forage; however, as project objectives are achieved the forest understory will provide an increase amount of forbs, grasses and shrubs that wildlife can utilize.

The first three actions described in combination with the proposed action could cumulatively have the potential to benefit wildlife in the long term. The project's objectives are to eliminate diseased trees, thin overcrowded stands, and allow for a more open and diverse composition. As roads and trails are designated, the public is more informed, route redundancy is eliminated and density is decreased, pressure on wildlife caused by disturbance would be reduced.

Alternative 1- Wildlife (No temporary road construction)

Direct and Indirect

The impacts for wildlife from Alternative 1 would be similar to those described under the proposed action with a slight reduction in the amount of habitat that would be lost to the road construction. Less linear features on the ground would also decrease disturbance on wildlife and reduce habitat fragmentation and route density.

Alternative 2 – Wildlife (Additional aspen treatments)

Direct and Indirect

The impacts for wildlife from Alternative 2 would be similar to those described under the proposed action with the added benefit of improving the quality of the aspen stands for those species that utilize them (ie. Lewis's Woodpecker).

Alternative 3 – Wildlife (Reroute Access to FS Trail #7058)

Direct and Indirect

The impacts for wildlife from Alternative 3 would be similar to those described under the proposed action with the added benefit of reducing route redundancy across BLM-managed public lands. There would be some loss of habitat from the creation of a new trail; however, the subsequent closure of the redundant routes would include more miles than those being created.

RECREATIONAL USES

The proposed action falls within an Extensive Recreation Management Area (ERMA). Within ERMA's BLM recreation management actions are limited to only those of a custodial nature allowing for recreational activities to take place while reacting to visitor health and safety, use and user conflicts and resource protection. Activities that occur or may occur within the project area primarily include Off Highway Vehicle (OHV) use and hunting.

OHV use occurs throughout the area on private, state and public lands. BLM-managed public lands within the project area are designated as “open” to OHV use, meaning OHVs can travel cross-country. The main trails, primarily single track, that go through the project area can be seen in Figure 3. The SFLC trail (FS trail # 7057) enters BLM lands at the southwestern portion of the project area and runs parallel to the SFLC and connects to the Bremner trail (FS trail # 7055) going north of the SFLC. The trail also turns south, crosses the SFLC, and makes use of a combination of existing roadbeds from past logging operations and user created routes to move through the project area. This southbound trail continues across Ear Creek and connects to the main road at an informal trailhead. At this trailhead, a user created route crosses Ear Creek approximately 700 feet upstream from the other trail crossing and is used to access FS trail # 7058 to the north. The majority of use on these trails is single track by motorcycles or bicycles, but there is no current designation on BLM lands that limits use by other OHV.

Big game hunting is another major recreational use of the project area. Hunting is managed by the Idaho Fish and Game and this area is within Big Game unit 44 where generally controlled hunts for deer and elk occur from between mid-September and November. During this period, hunters may use the area to pursue big game, but generally the majority of hunters stay further south as topography and roads allow for easier access.

No Action- Recreational Uses

Direct and Indirect Impacts

Under the No Action Alternative there would not be a change in the availability of the area to recreation uses. The area would be open to dispersed camping, hunting, fishing, OHV use, and many other forms of recreation. However, it is anticipated that the use of the area for recreation would continue to focus around the current uses described above.

Cumulative Impacts

As discussed previously, the Shoshone Field Office will be conducting a travel management plan for all BLM-managed public land north of Hwy 20. The plan would address OHV designations such as open, limited to designated roads and trails, or closed. The FS is currently considering relocating the informal trailhead referenced above to a site located south of the project area on state lands. In addition, the FS has an authorization to control several of the roads and trails in the area issued pursuant to 44 LD 513 (Vol. 44 of Land Decisions Page 513; January 13, 1916). However, there are several trails in the area that provide connectivity to designated FS roads and trails that are not included within the 44 LD 513 authorization. Subsequently, the FS has submitted an application to the BLM for a ROW issued under the Federal Land Policy and Management Act (FLPMA) for the use and maintenance of those trails. The issuance of this authorization would allow the Forest Service the ability to comprehensively manage trail opportunities within this area. These actions in combination with the no action would not change recreation uses dramatically, but would allow active management of roads and trails.

Proposed Action- Recreational Uses

Direct and Indirect Impacts

The Proposed Action would result in the temporary reduction in recreation opportunities within the project area, but would not change the recreational uses beyond the implementation of the project. When and where active felling, yarding/skidding, and hauling are occurring the treatment areas would have limited access for recreational uses. This would be in order to prevent potential hazards. During late spring and summer, this would mostly affect people using the roads and trails that pass through BLM-managed public land to access the FS trails #7058 and #7055 and in the fall this would also affect hunters pursuing big game.

Trail users that wish to access FS trail #7055 would be directed to access available through IDL ownership south of the project area. From there they would be able to access the SFLC trail and travel north to trail #7055. If users are willing to use this route then there won't be any periods within the normal season that trail #7055 is not accessible. However, users that wish to use trail #7058 may experience periods when they would not be able to access this trail. The trail may be closed while work is being completed around the trail system or when skidding is occurring using this same route. Following the Project Design Criteria the crews implementing the work would be responsible for determining when it is necessary to temporarily close the trail and under normal circumstance be able to coordinate safe passage through the work area at least every 2 hours during weekends and holidays.

In addition to the temporary changes in OHV opportunities access for hunting would also be restricted to areas and times where treatment operations are not occurring. Also, big game may temporarily move away from the project area when operations are occurring and may require hunters to pursue this type of hunting outside the project area. However, even though this area may not provide hunting opportunities during project operations there are many areas adjacent to the project area that are open to hunting and provide similar opportunities.

Indirectly, the proposed action would change the amount of shrubs and other understory vegetation within the project area. This would provide more hiding cover and forage within the project area and when the treatment operations have concluded hunting in the project area would provide different challenges to hunters. Additionally, as the route north of Ear Creek would be limited to single track travel, hunters that currently use this route would experience a change in access post treatment operations.

Cumulative Impacts

This alternative in conjunction with the future BLM travel planning, the current FS Travel Plan, the relocation of the FS informal trailhead and FS ROW application would influence how areas within the project are accessed. This alternative would not identify what and where specific types of travel may occur, but it would in effect reduce the type of vehicles that would be physically able to travel along routes identified north of Ear Creek as shown in figure 3. The BLM travel plan would address future travel designations throughout the project area and this could possibly change motorized and non-motorized access throughout the area. The FS travel plan has limited travel north of the project area to designated trails and only allow for single-track use. This type of travel preference is also reflected within the FS's ROW application for uses requested across BLM-managed public lands.

Alternative 1- Recreational Uses (No temporary road construction)

Direct and Indirect Impacts

The majority of impacts to recreation concern access to FS trails and to areas within the project area. As access restrictions through and into the project area would be the same for this alternative as it is for the Proposed Action the impacts would be relatively the same.

Cumulative Impacts

These impacts would also be the same as the Proposed Action.

Alternative 2 – Recreational Uses (Additional aspen treatments)

Direct and Indirect Impacts

The small scattered aspen stands that are targeted for treatment under this alternative are generally not within a close proximity to trails or other access routes and therefore would not result in any limits in the use of these trails/routes. Furthermore, unless someone is walking through one of these aspen stands these treatments would be unnoticed by recreationists.

Cumulative Impacts

Minimal conflicts with recreation would result because of this alternative and therefore the treatments would not add to the impacts that were discussed in the No Action or the Proposed Action Alternatives.

Alternative 3 –Recreational Uses (Reroute access to FS Trail #7058)

Direct and Indirect Impacts

The reroute of these trails would result in the same access to FS trails and ability for the public to use the area. This would require trail users to adjust to new routes and may cause confusion. In order to limit confusion, signs would be posted indicating the new trail route. Maps would also be posted at the trailhead.

Cumulative Impacts

Again Cumulative impacts would be the same as what was described in the Proposed Action. Particularly, impacts associated with the FS application for a ROW and future BLM travel planning as this would consider a ROW across the newly constructed route rather than the existing route.

SOIL RESOURCES

The soils within the project area are primarily composed of moderately coarse textured decomposed granite. The project area was not included in any completed soil survey, but mostly resembles the Earcree/Lockman soil complex that is described within the Soil Survey of Blaine County Area, Idaho. These soils are found on mountainsides and foothills on north to northeast slopes and support vegetation ranging from sagebrush steppe to Douglas-fir communities. The soils are deep and well drained with moderately rapid permeability, creating a low available water capacity and a severe erosion potential.

Additionally, two soil plots dug within the project area identified the characteristics of the soils within the footprint of treatments to have the following characteristics:

- Parent Material – Granitic Rock, Pre-tertiary
- Depth – 40+ inches
- Fertility – moderately low
- Texture – Gravelly/Sandy/Loam (texture Break down – gravel 30%, Sand 55%, Silt 10% and, Clay 5% percent)
- Effective Root depth – 40-60 inches
- Soil pH – slightly acidic
- Rock – Coarse fragments (1/2 to 4 inches diameter) in profile, 15 to 20 percent
- Drainage – Well Drained

No Action- Soil Resources

Direct and Indirect Impacts

As there is no action associated with this alternative there wouldn't be any direct effects, but current impacts that are occurring would continue and not implementing an action would also have indirect effects. Currently, soil displacement/movement occurs during severe rain events along existing roadbeds and trails that are not well drained and are un-vegetated. No data exists on how often this occurs, but areas where the soil has less rock, is un-vegetated, and is continually disturbed do have rills and ruts present. Also, the no action would indirectly allow large amounts of large woody debris to build up under forest stands and in the event of a wildfire would have high potential to remove stabilizing vegetation, create hydrophobic soils and influence the availability of soil nutrients within portions of the project area.

Cumulative Impacts

Activities that contribute additional soil impacts within the area come primarily as a result of use from livestock and recreation; however, occasional severe weather and fire events can contribute to soil impacts too. Also, past activities such as building roadways, prescribed burning, and harvesting timber have contributed to past soil erosion and areas of soil compaction.

The past actions have provided a route where most of the current travel through the area is concentrated. Approximately ½ of the constructed roadway developed for a timber sale in the mid-1970s is still being used, mostly for recreation. These routes do receive continual disturbance but are maintaining conditions that are not contributing to increases in erosion except for where the trails cross streams and during severe weather. Where these routes currently cross Ear Creek and an unnamed tributary to the SFLC soil is loosened and then washed downstream; these impacts would continue under the No Action alternative. The other ½ of the constructed roadway is mostly re-vegetated and is not being disturbed by continual use or contributing to increases in erosion, even during severe weather events. The other trails, user created and not associated with past timber sale, through the area have contributed to areas of compaction, but these trails, other than in stream crossing areas, are only contributing to an increase in erosion during severe rain events.

Proposed Action- Soil Resources

Direct and Indirect Impacts

The Proposed Action would increase areas that are exposed to erosion and compaction during treatment operations and would last until disturbed areas are re-vegetated as outlined in the project design features. The increase in exposure to erosion would result from road construction, road improvements, skidding/yarding operations, landing or roadside processing operations, and burning treatments. The total area estimated to incur compaction and potential soil loss as a direct result of harvesting operations is estimated to be 11.5 acres. This includes 0.7 mile of new road construction, two miles of road improvement, designated landing areas, roadside landings, and skidding routes. Disturbance would occur during operations as machinery and/or vehicles move over these areas causing compaction which would reduce the soils capability to drain water leading to surface flow and possibly increasing erosion. Additionally, soils would also be exposed to erosion as a result of prescribed fire. Under the Proposed Action, as discussed within the Noxious Weeds section, could be as much as 225 acres. Prescribed fire would temporarily remove vegetation on the surface of the soil and possibly some below the soil surface. Removal of the vegetation would expose the soil surface to rain, wind, and other weather that would result in higher erosion potentials. Although these areas would have an increased exposure to soil erosion, the proposed action also identifies actions that would reduce this exposure after operations are completed. After treatment operations are completed all roadways, skidding routes, and landing areas would be seeded and properly drained. It is expected that within a growing season that vegetation would be reestablished in areas that were exposed to broadcast prescribed fire and 3 years for areas that are pile burned or disturbed by machinery.

Also, as a result of implementing the proposed action areas south of Ear Creek would incur less traffic than what is currently occurring. This is because the roadway would be blocked to vehicle use other than single-track motorcycles or bicycles after operations are completed and this would result in less continuous exposure to erosion..

Cumulative Impacts

As discussed in the no action alternative there are currently uses that contribute to increasing erosion potential within the project area. Activities and uses that occur outside of disturbed areas considered under the proposed action would add to the amount of erosion that would occur. The areas uses that are most likely to contribute to erosion that are outside of the area disturbed by the proposed action are livestock bedding areas, particularly those lower in drainage bottoms, and the trail areas on the north side of the SFLC. The impacts associated with these actions would continue to occur as they currently do and unlike the area disturbed under the proposed action, these areas would not be re-vegetated or incur maintenance that would provide for better drainage and ultimately lessen erosion potential.

Alternative 1- Soil Resources (No temporary road construction)

Direct and Indirect Impacts

The direct impacts associated with this alternative are similar to those discussed in the Proposed Action, but the indirect impacts associated with no action alternative would also occur with this

action. The direct impacts created by road improvements and ground harvest systems would occur under this alternative; these impacts are estimated to occur on approximately 8 acres. Additionally, the same impacts from prescribed burning treatment created slash as discussed under the Proposed Action would impact approximately 110 acres. Areas that are not treated under this alternative do not currently incur erosion from disturbances, but as discussed in the no action alternative the area would continue to be exposed to higher levels of fire severity if a wildfire did occur.

Cumulative Impacts

Cumulative effects would be similar to what is discussed under the proposed action, with the understanding that the direct and indirect effects are slightly different.

Alternative 2 – Soil Resources (Additional aspen treatments)

Direct and Indirect Impacts

As this alternative does not include the use of machinery for cutting or removing trees, there would be very little disturbance to soils within the areas where treatments are accomplished.

Cumulative Impacts

The effects that would occur concerning soils are identified in the above sections. No additional impacts would result because of treatments identified within this alternative.

Alternative 3 – Soil Resources (Reroute access to FS Trail #7058)

Direct and Indirect Impacts

Impacts to soils that currently occur as a result of the stream crossings would be reduced once that section is restored as proposed. The main reduction of soil erosion would come from reducing the two stream crossing areas, one across Ear Creek and one across an unnamed tributary to Ear Creek. Additionally, the constructed trail would not have as much slope and would include drainage dips and therefore would result in less erosion than the current trail receives.

Cumulative Impacts

If this alternative is selected along with another alternative then the cumulative impacts would be as discussed under that alternative.

LIVESTOCK GRAZING

The project area lies fully within the Ear Creek Allotment; this allotment contains 3,908 acres of public land, 14 acres private and 180 acres state land. The elevation in the allotment varies from 5,200 feet to 6,600 feet. The climate of the area is characterized by cold, snowy winters and short, warm summers.

The Ear Creek Allotment was adjudicated in 1965 under permittee Wm. C. McCarter. The allotment has been used by sheep and cattle since the turn of the century. The Roanhide and Ear Creek Allotments were managed by the Sawtooth National Forest Fairfield Ranger District under

the Bremner/Middle Fork Allotment C&H Management Plan. In 2004 Shoshone BLM Field Office cancelled the USFS Bremner/Middle Fork Allotment C&H Management Plan MOU with the Sawtooth National Forest Fairfield Ranger District. The Shoshone Field Office has managed the Roanhide and Ear Creek Allotments for the last 6 years. Total AUMs authorized under this permit would not exceed 388 AUMs (2500 Sheep would use 16 AUMs a day). This would mean 24 days maximum of use in the Ear Creek Allotment if the full livestock number is utilized.

Table 2 Current Authorization

Current Permittee	Allotment	Livestock #	Season of Use Begin --- End	%PL	Active AUMs	Suspended AUMs	Total AUMs
Sawtooth Sheep Co.	Ear Creek	Sheep 2,500	06/01-10/15	100	388	-0-	388

The grazing management within the Ear Creek allotment is designed to help the allotments continue to meet all applicable Rangeland Health Standards.

Under the Management Guidelines utilization of native grasses (i.e., bluebunch wheatgrass, Thurbers needlegrass and Idaho fescue) are limited to 40% of current growth in key areas, i.e., up to one half mile from water features such as unnamed springs and streams within the allotment.

Grazing within riparian areas are managed to maintain proper functioning condition. Management actions include leaving adequate perennial herbaceous and woody vegetation by the end of the growing season to protect riparian areas from erosion, maintain streambank integrity, provide for sediment catchment and allow for diversity in vegetation structure and age class. Livestock are not allowed to graze riparian areas over 40% of current annual growth.

No Action- Livestock Grazing

Direct and Indirect Impacts

Under the No Action Alternative livestock operations would continue to use the area as identified within the Sun Valley MFP and the current grazing permit.

Cumulative Impacts

Impacts to livestock operations occur when and where grazing is limited/restricted or when coordination has to occur to prevent operations from impacting other uses. Under the No Action Alternative there is no proposal that would limit livestock operations; however, there is a potential for wildfires to occur that would temporarily limit/restrict livestock operations within this allotment, although it has not happened in the past.

Proposed Action- Livestock Grazing

Direct and Indirect Impacts

Livestock operations within the allotment would be limited within portions of the allotment during treatment operations and for approximately 3 years post treatment. During active treatment operations the livestock operator would be required to coordinate grazing within the project area with harvesting operators in order to reduce conflict of uses. The total area that

would be limited to use would be approximately 400 acres or 9.7% of the allotment, most of which is not conducive to grazing. Additionally, while areas that were disturbed during treatment operations are recovering, i.e. establishing vegetation, the livestock operator would not be allowed to use this area. These limits may cause the livestock operator to take longer routes through the allotment then would normally and may limit the use of areas normally used for bedding and water.

Cumulative Impacts

Cumulative impacts to livestock grazing would occur if other allotments and or private lands that the permittee uses become restricted. This would only occur if a wildfire or another unplanned event changed current conditions within these areas. If a wildfire did occur and the permittee lost the ability to graze within other allotments this would additionally limit the amount of livestock the permittee could operate at without additional costs of feeding.

Alternative 1- Livestock Grazing (No temporary road construction)

Direct and Indirect Impacts

Alternative 1 would have the same impacts on livestock grazing as the proposed action.

Cumulative Impacts

Cumulative effects would also be the same as the proposed action.

Alternative 2 – Livestock Grazing (Additional aspen treatments)

Direct and Indirect Impacts

The additional aspen treatments alone would not require any limits to be put on livestock grazing, but these treatments may impact the ability for sheep to move through aspen stands. The area treated under this alternative would be relatively small in respect to the allotment and would only result in an impact if the sheep trail or graze within those aspen stands; which casual observations indicate very little grazing occurs within the targeted areas.

Cumulative Impacts

This alternative would add minor inconveniences, if any, to the grazing operator.

Alternative 3 – Livestock Grazing (Reroute access to FS Trail #7058)

Direct and Indirect Impacts

The impacts of this alternative would be the same as the impacts that are discussed within the proposed action.

Cumulative Impacts

See the cumulative impacts of the proposed action.

LANDS/ACCESS

Access to the area would primarily utilize existing roads within the Camas County and Sawtooth National Forest transportation systems across private, BLM-managed public lands, and IDL endowment lands. The FS has a right-of-way (ROW) across BLM lands for both a road and a trail within the proposed project area; these current ROWs are identified on the South Fork of Lime Creek Trail that is located just north of the project area and a road that is located in the south east corner of the project area. Notification of how the project would impact the ROWs are required to be sent to the FS per BLM ROW regulations. Additionally, for the safety of the public it's recommended that the area be posted prior to and during vegetation treatments occurring and state how long they would be occurring for. In addition to the current ROWs the FS has also submitted an application to acquire new ROWs through the project area. However, the details of this application are currently being reviewed.

No Action- Lands/Access

Direct and Indirect Impacts

The FS would continue to be able to use the routes as indicated within the ROW grant and other access within the area may continue as indicated within the Sun Valley MFP.

Cumulative Impacts

Travel management planning would continue to refine and identify when, where, and what types of travel may occur within the area. This may further restrict travel in the future or maintain the current level of restrictions. Additionally, ROW applications, if approved, would identify areas that would maintain a connection to FS trails into the future as well as allow the FS to maintain those trail connections.

Proposed Action- Lands/Access

Direct and Indirect Impacts

Impacts pertaining to public access to the area are discussed within impacts to recreation. Generally, these impacts would temporarily limit access within and through the area because of concerns for public safety. However, operations that are proposed under the Proposed Action Alternative would not limit the uses of the current ROWs of the FS, but these actions may require users of these ROWs to access them via areas managed by the Idaho Department of Lands.

Cumulative Impacts

In addition to the impacts of the proposed action future impacts from proposed travel planning and FS ROW applications would also change how the project area is used to access FS trails. However, the impacts of the Proposed Action Alternative would be temporary, but the impacts that result from travel planning and/or the FS ROW application would be lasting. As no decisions or specific details are available of for the FS ROWs or the travel planning specific impacts cannot be discussed in detail, but the outcome of the proposed action is expected to complement future decision regarding the travel planning and FS ROW proposals.

Alternative 1- Lands/Access (No temporary road construction)

Direct and Indirect Impacts

The impacts of Alternative 1 would not be any different from the proposed action.

Cumulative Impacts

The same impacts as discussed within the Proposed Action and the No Action Alternative would also apply within this alternative.

Alternative 2 – Lands/Access (Additional aspen treatments)

Direct and Indirect Impacts

The additional aspen treatments proposed within Alternative 2 would not result in loss or limits to access of current ROWs or proposed future ROWs.

Cumulative Impacts

As there would be no direct impacts there would also be no cumulative impacts. However, impacts from other approved alternatives and/or past actions would still occur.

Alternative 3 – Lands/Access (Reroute access to FS Trail #7058)

Direct and Indirect Impacts

This would change how the public accesses FS Trail # 7058 as identified within Figure 6. However, impacts to public access would still be low as only the location of a short trail segment would be changed and it would not result in any use limits greater than is occurring presently.

Cumulative Impacts

The relocation of this route in addition to the proposed travel plan and proposed FS ROW would establish travel routes along the constructed roadway and may limit specific types of travel where current routes exist.

FIRE AND FUELS MANAGEMENT

Historically, the vegetation within the project area was maintained so that it was mature-open forest with healthy understory communities and low amounts of dead and down woody debris (Hann et al., 2008). Wildfires occurred frequently and were of mixed severity, but where intensities were low larger trees survived and grasses, forbs and shrubs regenerated from existing roots or viable seed banks (Graham et al., 2004). Wildfire frequencies decreased with active suppression and as land uses changed in the late 1800's and early 1900's when settlers became established within the area. Currently, fire management direction is to still to actively suppress wildfires and only a few wildfires have been recorded within the last 70 years. This has resulted in less than one acre burned, total. However, as forest management actions were completed in the 1970's prescribed fires were used on approximately 22 acres within the project area, approximately 20 acres on nearby FS-managed land, and approximately 30 acres on nearby Idaho Department of Lands property to remove slash and as site preparation in order to establish new regeneration.

The fuel characteristics within the treatment area are typical of current conditions throughout the region and are composed of uniform areas of mature dense forest, with small areas of early to mid seral forest structures, partially-open forest areas with high dwarf mistletoe infestations, and sagebrush steppe communities on drier aspects. Inventory data from the 2009 FORVIS and Fuels inventory identified dense areas typical of fuel model TL 3 as described by Scott and Burgan (2005). These dense forests with adequate moisture would exhibit low fire spread rates and low flame-lengths. However, when periods of drought or severe weather events occur the same dense forest stands are prone to crown fires that result in high severity fires (Scott and Burgan, 2005). The early to mid-forest structures can be characterized by fuel model TU5/SH3. The rate of spread and flame-lengths of this fuel model are characterized as moderate, but are substantially higher than the predicted spread and flame lengths for the TL 3 fuel model. The reason for the increase in fire behavior is the increase in the amount of herbaceous fuel loading, the increase in the fuel bed depth, and the increase in the surface to volume ratio (Scott and Burgan, 2005). However, these open areas would be less likely to sustain an active crown fire because of the lack of a continuous dense crown structure (Graham et al., 1999; Peterson et al., 2005). The partially-open forest areas with high dwarf mistletoe infestations also can be characterized by fuel models TU5 and SH3, but would exhibit higher fire intensities than the early and mid seral structures. This is because of the increased dead and down fuels and because the dwarf mistletoe acts as ladder fuels increasing torching and spotting (Scott and Burgan, 2005). Fuel models for sagebrush steppe vegetation were not identified in this inventory, but fire behavior would be similar to the SH3 model and is characterized by fuel model SH2. This fuel model has similar fuel loadings as SH3 but it is influenced highly by season, time of day, current weather, and is primarily on south aspects.

No Action- Fire Management

Direct and Indirect Impacts

The No Action Alternative would result in maintaining the current fuel and vegetation characteristics on the landscape for the immediate future, but eventually would result in increases of standing dead trees and higher amounts of dead and down fuel across the entire area (Hessburg et al., 2008; Hadfield et al., 2000). These results would occur as more trees suffer mortality as a result of competition and dwarf mistletoe infections (Tinnin et al., 1982) This amounts to greater resources and time needed to suppress a wildfire if one would occur. Additionally, it would also result in the greater loss of forest cover leading to longer periods before the re-establishment of forest vegetation within the area.

Cumulative Impacts

Continual fire suppression would also contribute to the No Action Alternative in unintentionally increasing fuel loadings and thus impacting fire behavior and fire effects. The overall area has potential for fire starts through the late summer from lightning and human causes and although most of these are suppressed prior to the fires becoming large, the potential for a large fire remains.

Proposed Action- Fire Management

Direct and Indirect

The Proposed Action would result in changes to the vegetation and fuel characteristics of the area and therefore would impact fire behavior and subsequent fire effects. The changes that would occur depend on the type of treatment and on the level at which slash is removed. The Proposed Action has identified that the preferred method of harvesting is to whole tree yard or skid trees to a landing so that the majority of slash can be removed via trucks or by piling and burning the slash on already disturbed areas. However, the Proposed Action does optionally allow trees to be bucked and delimbed at the stump where whole tree harvesting is not feasible. This would lead to slash remaining within the treated units. The areas that have slash left within the units would accumulate surface fuels and these fuels would remain until they are removed via broadcast or pile burning. As fuel accumulations within the units have a greater potential to impact the areas fuel characteristics, fire behavior, and fire effects the impacts within this section are discussed as if all slash would be left within the harvest units.

The fuel and vegetation structure of Units 12a, 11, 10, 6b, and 4 fall within the partially-open to dense forest cover (TL3 and TU5) with high dwarf mistletoe. The Proposed Action within these units would result in removing all Douglas-fir trees infested with dwarf mistletoe and leaving only the trees that are suitable as a seed source for regeneration. After harvesting is completed within these units, it is estimated that dead and down fuel would increase by approximately 22.2 tons per acre and would remain until the slash is removed by burning. After burning, either by pile burning or broadcast burning, it is estimated that about 9.8 tons per acre of dead and down fuel would remain within the harvested units. The total fuel loading within these units are not necessarily increasing but the fuel structure is changing. The actual overall fuel loadings would be reduced as trees are removed, but the fuels that were previously in the canopy would now be located on the surface of the forest floor. In addition to the change in dead and down fuels live fuel characteristics (vegetation) would also change. After prescribed burning is completed to remove excess dead and down fuels there would be an initial decline in the amount of understory vegetation as well. However, grasses, forbs, and shrubs would return relatively quickly and be more productive, initially adding to the amount of live fuels (Dodson et al., 2008; Metlen and Fiedler, 2005). What these changes mean in terms of fire behavior is that the area would experience slightly higher surface fire flame lengths and rates of spread, but there would be a reduction in torching and spotting potential. The effects of these harvesting and sanitation treatments would result in a fire that would be easier to suppress and that would have less overall fuel loading in a post wildfire environment (Peterson et al., 2005). Also, any trees that get established soon after harvesting operations would have a better chance of surviving a wildfire compared to trees that currently occupy these stands.

Crown thinning treatments would also result in changes to fire behavior by decreasing canopy fuels and increasing surface fuels. These treatments identified under the Proposed Action for units 12b, 9, 8, 6b, 5, and 2 would decrease stand densities by approximately 50-60%. With this reduction in density would come an increase in space between tree canopies resulting in less potential for a crown fire. Additionally, as the thinning preference for tree removal focuses on trees with dwarf mistletoe or trees with a lower crown position the potential for torching and spotting would also decrease. However, the thinning treatment and subsequent reduction in tree densities within these stands would allow the understory vegetation to increase and also would result in added dead and down fuels. This would result in an increase to surface fuel loading. It

is predicted that the thinning would increase dead and down fuels by as much as 18.3 tons per acre, but prescribed fires would reduce these fuels by 9.6 tons per acre so that the total increase would be less than 8.7 tons per acre. It is also anticipated that the increase in herbaceous understory growth would result in an increase in live fuel loadings from shrubs, forbs, and grasses that would also contribute to surface fire behavior, especially after a dry summer. Given that the potential for crown fires would be reduced and surface fire potential would increase; the fire effects would change from a fire that would have been stand replacing to a fire that would have mixed to low severities (Crist et al., 2009; Peterson et al., 2005). If a wildfire were to occur under average conditions after treatments are accomplished it is expected that smaller trees and trees close to high slash concentrations would be killed, but mature trees with thicker bark and open crowns would survive (Graham et al., 1999). These types of effects would further reduce competition on larger trees and additionally prepare soils for new tree regeneration and rejuvenation of understory vegetation.

Thinning treatments proposed within units 7, 3, and 1, like the thinning treatments discussed above, would result in a reduction of the total fuel loading, but the surface fuel loadings would also potentially increase. Within these units tree densities would be reduced opening space between each crowns and lowering the potential for crown fires. Additionally, these treatments would result in a more pronounced reduction in ladder fuels than in the above discussed units, thus further reducing the potential of torching and spotting. However, unlike the previous thinning units discussed these units currently do have substantial understory vegetation that can vary throughout the stand so fuel loadings may increase in certain areas, but may stay relatively static within other areas. These units would essentially end up with the same fuel characteristics as discussed within the effects of the crown thinning treatments, but with greater understory and structure diversity. The fire behavior would be similar, but the resulting fire effects within these units would result in greater tree mortality, but increased resiliency after a wildfire (Graham et al., 2004).

Through each of the treatment units, the general change in fire behavior is a reduction in potential for crown fires, torching and spotting, but an increase in surface fire behavior. The fire behavior impacts the effects of the fire on vegetation, but it also has an effect on how the fires are managed (i.e. suppression, emergency stabilization treatments, and restoration treatments). The treatment units within the project area compared to the surrounding forest vegetation would exhibit less intense fire behavior and therefore give suppression crews greater flexibility in the choice of tactics to use. Additionally, as the vegetation in the treatment units would be more resilient to wildfires, less effort would need to be supplied to stabilize soils and reestablish vegetation after a wildfire.

Cumulative Impacts

A 10,000 acre area surrounding the treatment units was assessed for past changes to fuel characteristics that resulted from harvesting, fuel reduction treatments, and/or wildfires. This area was chosen as it is approximate to the size of area that would have been impacted by considering a historic fire regime (Hann et.al., 2008). As indicated previously, harvested areas of approximately 22 and 30 acres exist to the east and south of the project area in addition to 20 acres within the project area. These areas were harvested and regenerated similar to what is proposed for units 12a,11, 6 and 4. The regeneration is now approximately 30 years old and

mixed with shrubs and grasses. The proposed action would add an additional 98 acres of similar stand structures that provide similar fire behavior and would result in similar fire effects. This would amount to a total 170 acres of early to mid-aged forest communities would be scattered throughout the area in patches ranging from approximately 7 to 95 acres. Collectively these treatments would contribute to maintaining fuel and forest structure diversity that more closely resemble historic distributions (Agee, 1998).

Alternative 1- Fire Management (No temporary road construction)

Direct and Indirect

The impacts of Alternative 1 on fire behavior and fuel characteristics would be similar to impacts discussed under the Proposed Action within treated areas. Areas that are being removed from treatment under Alternative 1 would incur impacts that area discussed within the no action alternative. These impacts would be the continuation of crown fire potential and an increase in fire behavior associated with an increase in dwarf mistletoe.

Cumulative Impacts

As discussed within the proposed action this action would increase the amount of fuel and vegetation characteristics that have resulted in the past from other treatments. However, Alternative 1 would only increase areas of mid to early forest communities by 12 acres.

Alternative 2 – Fire Management (Additional aspen treatments)

Direct and Indirect

The additional areas that are being targeted for treatment under this alternative would result in a light increase in dead and down fuel and though may increase fire behavior within isolated areas, would not impact fire behavior to a level that would change suppression tactics or future management actions. However, this alternative would prevent the future transition of aspen stands to conifer stands and the subsequent increase in potential fire behavior (Hann et al., 2008).

Cumulative Impacts

Cumulative impacts that have been assessed within the proposed action and Alternative 1 would be applied to the alternative depending on which additional actions are identified for implementation.

Alternative 3 – Fire Management (Reroute access to FS Trail #7058)

Direct and Indirect

The reroute of access to FS trail # 7058 would not change any fuel or vegetation characteristics that would impact fire behavior or fire management actions. Impacts for this alternative would depend on any additional alternative selected.

Cumulative Impacts

As there are no impacts to fuel characteristics or fire management associated with this alternative there would be no cumulative impacts. However, as discussed the impacts of any additional alternatives that are selected would occur.

TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED

TRIBES

Consultation with the Shoshone-Paiute Tribes of the Duck Valley Reservation occurred following procedures set within BLM MOU ID-07-04. The West Camas Forest Restoration and Timber Sale project was present to them on October 22, 2009 and additional information was presented to them through updates on November 25, 2009; January 28, 2010; July 22, 2010; and September 23, 2010. Throughout the consultation process the Shoshone-Paiute Tribes did not recommend changes to the project. The Shoshone-Bannock tribe received a scoping letter and their resources staff was briefed on the project during a meeting on January 20, 2011; however, they did not give any specific comments.

ORGANIZATIONS – RESOURCE ADVISORY COUNCIL (RAC)

This project was presented to the RAC at their February 2010 meeting and a subcommittee was formed to give recommendations on the project. In July 2010 the project area was toured and discussed within the RAC meeting. The subcommittee gathered recommendations and presented them at the September 2010 to the quorum and at this meeting it was agreed that the project was “worthy of support with a few reservations”. The reservations of the RAC consisted of maintaining access to the trail systems through the area and managing single track trails as single tracks. These reservations have been addressed within this EA or are outside the scope of the project.

ORGANIZATIONS – IDAHO CONSERVATION LEAGUE (ICL)

John Robinson, Public Lands Director, with ICL provided substantial comments concerning this project after receiving the initial scoping documents. Information from those comments was incorporated into this EA in the form of alternative development, Project Design Feature development, and assessment of issues. Also, ICL was provided notice of a pre-decisional EA posted to the BLM NEPA web page, but did not provide any further input.

AGENCIES – UNITED STATES FOREST SERVICE, FAIRFIELD RANGER DISTRICT

The FS was provided information concerning the West Camas Forest Restoration and Timber Sale project as part of the scoping process. Meetings were held with the FS concerning how this project would impact their existing and proposed ROW. The FS was also given notice of the pre-decisional EA and also did not provide further input. Additionally, information was provided by the FS concerning fish inventories and past actions within and adjacent to the project area.

LIST OF PREPARERS

Name	Title	Issue/Resource Represented
Kasey C. Prestwich	Forester	Air, Soil, Forest Resources
Joe Russell	Natural Resource Specialist (Fuels)	Fuels and Fire Management
Diana Miller	Range Management Specialist	Range

Name	Title	Issue/Resource Represented
Lisa Cresswell	Archaeologist	Cultural Resources
Danelle Nance	Natural Resource Specialist	Botany/ Noxious weeds
Bonnie Claridge	Wildlife Biologist	Wildlife
Kate Forster	Fisheries Biologist	Fisheries/Riparian/Water Quality
Lisa Cresswell	Planning/NEPA Coordinator	Planning
Tara Hagen	Realty Specialist	Lands/Access
John Kurtz	Recreation Planner	Recreation

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