

U.S. Department of the Interior Bureau of Land Management

Environmental Assessment – DOI-BLM-MT-B010-2016-0005-EA
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Marshall Fred Vegetation Management Project

Location:

The proposed vegetation treatments are located in Sections 10 and 11 of T. 7 N., R. 15 W PMM (Marshall Grade Project Area) and Section 12 of T. 6 N., R. 14 W PMM (Fred Burr Project Area)

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CHAPTER 1

PURPOSE AND NEED

1.1 INTRODUCTION

The Bureau of Land Management (BLM) proposes three vegetation treatments that include:

- Timber harvest to improve forest vegetation health, provide timber for local industry, and reduce hazardous fuels within the wildland urban interface through the salvage of dead, dying and diseased trees.
- The removal of conifer encroachment to promote big game winter forage within existing mountain meadows.
- A mixture of selective thinning and prescribed fire to promote whitebark pine (*Pinus albicaulis*) vigor and to encourage seedling recruitment.

The entire proposed project area would encompass 509 acres of public land on two separate BLM parcels located near Philipsburg, Montana in T7N, R15W SEC. 10, 11 (Marshall Grade project area) and T6N, R14W SEC. 12 PMM (Fred Burr project area). If approved, the project would occur over a three year time period beginning in the summer of 2016.

1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

Timber Harvest:

The need for timber harvest in the Marshall Grade and Fred Burr project areas has been established through onsite observations and timber inventories that indicate public safety concerns and a decline in forest health conditions within the proposed project areas. These indicators include:

- Hazardous fuel loadings caused by the wind throw of dead and dying trees are present in the Marshall Grade and Fred Burr project areas and will increase in the future (Mitchell and Preisler 1998, Waterhouse and Armleder 2004).
- High concentration of dead and dying trees adjacent to the Discovery Ski Area right-of-way (ROW) in the Fred Burr project area.
- Mountain pine beetle (*Dendroctonus ponderosae*) caused mortality in 65% of the lodgepole pine (*Pinus contorta*) in the Marshall Grade project area and 90% mortality in lodgepole pine within the Fred Burr project area.
- Based on the Region 1 Forest Insect Hazard Rating Criteria for mountain pine beetle in lodgepole pine 50 percent of the remaining live stand is at a high risk of future attacks, 36 percent is at moderate risk, 2.7 percent is at low risk and 11.3 percent is at extremely low risk (Randal et al. 2011).
- Lodgepole pine dwarf mistletoe (*Arceuthobium americanum*) has been detected throughout both the Marshall Grade and Fred Burr project areas at moderate to severe infestations based on the Hawksworth Dwarf Mistletoe Rating System (Hawksworth, Frank G. 1979).
- Moderate to severe defoliation of Douglas-fir (*Pseudotsuga menziesii*) by western spruce budworm (*Choristoneura occidentalis*) occurs uniformly throughout the Marshall Grade and Fred Burr project areas.
- Requests by adjacent landowners to reduce hazardous fuels.
- The U.S. Forest Service has identified the project area having a moderate to high crown fire potential (Rothermel, R.C. 1991).
- The Granite County Wildfire Protection Plan identifies the project area as a high priority for wildfire risk mitigation.

The purposes for the action are to:

- Salvage the economic value of dead, dying and diseased trees.
- Reduce hazardous fuels in the Wildland Urban Interface to provide for public safety in the Marshall Grade and Fred Burr project areas.
- Remove hazard trees along the Discovery Ski Area ROW in the Fred Burr project area for public safety.
- Reinitiate a stand of lodgepole pine that has reduced levels of lodgepole pine dwarf mistletoe and is less susceptible to mountain pine beetle attacks.
- Create conditions that promote the vigor of the Douglas-fir component of the proposed project areas and its resiliency to insects and disease.

Meadow restoration:

Action is needed in the Marshall Grade project area to reduce conifer encroachment in existing mountain meadows. Vegetation present includes: lodgepole pine, Douglas-fir, rough fescue (*Festuca campestris*), bluebunch wheatgrass (*Pseudoroegneria spicata*), sagebrush (*Artemisia tridentata*) and serviceberry (*Amelanchier alnifolia*).

The purpose for reducing conifer encroachment within existing mountain meadows in the Marshall Grade project area is to promote vegetation communities desirable for big game winter forage such as rough fescue (*Festuca campestris*), bluebunch wheatgrass (*Pseudoroegneria spicata*), sagebrush (*Artemisia tridentata*) and serviceberry (*Amelanchier alnifolia*) by reducing competition for light, water and nutrients.

Whitebark pine:

Declining whitebark pine populations in the area caused by white pine blister rust (*Cronartium ribicola*), mountain pine beetle attack and drought have created the need to selectively thin competing vegetation and promote natural regeneration. This will result in improved vigor in the whitebark pine and seedling recruitment as a result of prescribed fire. As a keystone species within the subalpine ecosystem there is a need to promote and retain the whitebark pine population within the Marshall Grade project area. Current conditions include a mature over story of whitebark pine interspersed with mature lodgepole pine and Douglas-fir. The understory is comprised of numerous whitebark pine, lodgepole pine and Douglas-fir seedlings and saplings.

The purpose for action in the whitebark pine thinning unit is to increase the health and resiliency of established whitebark pine by reducing competition for light, water and nutrients from the lodgepole pine and Douglas-fir component and to create conditions favorable for seedling recruitment and seed caching of whitebark pine through the use of prescribed fire.

1.3 CONFORMANCE WITH BLM LAND USE PLAN(S) AND POLICIES

The Proposed Action and Alternative in this EA are in conformance with the BLM Garnet Resource Management Plan (RMP) and Record of Decision (1986), as amended. The RMP established Management Areas with specific management goals and guidelines. The Proposed Action complies with these goals and guidelines. The actions proposed follow management direction, goals, and guidelines found in the 1986 Record of Decision issued for the Garnet Resource Management Plan and Final Environmental Impact Statement, as amended.

Treatments proposed for the Marshall Grade area fall within lands designated in the RMP as Management Areas 3 and 6.

- Management Area 3 is designated as General Forest Management
- Management Area 6 is designated as Big Game Winter Range

Treatments proposed for the Fred Burr area fall within Management Areas 3, 13 and 14.

- Management Area 3 is designated as General Forest Management
- Management Area 13 is designated as Non-Forest Habitat
- Management Area 14 is designated as Mineral Production Area

Goals and Guidelines as stated in the RMP for the above Management Areas are as follows:

Management Area 3 General Forest Management:

Emphasis will be on managing timber to maintain healthy stands, optimize timber growing potential, and regulate sustained timber production while maintaining site productivity, water quality, and stream stability and providing for other uses. Livestock grazing generally will be permitted. Utility corridor development will be possible. A broad range of timber production activities will be permitted. Timber management practices will include special measures to protect riparian values and specific big game features. These lands may be considered on a case-by-case basis for use in land tenure adjustment actions.

Management Area 6 Big Game Winter Forage:

Emphasis will be on enhancing forage production and cover for big game on winter ranges while managing timber and providing for other uses. Livestock grazing generally will be permitted. Utility corridor development will be possible. A broad range of timber management activities will be permitted. Timber management practices will be designed to maintain or improve big game winter range, particularly cover and forage relationships, and include special measures to protect riparian values and specific big game features. These lands generally will remain in public ownership.

Management Area 13 Non-Forest Habitat:

Emphasis will be on enhancing wildlife and livestock forage in wet meadows, dry parks, and open grass and shrub lands. Management activities will be designed to maintain site productivity, water quality and stream stability. Adjoining timber stands will be maintained or enhanced to provide for wildlife cover. Dispersed recreation activities will be conserved by ensuring that management activities retain natural features characteristic of the landscape.

Management Area 14 Mineral Production Area:

Emphasis will be on balancing the utilization of resources in a manner that is compatible with the goals of mineral production. Management activities will focus on restoration of water quality and the rehabilitation of site productivity and stream stability through reclamation.

BLM Conservation and Management Strategy for Whitebark Pine in the Western United States:

Directs the agency to use silviculture practices, including prescribed fire, to restore and maintain whitebark pine populations.

1.4 RELATIONSHIPS TO STATUTES, REGULATIONS AND OTHER PLANS

This document has been prepared by the BLM to comply with NEPA. The primary authority for federal agency proposed actions is found in the Federal Land Policy and Management Act (1976). The Proposed Action presented in this EA is consistent with federal and state legislation pertaining to land management, water and air quality, threatened and endangered species, and antiquities protection.

Section 106 of the National Historic Preservation Act (P.L. 89-665; 80 Stat. 915; 16 U.S.C. 470) and its implementing regulations found at 36 CFR Part 800 requires Federal agencies to take into account the effects their actions would have on cultural resources for any endeavor that involves Federal monies,

Federal permitting or certification, or Federal lands. Cultural resources are locations of past or current human activity, occupation, or use and include prehistoric or historic archaeological sites, buildings, structures, objects, districts, or other places. Cultural resources can also be natural features including native plant localities that are considered to be important to a culture, subculture, or community. Traditional Cultural Properties (TCPs) located throughout the Missoula Field Office area, are places associated with the traditional lifeways, cultural practices or beliefs of a living community. These sites are rooted in the community's history and are important in maintaining cultural identity. Locations of TCPs, are often not known to the BLM, but may still be present in the project area.

Section 7 of The Endangered Species Act (ESA) requires that the Bureau of Land Management (BLM) consult with the U.S. Fish and Wildlife Service (FWS) when land use planning to ensure the proposed actions do not jeopardize the recovery of threatened and endangered species or adversely modify their critical habitats.

The Bull Trout Plan Implementation Biological Opinion (PIBO) and the Inland Native Fish Conservation Strategy (INFISH) (USDA, 1995; USDI, 1998) would be followed in order to prevent adverse effects to bull trout and designated critical habitat. The BLM is required to assure that activities occurring within Riparian Habitat Conservation Areas (RHCAs) do not "retard the attainment" of the PIBO/INFISH Riparian Management Objectives (RMOs). The preferred alternative would have No Effect on the bull trout or designated critical habitat.

1.5 IDENTIFICATION OF ISSUES:

Notice of a public meeting was published in the Philipsburg Mail on February 4, 2016 with the intent to obtain input pertaining to this proposed project. The public meeting was held as scheduled on February 10, 2016 at 6 p.m. at the Granite County Museum and Cultural Center. Five members of the public attended the meeting. There was support for the proposed project and no issues arose as a result of scoping. An internal issue pertaining to the removal of big game hiding cover was considered and addressed through a project design feature to retain big game hiding cover.

CHAPTER 2 DESCRIPTION OF ALTERNATIVES

2.1 INTRODUCTION

This chapter focuses on the Proposed Action and No Action alternatives. The No Action alternative is considered and analyzed to provide a baseline for comparison of the impacts of the Proposed Action. Since no potential adverse impacts have been identified, there are no issues to resolve through additional mitigation or other action alternatives.

2.2 NO ACTION ALTERNATIVE

The Proposed Action would not be implemented.

2.3 PROPOSED ACTION ALTERNATIVE

Marshall Grade Timber Harvest:

The BLM-Missoula Field Office is proposing a timber harvest in the Marshall Grade area northwest of Philipsburg, Montana (Sections 10 and 11 of T. 7 N., R. 15 W PMM). The project encompasses 138 acres

of public land that would be treated using mechanized harvesting systems. The project would be implemented over the course of a 24 month period beginning in the summer of 2016. Proposed Actions include:

- Utilize a shelterwood silvicultural system to move the existing stand toward the objective of a two aged stand, which will promote heterogeneity in stand composition and structure. The proposed shelterwood harvest would move the existing stand toward the objective of a two aged stand by creating retention groups and cut groups; areas with live lodgepole pine that have low susceptibility to mountain pine beetle attack would be retained in groups and areas with dead lodgepole pine or lodgepole pine that have a moderate to high susceptibility to mountain pine beetle attack (based on the Region 1 Forest Insect Hazard Rating Criteria) would be harvested, leaving growing space for lodgepole pine regeneration (a second age class).
- Harvest dead lodgepole pine and live lodgepole pine that have a moderate to high susceptibility to future mountain pine beetle attack (based on the Region 1 Forest Insect Hazard Rating Criteria) over 40% (~55 acres) of the proposed 138 acre harvest area.
- Harvest lodgepole pine that are moderately to highly infected with lodgepole pine dwarf mistletoe.
- Retain lodgepole pine that have a low susceptibility to mountain pine beetle attack. Defer treatment adjacent to big game foraging areas and travel corridors to maintain spatial connectivity and habitat integrity.
- Retain vegetation in 0.5 to 5 acre patches over 30% (~40 acres) of the proposed 138 acre harvest area to maintain big game thermal and hiding cover.
- Harvest within the Douglas-fir component of the project area through single tree selection and group selection silvicultural methods that promote tree vigor and forest health with a desired structure that incorporates a mixture of openings (0.5-1.0 acres in size), unaffected areas (0.5-5 acres in size) and light thinning treatments. The objective is to remove 10% of the basal area of the Douglas-fir component over 30% (~40 acres) of the proposed 138 acre harvest area.
- Pile and burn slash resulting from harvest activities.
- Broadcast burning may be conducted if adequate lodgepole pine regeneration does not occur after harvest.

Project design features:

- Reduce slash depths to <18”.
- Leave trees – Select trees with >40% crown-cover; select a mix of best formed live trees and decadent trees that are hollow and/or with forked and broken tops.
- Snags and replacement snags – For dispersed spatial pattern leave 5-10 snags (soft and hard snags; Class 1, 2, and 3) >10” DBH/acre (a mix of sizes) and leave preferably in clumps when available. Select snags with existing nest cavities, snags with broken tops, and hollow snags with a species preference for Douglas-fir, ponderosa pine, quaking aspen, and lodgepole pine. Where available retain Douglas-fir at 4-snags/acre at least 20” DBH. Live leave trees will function as replacement snags.
- Logs – For dispersed spatial pattern leave 10-20 logs/acre > 10” DBH and 10-40 feet long. Retain all Douglas-fir logs >20 inches when available. Select a range of logs from hard to soft and retain all hollow logs. Replacement snags and snags will eventually become logs. For aggregate spatial pattern retention leave all logs.
- Prevailing wind – Consider retaining uncut areas to prevent blowdown along edges with prevailing wind conditions.
- Utilize prescribed fire where practical.
- Defer livestock grazing for two seasons if necessary in association with broadcast burning.
- Spot-treat weeds before and after treatment.
- Retain all 5-needle pines when and where possible.
- Promote lodgepole pine regeneration by ensuring adequate site scarification through the utilization of ground based harvesting techniques or post-harvest site preparation.

Mitigation:

- Timber management activities will be designed to maintain or improve big game winter range.
- Timber sale contracts will prohibit most sale activity during winter and spring to prevent disturbance of animals on winter range.
- Timber will be harvested, slash treated, and roads closed within 2-summer seasons.
- Timber sale units, except single or group selection, will generally be 5-30 acres.
- Unit shapes will be irregular with reserve blocks within harvest units where necessary to increase edge effect and maintain proper sight distances.
- Reserve areas between harvest units will be as wide as the harvest units or a minimum of 600 feet wide.
- Timber harvest adjacent to past harvest units will be deferred until harvest units constitute hiding cover with a minimum of 200 TPA 8-foot high.
- Cover areas will be managed to maximize thermal cover with the remainder in hiding cover.
- Thermal cover should be provided on both low and high energy aspects adjacent to forage areas.
- Timber harvest will be designed to maintain or develop thermal cover adjacent to big game forage areas.
- Retention groups will be located adjacent to 1-5-acre parks, meadows, and grasslands.
- For parks, meadows, and grasslands over 5-acres, timber harvest may remove cover from up to 25% of the park perimeter. The remainder of the perimeter will be maintained in existing cover.
- An interdisciplinary review of silvicultural prescriptions, unit layout, and marking guidelines would occur to evaluate effectiveness of treatments in providing thermal cover.
- Monitoring, prevention and control of noxious weeds would be implemented through an integrated, cooperative strategy as directed by BLM's "Integrated Weed Management Plan" (USDI, 2003).
- Timber harvest and road construction contracts would stipulate that all off-road equipment would be power-washed prior to arriving on public land. The successful bidder would be required to contribute funds for weed control.
- Weed detection, monitoring, and management actions would be conducted before, during and after implementation of the Proposed Action based on site-specific conditions and need. Herbicide application would continue under and conform to the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (USDI, 2007).
- To better prevent the establishment of new noxious weeds, and to detect and eradicate any new populations, special precautions will be taken. Existing roads used to transport heavy equipment and haul forest products will be treated with herbicides to control all detectable noxious weeds prior to logging operations. All temporary roads will be carefully inspected for noxious weeds and other undesirable vegetation prior to rehabilitation or obliteration. Herbicides would be applied to kill any known weeds prior to final dirt work. Soil will be re-vegetated with a certified weed-free seed mixture of forbs and grasses to cover the site until trees re-establish.

Meadow restoration:

The BLM-Missoula Field Office is proposing light thinning and prescribed fire treatment on approximately 132 acres in the Marshall Grade area northwest of Philipsburg, Montana (Sections 2, 10 and 11 of T. 7 N., R. 15 W PMM). The project would be implemented by utilizing hand felling with chainsaws and hand piling techniques. The project would be implemented over the course of a 24 month period beginning in the summer of 2016. Proposed Actions:

- Mimic the effects of high frequency, low intensity fire.
- Thin to reduce conifer encroachment around sagebrush and other shrubs.
- Large diameter Douglas-fir would be favored for retention; thin small diameter lodgepole pine and Douglas-fir; lop and scatter slash.
- Broadcast and/or pile burning would be implemented if needed upon completion of thinning.

Project design features/mitigation:

- Retain 1-2 snags/acre >20" DBH, if available.

- Retain logs at their current level.
- Defer livestock grazing for two seasons if necessary in association with broadcast burning.
- Spot treat weeds before and after treatment implementation.
- Retain all 5-needle pines where possible.

Whitebark pine release:

The BLM-Missoula Field Office is proposing thinning and prescribed fire treatment on approximately 150 acres along the southern end of Black Pine Ridge in the Marshall Grade area northwest of Philipsburg, Montana (Sections 2 and 11 of T. 7 N., R. 15 W PMM). The project would be implemented by utilizing hand felling with chainsaws and hand piling techniques. The project would be implemented over the course of a 24 month period beginning in the summer of 2016. Proposed Actions include:

- Thin approximately 150 acres along Black Pine Ridge to alleviate competition and improve the health and vigor of established whitebark pine.
- Create conditions favorable for whitebark pine seedling recruitment by creating seed caching sites through pile burning slash.

Project design features:

- Retain all whitebark pine.
- Cut, lop, and scatter or pile lodgepole pine and Douglas-fir within 50-60 feet from mature whitebark pine.
- Mimic the behavior and effects of infrequent, low intensity fire.

Mitigation:

- Retain all large snags within 50-60 feet from mature whitebark pine; additional snags and replacement snags should be located outside of the 50-60 foot limit for mature whitebark pine.
- Retain logs at their current level; snags and replacement snags will eventually become logs.

Fred Burr Timber Harvest:

The BLM-Missoula Field Office is proposing a timber harvest near Fred Burr Creek southeast of Philipsburg, Montana (Section 12 of T. 6 N., R. 14 W). The project encompasses 89 acres of public land that would be treated using mechanized harvesting systems. The project would be implemented over the course of a 24 month period beginning in the summer of 2016. Proposed Actions include:

- Salvage dead lodgepole pine within harvest unit boundaries with an objective of regenerating lodgepole pine.
- Use group selection and single tree selection silvicultural systems to thin the Douglas-fir component to promote resilience and improve forest health of the remaining stand.
- Scarify or broadcast burn after harvest to provide for lodgepole regeneration.
- Complete a timber stand improvement treatment on non-merchantable trees after harvest.
- Within 300' of the local swimming hole remove all snags. Retain all live trees.

Project design features:

- Reduce slash depths to <18".
- Quaking aspen – where possible create a 50:50 ratio of young to mature structure in aspen stands by cutting a portion of the above ground stems; retain all aspen snags and logs; regenerated stems may need to be fenced due to winter elk browsing; the timber harvest may release dormant aspen clones.

- Leave trees – retain 1-2 large live decadent lodgepole pine or Douglas-fir wildlife trees (forked tops, broken tops, etc.) where such trees exist.
- Retain lodgepole pine in areas that have a low mountain pine beetle rating.
- Snags and replacement snags – where a sufficient number of snags exist, retain 5-10 snags (soft and hard snags; Class 1, 2, and 3) >10” DBH/acre (a mix of sizes) and leave preferably in clumps. Select snags for retention that have existing nest cavities, snags with broken tops, and hollow snags with a species preference for Douglas-fir, ponderosa pine, quaking aspen, and lodgepole pine. Live leave trees will function as replacement snags. In areas outside of regeneration groups retain all snags.
- Logs – For dispersed spatial pattern leave 10-20 logs/acre > 10” DBH and 10-40 feet long. Retain all Douglas-fir logs >20 inches. Select a range of logs from hard to soft and retain all hollow logs. Replacement snags and snags will eventually become logs. In areas outside of regeneration groups leave all logs.
- Utilize prescribed fire where possible to reduce ground fuels and stimulate aspen suckering.
- Spot-treat weeds before and after project implementation.
- Retain all 5-needle pines where possible.
- Promote lodgepole pine regeneration by ensuring adequate site scarification through the utilization of ground based harvesting techniques or post-harvest site preparation.
- Prevailing wind – Consider retaining uncut areas to prevent blowdown along edges with prevailing wind conditions.
- Class 1 Streamside Management Zones were delineated for Fred Burr Creek and no activity will occur within these SMZs. These were 50 feet for slopes <35% and 100 feet for slopes >35% (Montana DNRC, 2006).
- To prevent soil compaction, limit equipment activity to when soils are dry or frozen, or operate equipment over slash. Otherwise, designate equipment trails and rip/till compacted trails after use.

Mitigation:

- Stream Management Zones around Fred Burr creek were delineated by the Missoula Field Office Fisheries Biologist and the Hydrologist.
- Cutting units will be treated to maximize the visual resource qualities of the project area.
- Timber harvest and road construction contracts would stipulate that all off-road equipment would be power-washed prior to arriving on public land. The successful bidder would be required to contribute funds for weed control.
- Weed detection, monitoring, and management actions would be conducted before, during and after implementation of the Proposed Action based on site-specific conditions and need. Herbicide application would continue under and conform to the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (USDI, 2007).
- To better prevent the establishment of new noxious weeds, and to detect and eradicate any new populations, special precautions will be taken. Existing roads used to transport heavy equipment and haul forest products will be treated with herbicides to control all detectable noxious weeds prior to logging operations. All temporary roads will be carefully inspected for noxious weeds and other undesirable vegetation prior to rehabilitation or obliteration. Herbicides would be applied to kill any known weeds prior to final dirt work. Soil will be re-vegetated with a certified weed-free seed mixture of forbs and grasses to cover the site until trees re-establish.

CHAPTER 3

AFFECTED ENVIRONMENT

3.1 GENERAL SETTING

Marshall Grade Project Area:

The Marshall Grade Project Area is located at the southern terminus of Black Pine Ridge within an isolated BLM parcel that totals 1360 acres. The harvest unit and the meadow restoration area are situated at 6500 feet on a south-south west aspect with slopes of less than 15 percent. The whitebark pine release area is located along the top of the north-south oriented ridge at 7600 feet in the northern portion of the BLM parcel. The site receives an average of 15 inches of precipitation and 68 inches of snowfall each year. Average annual maximum temperature is 54°F with an average annual minimum temperature of 27°F. The dominant wind direction in the area is from the south west. Private land surrounds the parcel with a small housing development located adjacent to the eastern most boundary. The area has been identified as being within the wildland-urban interface by the Community Wildfire Protection Plan for Granite County with the potential for extreme fire behavior due to heavy fuel loadings being present in the stand. There is also a current grazing allotment within the parcel.

Fred Burr Project Area:

The Fred Burr Project Area is located within an isolated 162 acre BLM parcel that includes a 1500 foot section of Fred Burr creek. The harvest unit is situated at an elevation of 5600 to 5800 feet with slopes that range from 0 to 35 percent. The site receives an average of 15 inches of precipitation and 68 inches of snowfall each year. Average annual maximum temperature is 54°F with an average annual minimum temperature of 27°F. The dominant wind direction in the area is from the south west. A recent right-of-way has been granted to the Discovery Ski Area that allows access running south through the parcel with the completion of road construction anticipated in 2017. The Rumsey Gulch Fire (2013) that burned 350 acres and destroyed 5 homes is located approximately 1 mile away from the BLM parcel. Private land surrounds the parcel and has been identified as being within the wildland-urban interface by the Community Wildfire Protection Plan for Granite County with the potential for extreme fire behavior due to heavy fuel loadings being present in the stand. Adjacent private landowners have already reduced fuels on their property with the remaining predominate stand structure on their lands being widely spaced medium to large diameter Douglas-fir.

3.2 Vegetation

3.2.1 Affected Environment:

Forest vegetation in the assessment area is within a warm Douglas-fir habitat type group (Pfister, 1977). Fire was the dominant disturbance process in Western Montana which historically sustained forest ecosystems and biodiversity at the watershed scale. Douglas-fir habitat types were generally characterized by low to moderate severity historic fire regimes on 20-60 year average fire-return intervals functioning to maintain relatively open stand conditions in small to medium sized patches (e.g., fire sizes usually ranged from between 40-250 acres). An extended fire-free period and past land use practices which did not emulate natural disturbance regimes created conditions in both the Marshall Grade and Fred Burr project areas that are outside their historic range of variability (HRV). In the northern Rocky Mountains, structural uniformity at stand and landscape scales has exacerbated the susceptibility of lodgepole pine forests to bark beetles and stand-replacing wildfire (Keyes 2014).

Marshall Grade Project Area:

Current conditions in the proposed harvest area (138 acres) consist of a mixed species stand of Douglas-fir and lodgepole pine. The Douglas-fir component dominates the periphery of the stand with the older age class consisting of approximately 300 year old (20-30" DBH) trees and the younger age class consisting of around 90 year old (6-15" DBH) trees. Stocking levels of the Douglas-fir component range from 20-200 ft² of basal area and about 50 trees per acre with trees growing in clumped groups or as individuals dispersed throughout the stand. These conditions are outside the historic range of variability in terms of tree density; there are more trees on site than what would have occurred historically which is causing susceptibility to the following insect and disease agents. Western spruce budworm (*Choristoneura occidentalis*) activity was first noted by BLM staff in 2012 and has caused crown defoliation in up to 30% of the older age class and up to 100% in the intermediate and suppressed trees of the younger age class. The older cohort of Douglas-fir is experiencing progressive mortality due to colonization by Douglas-fir beetle (*Dendroctonus pseudotsugae*) and wood boring beetles. Brown cubical decay indicative of schweinitzii root and butt rot was observed in blowdown and crown indicators such as rounded tops, scattered branch mortality, and overall crown dieback in older standing trees throughout the stand.

Lodgepole pine dominates the interior of the stand as an even aged cohort of approximately 90 year old (5-14" DBH) trees in the stem exclusion phase of stand development. Crown ratios are 10-30 percent. Stocking levels range from 110-130 ft² of basal area and 160 trees per acre. These conditions are outside the historic range of variability in terms of age class homogeneity; a mixed severity fire that burned every 20 to 60 years would have created a more diverse (or heterogeneous) distribution of age classes throughout the stand, creating trees that were younger and more vigorous. The even aged over mature (about 90 years old) stand that currently exists on site has created susceptibility to the following insect and disease agents. A mountain pine beetle infestation that peaked between 2008 and 2012 resulted 65 percent mortality within the stand. Based on the Region 1 Forest Insect Hazard Rating Criteria for mountain pine beetle in lodgepole pine 50 percent of the remaining live stand is at a high risk of future attacks, 36 percent is at moderate risk, 2.7 percent is at low risk and 11.3 percent is at extremely low risk. Lodgepole pine dwarf mistletoe has infested the majority of the stand with a Hawkworth dwarf mistletoe rating (DMR) of 2 to 4 with areas of heavy infestation having DMRs of 4 to 6. Blowdown of dead and dying trees within the stand has occurred resulting in current fuel loadings of 12 to 15 tons per acre.

The meadow restoration area (132 acres) consists of an overstory of large 300 year old (20-30" inch), widely spaced Douglas-fir. The understory consists of an even aged cohort of 30 year old lodgepole pine and Douglas-fir that occur in dispersed groups throughout the project area. Ground cover consists of rough fescue (*Festuca campestris*), bluebunch wheatgrass (*Pseudoroegneria spicata*), sagebrush (*Artemisia tridentata*) and serviceberry (*Amelanchier alnifolia*).

The whitebark pine release area (150 acres) consists of a mature overstory of whitebark pine interspersed with mature lodgepole pine and Douglas-fir. The understory consists of numerous whitebark pine, lodgepole pine and Douglas-fir seedlings and saplings. White pine blister rust and mountain pine beetle activity is evident within the stand.

Fred Burr Project Area:

The harvest unit (89 acres) consists of a mixed species stand of Douglas-fir and lodgepole pine. The Douglas-fir component dominates the southern, steeper and rockier portions of the harvest unit and an additional large area located north of the creek that runs along the western half of the unit. The Douglas-fir has two distinct age classes, one consisting of 300 year old (20-30" DBH) trees and the younger cohort consisting of 90 year old (6-15" DBH) trees. Stocking levels of the Douglas-fir component ranges from 20-200 ft² of basal area (50 trees/acre) with trees typically growing in continuous stands between 5 and 30 acres in size. Western spruce budworm (*Choristoneura occidentalis*) activity has caused crown defoliation in up to 30% of the older cohort and up to 100% in the intermediate and suppressed trees of the younger cohort. The older cohort of Douglas-fir is experiencing progressive mortality due to colonization by Douglas-fir beetle (*Dendroctonus pseudotsugae*) and wood boring beetles. Brown cubical decay indicative

of schweinitzii root and butt rot was observed in blowdown and crown indicators such as rounded tops, scattered branch mortality, and overall crown dieback in older standing trees throughout the stand.

The lodgepole pine component is dominated by a homogeneous even aged cohort of 90 year old (5-14" DBH) trees in the stem exclusion phase of stand development. Crown ratios are 10-30 percent. Stocking levels range from 110-130 ft² of basal area (160 trees/acre). The lodgepole pine cohort has experienced a mountain pine beetle infestation that peaked between 2008 and 2012 resulting in nearly 100 percent mortality within the stand. Blowdown of dead and dying trees within the stand has occurred resulting in current fuel loadings of 15 to 20 tons per acre.

3.2.2 Direct and Indirect Impacts:

No Action- Direct and Indirect Impacts:

Marshall Grade Project Area:

The timber harvest would not be implemented in the Marshall Grade project area. The structure of the Douglas-fir component of the stand would remain as a dense, multi-storied canopy which would continue to aid in the transport and spread of western spruce budworm infestations (Williams et al., 1971). The lodgepole pine component of the stand would continue to experience mortality due to mountain pine beetle attacks and infestation by dwarf mistletoe with the result being an increase in hazardous fuel loadings over the next 15-50 years (estimated) and an increased threat of high intensity wildfire that is outside the HRV could spread to adjacent private land. The regeneration of a healthy cohort of lodgepole pine that would result from ground scarification created through logging activities would not occur (USFS 1983).

The meadow restoration project would not be implemented in the Marshall Grade project area. Conifer species would continue to encroach on the mountain meadow reducing the availability of winter forage for big game species through competition for light, water, and nutrients (Hillis 1998).

The whitebark pine release project would not be implemented in the Marshall Grade project area. Established mature and seedling/sapling sized whitebark pine would continue to compete for resources with Douglas-fir and lodgepole pine. The utilization of prescribed fire to expose mineral soil and increase the potential seed caching sites necessary for whitebark pine germination would not occur.

Fred Burr Project Area:

The timber harvest would not be implemented in the Fred Burr project area. The structure of the Douglas-fir component of the stand would remain as a dense, multi-storied canopy which aids in the transport and spread of western spruce budworm infestations (Williams et al., 1971). The lodgepole pine component of the stand would continue to experience mortality due to mountain pine beetle attacks and infestation by dwarf mistletoe with the result being an increased threat of high intensity wildfire that is outside HRV which could spread to adjacent private land. The regeneration of a healthy cohort of lodgepole pine that would result from ground scarification created through logging activities would not occur (USFS 1983). Snags that would fall on the Discovery Ski Area right-of-way would create a hazard for the public accessing the popular ski area.

Proposed Action - Direct and Indirect Impacts:

Marshall Grade Project Area:

Timber Harvest:

The proposed timber harvest would include the removal of dead and dying lodgepole pine on 40% (~55 acres) of the 138 acre proposed harvest area and the reduction in the basal area of the Douglas-fir component by 10% over 30% (~40 acres) of the 138 acre proposed harvest area. This would create a

reduction in future blowdown potential and hazardous fuel loading by over 40% of the harvest area. The proposed shelterwood timber harvest in the lodgepole pine is a silvicultural treatment that would simulate mixed-severity disturbance, creating a two aged stand, which, along with heterogeneous forest landscapes, can play a role in mitigating susceptibility to disturbance agents such as bark beetles and wildfire (Keyes 2014). A second age class of lodgepole pine is anticipated over 40% of the proposed harvest area.

Improved tree vigor, forest health and resilience to disturbance that is outside the HRV would result in 90% of the Douglas-fir because limited resources such as light, water and nutrients would become available to residual trees after harvest activities are complete.

Meadow Restoration:

Direct environmental impacts of the proposed meadow restoration include the removal of small diameter lodgepole pine and Douglas-fir. Existing big game forage species including rough fescue (*Festuca campestris*), bluebunch wheatgrass (*Pseudoroegneria spicata*), sagebrush (*Artemisia tridentata*) and serviceberry (*Amelanchier alnifolia*) should increase in cover through the removal of competition for light, water, and nutrients from encroaching conifer species. Understory species richness and cover have been shown to increase in response to thinning in Western Montana (Metlen 2006). An increase in big game forage species would improve big game habitat.

Whitebark Pine Release:

Direct environmental impacts of the proposed whitebark pine release include the removal of competing Douglas-fir and lodgepole pine that occur in close proximity to existing whitebark pine and the elimination of slash through pile burning. Indirect environmental impacts of the proposed whitebark pine treatments include improved tree vigor for existing whitebark pine within the treatment area and the creation of areas with exposed bare mineral soil. These areas are expected to create microsites which would increase the probability of establishment and regeneration of whitebark pine seedlings. Microsites such as these have been used preferentially to cache whitebark pine seeds by Clark's Nutcracker (*Nucifraga Columbiana*) and cones by the American red squirrel (*Tamiasciurus hudsonicus*) (Keane et. al. 2007).

Fred Burr Project Area:

Timber Harvest:

Direct environmental impacts of the proposed timber harvest include the removal of dead and dying lodgepole pine on 100% of the proposed harvest area which includes the removal of hazardous snags along the entire length of the Discovery Ski Area right-of-way. The reduction in the basal area of the Douglas-fir component by 10% would also occur. Indirect environmental impacts of the proposed timber harvest include the reduction in future blowdown and hazardous fuel loading by 100% over the entirety of the harvest area. Regeneration of lodgepole pine is expected on the entirety of the lodgepole pine harvest area as a result of ground scarification associated with harvest (USFS 1983).

Improved forest health and resilience for 90% of the residual stand of Douglas-fir through selective thinning that will increase the availability of resources such as light, water and nutrients. Release of seedling and sapling size trees already present in the understory would also occur due to the removal of the overstory.

3.2.3 Cumulative Impacts:

Cumulative environmental 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 other actions.

The geographic area considered to assess cumulative effects consists of the project areas (Marshall Grade and Fred Burr) and one mile around each project area. This cumulative effects impact analysis area was chosen due to the small size of the BLM parcels on which the proposed actions occur and the even smaller size of the project areas on those parcels. This cumulative effects analysis area includes BLM, DNRC, FS and private lands.

Marshall Grade Project Area:

Past commercial timber harvests have occurred within the 1,360 acre BLM parcel equaling 20% of the total parcel. Past timber stand improvement activities equal 6% of the total parcel. Past planting activities account for 9% of the total parcel. Summary in Table 3.1.

Table 3.1 Past Vegetation Treatments in the Marshall Grade BLM Parcel

| Sale Name | Year | Treatment | Acres | Percent of 1,360 acre BLM parcel |
|-------------------------------------|------|---|---------|----------------------------------|
| North Fork Spring Creek Timber Sale | 1965 | Harvest- Seed Tree | 128 | 9.4% |
| | 1976 | Planting | 128 | |
| | 2001 | Pre-Commercial Thinning | 128 | |
| Marshall Mill Timber Sale | 2001 | Harvest-Mixture of Seed Tree/Shelterwood and Clearcut | 147 | 10.8% |
| | 2001 | Timber Stand Improvement-Dwarf Mistletoe Sanitation | 90 | 6.6% |
| | | | Total = | 26.8% |

North Fork Spring Creek Timber Sale (1965) - The earliest recorded harvest was the North Fork Spring Creek timber sale which was completed in 1965 and was 128 acres in size and represents 9% of the 1,360 acre BLM parcel. Portions of this sale occurred directly adjacent to the proposed timber sale sharing 3,500' of boundary (22% of the total proposed timber harvest boundary). This project occurred within the entire area proposed for meadow improvement. The sale consisted of the harvesting of large diameter Douglas-fir (seed-tree harvest) and small to medium sized lodgepole pine. The resulting stand is a widely spaced overstory with an open park-like understory. Subsequent planting of lodgepole pine occurred in 1976 over the entire sale area with pre-commercial thinning to an 8' X 8' (680 trees/acre) spacing occurring in 2001. Natural regeneration of Douglas-fir has occurred throughout the past harvested area.

Marshall Mill Timber Sale (2001) - The most recent harvesting activities on the BLM parcel was the Marshall Mill timber sale which occurred in 2001 and encompassed 147 acres of commercial harvest and 90 acres of timber stand improvement. These two activities represent 11% and 6%, respectively, of the entire 1,360 acre BLM parcel. The sale occurred adjacent to the housing subdivision along Marshall Creek and to the east and northeast of the proposed harvest unit. The timber stand improvement activities occurred adjacent to and within the proposed whitebark pine release area. The sale consisted of a mixture of lodgepole clear-cutting (51 acres) to remove dwarf mistletoe, non-commercial dwarf mistletoe sanitation (90 acres) in which only infested trees were cut and seed-tree/shelter-wood/overstory removal harvesting (96 acres) which was designed to remove dwarf mistletoe infected lodgepole pine and retain Douglas-fir

and healthy lodgepole pine. The pure lodgepole pine stands (51 acre clear cut unit) have naturally regenerated uniformly with stocking levels greater than 700 trees/acre. Natural regeneration in the Douglas-fir/ lodgepole pine stands (96 acres) occurs in groups or as scattered individuals with a stocking of at least 200 trees/acre.

Private Land - Harvesting has occurred on private land along the southern and eastern border of the BLM parcel. Harvesting along the southern border has occurred directly adjacent to the proposed harvest unit and shares 1,500' of boundary (9% of the total proposed timber harvest boundary). From examination of remnant stumps and in speaking with the current landowner the timber harvests were designed to remove dead lodgepole and thin throughout the Douglas-fir matrix. The current condition consists of Douglas-fir stringers that connect to the proposed harvest unit and run south to within 1,500' of Route 348. The Douglas-fir occurs along ridgelines and within drainages along the southern portion. The private land east of the BLM parcel was commercially harvested and subsequently sold to create a housing subdivision. Current stand conditions in the housing subdivision consist of varying densities of Douglas-fir with significant quantities of natural lodgepole pine and Douglas-fir regeneration.

Other Government Entities - No past timber harvesting or other activities have occurred on Forest Service or Montana DNRC lands within the 1 mile buffer around the proposed project area.

Present Actions - Present activities on the BLM parcel consists of a grazing lease.

Reasonably foreseeable actions - Reasonably foreseeable actions on the BLM parcel would include the renewal of the current grazing lease.

Fred Burr Project Area:

Past commercial harvests have occurred within the 162 acre BLM parcel equaling 5% of the total parcel. Summary in Table 3.2.

Table 3.2 Past Vegetation Treatments in the Fred Burr BLM Parcel

| Sale Name | Year | Treatment | Acres | Percent of BLM Parcel |
|---|------|---------------------|-----------|-----------------------|
| Northwest Energy powerline right-of-way | 1977 | Clearcut | 8.7 | 5% |
| Fred Burr Salvage | 2011 | Hazard Tree Removal | 676 trees | N/A |

Total = 5%

Northwest Energy powerline right-of-way (1977) - The sale was conducted in 1977 to facilitate the installation of a power line and was 8.7 acres in size. The power line runs the entire length of the BLM parcel from north to south.

Fred Burr Salvage (2011) - Following a mountain pine beetle outbreak an additional 676 trees were removed along the length of the power line in 2011 to prevent damage to the installation.

Private Land - Past harvesting on private land has been extensive with the current conditions consisting of widely spaced large Douglas-fir, isolated groups of lodgepole pine with the result being substantial quantities of natural lodgepole pine and Douglas-fir regeneration.

Present Actions - Present activities on the BLM parcel include road construction by the Discovery Ski Area within the BLM approved right-of-way which will include 7 acres of timber harvesting.

Reasonably foreseeable actions - There are no reasonably foreseeable actions on the BLM parcel.

No Action - Cumulative Impacts:

Marshall Grade Project Area:

Timber Harvest - The timber harvest would not be implemented in the Marshall Grade project area.

Meadow Restoration - The meadow restoration project would not be implemented in the Marshall Grade project area.

Whitebark Pine Release - The whitebark pine release project would not be implemented in the Marshall Grade project area.

Fred Burr Project Area:

Timber Harvest - The timber harvest would not be implemented in the Fred Burr project area.

Proposed Action – Cumulative Impacts:

Marshall Grade Project Area:

Timber Harvest – The proposed 138 acre timber harvest represents 10% of the total 1360 acre BLM parcel. 40 acres (2.9% of the total area) would be deferred from treatment to provide for big game thermal/hiding cover and to retain connectivity with adjacent forested stands and foraging areas. 39 acres (2.8% of the total area) would consist of a light thinning of the Douglas-fir component to improve health and resiliency and the removal of dead and dying lodgepole pine to salvage economic value, reduce hazardous fuels and release the understory of established Douglas-fir and lodgepole pine regeneration. 59 acres (4.3% of the total area) would consist of the removal of dead and dying lodgepole pine to salvage economic value, reduce hazardous fuels and release the understory of established Douglas-fir and lodgepole pine regeneration with the retention of all Douglas-fir throughout the matrix to retain stand structure.

Meadow Restoration – The proposed 132 acre meadow restoration project to remove small diameter conifer encroachment represents 9.7% of the total 1360 acre BLM parcel.

Whitebark Pine Release – The proposed 150 acre whitebark pine release project to selectively remove competition around established mature and seedling/sapling sized whitebark pine represents 11% of the total 1360 acre BLM parcel.

Fred Burr Project Area:

Timber Harvest – The proposed 89 acre timber sale represents 55% of the total 162 acre BLM parcel. 26 acres (30%) of the proposed harvest area consists of Douglas-fir with small occurrences of lodgepole pine in which a light thinning would occur. The remaining 63 acres (70%) consists of dead and dying lodgepole pine that would be removed from the site.

3.3 Wildlife and Wildlife Habitat

3.3.1 Affected Environment:

Special Status Species:

Marshall Grade and Fred Burr Project Areas:

Marshall Grade and the Fred Burr area provides habitat for several terrestrial Special Status Species. Species included in Table 3.3 are protected under the Endangered Species Act; species included in Table 3.3 are recognized by the BLM Montana/Dakotas State Director as Sensitive Species.

Threatened and Endangered:

Table 3.3 Threatened and Endangered Species Occurrence and Habitat Potentially Affected By the Proposed Action

| Species | Status | Occurrence | Habitat Potentially Affected |
|--|------------|------------|------------------------------------|
| Grizzly Bear (<i>Ursus arctos</i>) | Threatened | Resident | Yes, occupied grizzly bear habitat |
| Canada Lynx (<i>Lynx Canadensis</i>) | Threatened | Transient | No, unoccupied Canada lynx habitat |
| Western yellow-billed cuckoo (<i>Coccyzus americanus</i>) | Threatened | No | No, habitat not present |
| Sprague’s pipit (<i>Anthus spragueii</i>) | Candidate | No | No, habitat not present |

Grizzly bear (threatened) is a resident of Granite County. The Proposed Action area is approximately 50 miles south of the Northern Continental Divide Grizzly Bear Recovery Zone (NCDE). Grizzly bears have expanded their range south of the NCDE in the last 10-years and are routinely reported in the John Long Mountains (Jamie Jonkel, wildlife biologist, Montana Department of Fish, Wildlife, and Parks). Grizzly bear will be further analyzed in this proposal. Canada lynx(threatened) are not known to occupy the Proposed Action area, which is considered secondary habitat. Lynx analysis Units have not been delineated and Critical Habitat is not designated. The proposal would have no effect on Canada lynx and therefore they are not analyzed further. Western yellow-billed cuckoo (threatened) is not known to inhabit Granite County and their preferred habitat, riparian areas with cottonwoods and willows are not present. The proposal would have no effect on yellow-billed cuckoos and therefore they are not analyzed further. Sprague’s pipit (candidate) is not known to inhabit Granite County, and their preferred habitat, open grasslands with rough fescue and bluebunch wheatgrass are not present. The proposal would not jeopardize the continued existence of Sprague’s pipit and therefore they are not analyzed further.

Sensitive Species:

Table 3.4 Sensitive Species Occurrence and Habitat Potentially Affected By the Proposed Action

| Species | Occurrence | Habitat Potentially Affected |
|---|------------|------------------------------|
| Bald Eagle (<i>Haliaeetus leucocephalus</i>) | Resident | Yes |
| Black-backed Woodpecker (<i>Picoides arcticus</i>) | Resident | Yes |
| Golden Eagle (<i>Aquila chrysaetos</i>) | Resident | Yes |
| Great Gray Owl (<i>Strix nebulosa</i>) | Resident | Yes |
| Gray wolf (<i>Canis lupus</i>) | Resident | Yes |
| Wolverine (<i>Gulo gulo</i>) | Resident | Yes |

Bald eagle is a resident; nesting territories have been established at Porter’s Corner, Black Pine, and Sluice Gulch, but not in the treatment area. Bald eagle may forage in the treatment area. Black-backed woodpecker is a resident; they are not known to nest, but may forage in the treatment area. Golden eagle is a resident; they nest in Granite County, but not in the treatment area. Great gray owl is a resident, but nests have not been located in the treatment area. Gray wolf is a resident and the Slide Rock and Black Pine wolf packs are in the proposed project vicinity (Tyler Parks, FWP). Wolverine is a resident; dens are not known to exist, but they may forage and travel through the treatment area.

Migratory Birds and Species of Concern:

At least 40 migratory birds and Species of Concern inhabit the project area during the nesting season. These birds are grouped into one of four nesting guilds in Table 3.5 A few of these bird species include: brown creeper, Cassin’s finch, Clark’s nutcracker, evening grosbeak, northern goshawk, pileated woodpecker, American kestrel, American robin, brown-headed cowbird, chipping sparrow, mountain bluebird, Lincoln’s sparrow, and Swainson’s thrush.

Table 3.5 Migratory Bird and Species of Concern Nesting Guilds for 40 Species and Potential Habitat Affected By the Proposed Action

| Nesting Guild | Number of Species and Frequency | Habitat Potentially Affected? |
|---------------|---------------------------------|-------------------------------|
| Ground | 4 (10%) | Yes |
| Shrub | 9 (23%) | Yes |
| Tree | 21 (53%) | Yes |
| Snag | 6 (14%) | Yes |

Big Game:

Bighorn sheep, moose, elk, mule deer, whit-tailed deer, mountain lion, and black bear inhabit the proposed action area (Table 3.6). The Marshall Grade area is located in Management Area 6, which is big game winter range for elk, deer, moose, and lions. Bighorn sheep may use the Marshall Grade area, but generally are located closer to the Rock Creek drainage. Black bear utilize the area during spring and summer. The Fred Burr area is located in elk winter range, and may be inhabited by deer, moose, lions, and black bears. Bighorns do not inhabit Fred Burr.

Table 3.6 Big Game Species and Potential Habitat Affected By the Proposed Action

| Species | Occurrence | Habitat Potentially Affected? |
|-------------------|------------|-------------------------------|
| Bighorn Sheep | Yes | Yes |
| Moose | Yes | Yes |
| Elk | Yes | Yes |
| Mule Deer | Yes | Yes |
| White-tailed Deer | Yes | Yes |
| Mountain Lion | Yes | Yes |
| Black Bear | Yes | Yes |

3.3.2 Direct and Indirect Impacts

No Action - Direct and Indirect Impacts:

Special Status Species:

Threatened and Endangered - The project would not occur. Therefore, direct and indirect impacts to threatened and endangered species and candidate species would not occur to grizzly bear, Canada lynx, western yellow-billed cuckoo, and Sprague’s pipit.

Sensitive Species - The project would not occur. Therefore, direct and indirect impacts to terrestrial sensitive species would not occur to bald eagle, black-backed woodpecker, golden eagle, great gray owl, gray wolf, and wolverine.

Other Wildlife:

Migratory Birds and Species of Concern – The project would not occur. Therefore, direct and indirect impacts would not occur to migratory birds and Species of Concern.

Big Game – The project would not occur. Therefore, direct and indirect impacts would not occur to big game ungulates and carnivores such as mountain lion and black bear.

Proposed Action - Direct and Indirect Impacts:

Special Status Species:

Terrestrial threatened and endangered species - Direct and indirect effects may occur to grizzly bear. Direct effects from displacement may occur, but are considered temporary. Black Pine Ridge and the John Long Mountains provide security habitat for grizzlies, which ameliorates temporary displacement. The Missoula Field Office Food/Attractant Storage Strategy would be included in the two timber sales and the meadow and whitebark pine restoration treatments to mitigate direct effects. Cattle may be present in treatment areas during summer, and would compete with grizzlies for forage. Competition for forage between grizzlies and cattle would be no different from pre-treatment effects. Road construction is not proposed and therefore would not lead to direct or indirect effects. Indirect effects are considered beneficial. Timber harvest would create early stand initiation providing more grass and herbaceous forage for grizzlies. Meadow and whitebark pine restoration would also provide additional grass and forbs for bears. Whitebark pine cone crops may increase after restoration treatments. Prescribed fire may benefit grizzlies by stimulating and enriching grass, forbs, berries, and other forage

Terrestrial sensitive species - Direct and indirect effects may occur. Direct effects may occur from temporary displacement. However, adjacent habitat is available for sensitive species during the life of the proposal. Timber harvest and slashing/thinning would not occur from June 1 to July 15 to protect nesting birds. Active nests of bald eagle, black-backed woodpecker, golden eagle, and great gray owl have not been recorded at Fred Burr or Marshall Grade. Prescribed fire may benefit black-backed woodpecker. If an active owl or eagle nest is located in the units a 40-acre buffer around the nest would be deferred from any ground disturbing activity from February through August 15. A nest survey would be conducted prior to project initiation. Gray wolf and wolverine may also be temporarily displaced. Indirect effects may occur from a decrease in potential nesting overstory tree abundance. However, biological legacies (snags, logs, mature live trees, saplings, shrubs, etc.) would be retained for future nesting sites. Indirect effects may be beneficial for wolves and wolverines due to potential increase in mammalian prey species. A healthy prey base of mule deer, white-tailed deer, elk, bighorn sheep, and moose inhabit the area. Wolf den and/or rendezvous sites have not been identified in the action area. The Proposed Action would not lead or contribute to potential listing of terrestrial sensitive species under the Endangered Species Act.

Other Wildlife:

Migratory Birds and Species of Concern - Direct and indirect effects would be similar to those described for special status species: Direct effects may cause temporary displacement, but the nesting season would be protected from June 1 to July 15. Indirect effects associated with timber harvest may reduce habitat for nesting birds. However, biological legacies would be retained with a diverse mosaic of oldgrowth, mature trees, saplings and seedlings available for future nesting. Species diversity would be retained, with potential decline in species abundance and potential stable species richness.

Big Game - Direct and indirect effects may occur. Temporary displacement may occur for big game from all treatments. Available undisturbed habitat occurs in the proposed action area. Vegetation treatments would not occur from June 1 to July 15 to protect big game calving and fawning periods. Indirectly, the timber sales at Fred Burr and Marshall Grade would occur in summer to mitigate potential adverse effects to big game winter range. Summer harvest would create a conifer seed bed by mechanical ground scarification, which would hasten conifer seedling establishment and quaking aspen suckering. Vegetation

treatments, such as prescribed fire would enhance forage opportunities in grassland/shrublands. A prey-base of ungulates would be available for mountain lions.

3.3.3 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 other actions.

The geographic area considered to assess cumulative effects consists of the project area, with a one mile buffer. The project area includes BLM, DNRC, FS, and private lands. Wildlife distribution and the condition of wildlife habitat in this area have been influenced by current and past activities including: timber harvest, road construction, livestock grazing, wildfire, subdivision and residential construction. These actions may continue to occur at various levels in the future. Direct and indirect effects for species considered in the analysis may occur. The effects of the Proposed Action, when combined with past, present, and reasonably foreseeable future actions, would have cumulative effects, but would not be considered adverse cumulative effects. The cumulative effects associated with the proposal may be beneficial due to restoration treatments in meadow and whitebark pine units, and due to applying ecological forestry principles in timber harvest units.

No Action - Cumulative Impacts:

Special Status Species:

Threatened and Endangered Species – Direct and indirect impacts of the no action alternative would not occur to threatened and endangered species and candidate species, therefore, cumulative impacts related to past, present, and reasonably foreseeable future actions would not occur.

Sensitive Species - Direct and indirect impacts of the no action alternative would not occur to terrestrial sensitive species, therefore, cumulative impacts related to past, present, and reasonably foreseeable future actions would not occur.

Other Wildlife:

Migratory Birds and Species of Concern – Direct and indirect impacts of the no action alternative would not occur, therefore, cumulative impacts related to past, present, and reasonably foreseeable future actions would not occur.

Big Game – Direct and indirect impacts related to the no action alternative would not occur, therefore, cumulative impacts related to past, present, and reasonably foreseeable future actions would not occur.

Proposed Action – Cumulative Impacts:

Special Status Species:

Terrestrial threatened and endangered species – Direct and indirect impacts may occur to the grizzly bear, therefore, cumulative effects related to past, present, and reasonably foreseeable future actions would occur. Timber harvest has occurred in the past, is currently occurring on federal, state, and private lands, and is expected to continue in the future. Roads would not be constructed and past and future road construction is not anticipated. Livestock grazing by cattle has occurred in the past, currently occurs, and is expected to continue in the future. Wildfire has occurred in the past, currently occurs, and is expected to increase in the future. A subdivision is located within a mile of the project area. Subdivisions occur in the surrounding area, and are expected to continue subdivision development in the future. Prescribed fire may benefit grizzlies by enhancing grass and forb forage. Cumulative effects of the proposed action, when

combined with past, present, and reasonably foreseeable future actions would occur. These additive cumulative effects would not be considered adverse and it has been determined that the project “my effect, but is not likely to adversely affect the grizzly bear and its habitat.

Terrestrial sensitive species – Direct and indirect impacts may occur to sensitive species, therefore, cumulative effects would occur. Direct and indirect impacts are predominantly related to temporary displacement. Timber harvest within the cumulative effects boundary may have reduced nest trees for sensitive birds, but would not affect wolf and wolverine habitat. Roads would not be constructed. Livestock grazing would not affect sensitive species. Wildfire is expected to occur in the future. Prescribed fire may benefit black-backed woodpecker. Subdivision development is a direct loss of habitat for sensitive species, but available habitat is present in the surrounding John Long Mountain area. Cumulative effects of the proposed action, when combined with past, present, and reasonably foreseeable future actions would occur. These additive cumulative effects would not be considered adverse. The proposed Action would not lead or contribute to potential listing of terrestrial sensitive species under the Endangered Species Act.

Other Wildlife:

Migratory Birds and Species of Concern – Direct and indirect impacts would occur and are similar to those described for special status species. Temporary displacement and loss of nesting habitat for nesting birds may occur. However, the nesting season would be protected from disturbance from June 1 to July 15. Biological legacies, such as snags, logs, and live trees would be retained in harvest and restoration units. Bird abundance in timber harvest units would lower than pretreatment, but species richness and diversity would be retained. Cumulative effects of the proposed action, when combined with cumulative effects related to past, present, and reasonably foreseeable future actions would occur. Additive cumulative effects would not be considered adverse. The proposed action would not lead or contribute to potential listing of migratory birds and species of concern under the Endangered Species Act.

Big Game – Direct and indirect effects would occur, therefore, cumulative impacts would occur. Direct impacts include temporary displacement. Biological legacies and ecological forestry principles would be retained and applied in both timber harvest units. Such techniques would retain thermal and hiding cover and provide additional forage pretreatment. Aspen suckering, and shrub, grass, and forb response to timber harvest treatments would benefit big game by retaining hiding and thermal cover, and forage enhancement. Timber harvest would not occur during winter to protect big game winter range. Meadow and whitebark pine restoration would also benefit big game by providing forage and cover. Prescribed fire would benefit big game by enhancing forage habitat. Movement to and utilization of big game summer range would not be inhibited by the proposed action. Cumulative effects of the proposed action, when combined with past, present, and reasonably foreseeable future actions would occur. However, cumulative effects would not be considered adverse.

3.4 Rangeland Vegetation and Health

3.4.1 Affected Environment:

Marshall Grade Project Area:

The Marshall Grade project is located within the Spring Creek grazing allotment #17324 that consist of approximately 1,360 acres of BLM administered land. Historically the BLM land within the allotment boundary has been used in conjunction with adjacent private land for a cow/calf livestock operation for several decades. Current authorized season of use is June 16th through September 30th with total of 109 Animal Unit Months (AUM).

Upland vegetation in the project area mainly consists of: rough fescue, Idaho fescue, bluebunch wheatgrass, elk sedge, Columbia needlegrass, June grass, lupine and sagebrush. The latest Rangeland Health Assessment was conducted by an interdisciplinary team in the summer of 2007 and the field

evaluation identified all rangeland standards were met on the allotment. The assessment area contained desirable native plant species expected for the site.

Fred Burr Project Area:

The Fred Burr project does not contain rangeland vegetative sites therefore the Marshall Grade project that contains rangeland vegetation will only be discussed in this section.

3.4.2 Direct and Indirect Impacts

No Action – Direct and Indirect Impacts:

Under this alternative, conifer encroachment would not be removed from the meadow restoration area and there would be no direct impacts. The indirect impacts would be the continued conifer encroachment on the meadow therefor increasing tree canopy cover. It is expected that native grass and shrub species would decline in population and production.

Proposed Action - Direct and Indirect Impacts:

The direct effects with the meadow restoration would involve the removal of conifer encroachment. A series of slash piles would be created within the project area and later burned. The result of the burn piles would be a limited and temporary loss of upland vegetation. If a broadcast burn is conducted, the result would be the direct removal of litter and upland vegetation. The indirect effects of the project would improve upland vegetation quality and production. The lack of tree canopy would improve photosynthesis for native grass species. Vegetative regrowth would provide quality forage for wildlife and domestic livestock.

3.4.3 Cumulative Impacts:

The geographic area considered to assess cumulative effects consists of the project area and a one mile buffer. The project area includes BLM, DNRC, FS and private lands.

No Action – Cumulative Impacts:

Under this action there would be direct effects to forest overstory or upland grass/shrub species. In the foreseeable future, conifer encroachment would continue and reduce native grass and shrub species populations and forage production. Domestic livestock grazing patterns may be altered to some degree as forage production declines.

Proposed Action – Cumulative Impacts:

The removal of conifer encroachment would provide favorable growing conditions for native upland plant species. Pile burning would be a minimal impact to the overall meadow while retaining plant litter in contact with the soil surface. It is recommended under this action that no salt/mineral blocks should be placed within or adjacent to the treatment area.

The implementation of a broadcast burn would improve forage quality and production for the next several years. The regrowth and improved forage quality would attract big game and domestic livestock to the treatment area. It is recommended if a broadcast burn is prescribed, livestock grazing should not be allowed in the treatment area for at least two years to allow native grasses to regain plant vigor. If desired conditions are not met within the two year time frame due to weather or other unforeseen events, livestock grazing may be postponed for additional seasons until recovery objectives are met. A temporary fence around the perimeter of the treatment area may be necessary to prevent livestock grazing during the recovery period.

3.5 Noxious Weeds

3.5.1 Affected Environment:

Marshall Grade and Fred Burr Project Areas:

Several species of noxious weeds are now established in the Fred Burr project area. Spotted knapweed is the most widespread species but hounds tongue and musk thistle occur along roads, trails and disturbed sites especially at lower elevations. The Marshall Grade project area has limited noxious weed populations with spotted knapweed being the most prevalent. Only scattered individual of hounds tongue and musk thistle are present. Weeds are generally absent from forest communities with closed canopies, and on relatively cool, mesic sites. South aspect slopes have the highest risk for noxious weed infestation particularly spotted knapweed.

Many areas within the Flint Creek and Rock creek drainage are in near pristine condition with respect to invasive species and to overall rangeland health. These are high priority sites for weed management efforts by both the BLM and county cooperative agreements.

Presently, the management of noxious weeds on BLM-administered lands is guided by the *Missoula Field Office Integrated Weed Management Plan (2003)*, and a Decision Record (DR) issued in 2004. Public lands within the assessment area have been treated with appropriate herbicides using both aerial and ground-based equipment. Treatment acreages vary by year. Biological control agents, re-vegetation and prevention measures are also being used to manage noxious weeds under the 2004 decision.

3.5.2 Direct and Indirect Impacts

No Action - Direct and Indirect Impacts:

Noxious weed risks would likely continue at the present level similar to that discussed in the cumulative effects section. Ongoing programs and treatment efforts would continue to reduce overall weed populations.

Proposed Action - Direct and Indirect Impacts:

The proposed vegetation treatments would involve the use of harvest equipment and associated vehicle traffic which could increase the risk of new weed seed entering the area. Reduction of canopy cover would have a direct effect on noxious weeds by increasing the available light for noxious weed growth. Implementing design features will greatly reduce the risk of new infestations, and there would be a low risk of new weed populations becoming established with the vegetation treatments areas.

3.5.3 Cumulative Impacts

The geographic area considered to assess cumulative effects consists of the project area and a one mile buffer. The project area includes BLM, DNRC, FS and private lands.

No Action – Cumulative Impacts:

Noxious weed risks would likely continue at the present level.

Proposed Action – Cumulative Impacts:

Ongoing weed treatment efforts from prior decisions will continue to have an impact on noxious weed populations. Cooperative efforts with counties and private landowners have reduced overall noxious weed populations or have contained existing populations. This trend is expected to continue.

3.6 Aquatic Species and Habitat

3.6.1 Affected Environment:

Marshall Grade Project Area:

The treatment units associated with Marshall Grade are located in the uplands and in habitat not associated with aquatic resources.

Fred Burr Project Area:

The Fred Burr project area potentially provides habitat for several aquatic Special Status Species. Species included in Table 1 are protected under the Endangered Species Act or recognized by the BLM Montana/Dakotas State Director as Sensitive Species.

Table 3.7 Aquatic threatened, endangered, or sensitive species occurrence and habitat potentially affected by the proposed action

| Species | Status | Occurrence in Marshall Grade portion | Occurrence in Fred Burr portion | Habitat Potentially Affected |
|--|------------------|--------------------------------------|---------------------------------|-------------------------------|
| Bull trout (<i>Salvelinus confluentus</i>) | Threatened | No | No | Downstream in Flint Creek |
| Bull trout Critical Habitat | Federally listed | No | No | Downstream in Flint Creek |
| Westslope cutthroat trout (<i>Oncorhynchus clarki lewisi</i>) | Sensitive | No | Not likely | Not likely |
| Western toad (<i>Anaxyrus boreas</i>) | Sensitive | Transient | Transient | Yes potential habitat present |
| Western pearlshell mussel (<i>Anaxyrus boreas</i>) | Sensitive | No | No | No, habitat not present |

Bull trout (*Salvelinus confluentus*)

Bull trout is an ESA-listed Threatened Species with designated Critical Habitat. Critical habitat identifies geographic areas that contain features essential for the conservation of a listed species.

The bull trout is a large, piscivorous, salmonid species indigenous to the Clark Fork and Flathead drainages of western Montana. The Project area is within the current and historic range of the bull trout, although bull trout have not been documented in Fred Burr Creek. Bull trout prefer to reside in cold, clean and relatively pristine streams, rivers and natural lakes. As a migratory species, both adfluvial and fluvial bull trout are often travel long distances in response to varying seasonal conditions and requirements for both habitat and development. Open migratory corridors without impassible barriers are essential for the long-term persistence of bull trout populations (Rieman and McIntyre 1993; Dunham and Rieman 1999).

Adult bull trout have travelled well over 150 miles in just a few months to reach spawning sites. Spawning occurs from late August through October in third- and fourth-order tributary streams throughout their range. Productive spawning habitat requirements for bull trout include cold water temperatures, a clear and clean coarse gravel to fine cobble substrate mixture with a high percentage of interstitial space, and low levels of fine sediment. Juvenile bull trout feed primarily on aquatic benthic macroinvertebrates while adult bull trout are largely piscivorous (Rieman and McIntyre 1993; Donald and Alger 1993).

Optimal bull trout habitat is a complex mixture of riffles and deep pools with an abundance of adequate cover consisting of deeply undercut banks, copious amounts of overhanging riparian vegetation and large quantities of in-stream coarse woody debris. Of native salmonids in the Pacific Northwest of the United States, bull trout have the most specific habitat requirements (Rieman and McIntyre 1993).

Bull trout are threatened by anthropogenic habitat degradation and fragmentation. Their declining population trend throughout their native range ultimately led to their official designation by the USFWS as a Threatened species under the ESA in 1999. Critical Habitat designation followed in 2005 and was revised in 2010. In Montana, including the Upper Clark Fork River Critical Habitat Subunit, approximately 3,056 stream miles and 221,471 acres of lakes were designated as Critical Habitat. Overall, approximately 18,975 miles of streams and 488,252 acres of lakes were designated as Critical Habitat throughout their geographic home range (USFWS 2004, 2010).

Fred Burr Creek is not designated as Critical Habitat for bull trout. However Fred Burr Creek is a direct tributary of Flint Creek which has been designated as Critical Habitat for bull trout within the Upper Clark Fork River Critical Habitat Subunit. Although species occupation of available habitat is not a prerequisite for Critical Habitat designation under the ESA, only about 4.3% of officially-designated streams are currently considered to be unoccupied. This means that if a stream did not have verified records of recent occupation, it was not typically included in the official designation of Critical Habitat. USFWS has acknowledged that it is likely bull trout will need to be restored to currently unoccupied habitat to achieve recovery (USFWS 2010).

Westslope Cutthroat Trout (*Oncorhynchus clarki lewisi*)

The westslope cutthroat trout is recognized as a Sensitive Species by the BLM. Westslope cutthroat trout, (WCT) inhabit streams on both sides of the continental divide. Its eastside distribution is largely in Montana in the Missouri River drainage. Historically, within the Missouri basin, the downstream distribution extended to Great Falls and included headwaters of the Judith, Milk, and Marias rivers. On the west side of the divide, the subspecies occurs in the upper Kootenai, Clark Fork, Clearwater, and Salmon rivers. It also inhabits the Spokane River above Spokane Falls, and the Coeur d'Alene and St. Joe drainages. Shepard et al. (2005) estimates that historically 90, 800 km were occupied but the subspecies distribution wide. Their estimate suggests that 59% of those lotic habitats are currently occupied.

Genetically pure westslope cutthroat trout populations have been drastically reduced in their native range because of hybridization with rainbow trout and/or Yellowstone cutthroat trout. In western Montana, various studies estimate that the westslope cutthroat trout occupies between 19-27% of its historic range (Van Eimeren 1996), and that genetically pure westslope cutthroat are estimated to exist in only 2-4% of their historic stream distribution (McIntyre and Rieman 1995).

Westslope cutthroat trout was petitioned for listing throughout its historic range in 1997. In 2000, the USFWS found WCT "Not Warranted for Listing". A recent lawsuit resulted in the determination being remanded to the USFWS for reevaluation. Following a new status assessment the August 2003 finding issued in response to the amended petition, again found WCT "Not Warranted for Listing" (USFWS 2003).

Westslope cutthroat trout prefer to reside in cold, clean and well-oxygenated streams, rivers and natural lakes. They can be either migratory or nonmigratory. Both adfluvial and fluvial migratory forms can travel beyond 50 miles between adult and spawning habitats. Resident forms spend their entire life in small, headwaters tributary streams. Throughout their range, westslope cutthroat trout spawn in the spring when water flow is relatively high as a result of snow melt. Productive spawning habitat requirements for

westslope cutthroat trout include cold water temperatures and clean gravel substrates with a high percentage of interstitial space and low levels of fine sediment. Westslope cutthroat trout feed primarily on aquatic benthic macroinvertebrates and zooplankton and are usually not piscivorous.

The westslope cutthroat trout is a Species of Special Concern in Montana (Montana Department of Fish, Wildlife, and Parks designation). It has been severely impacted in its native range because of the influence of nonnative species as well as anthropogenic habitat fragmentation and degradation. Westslope cutthroat trout continue to be negatively affected by the loss, degradation and fragmentation of habitat as a consequence of logging, road construction, mining, and overgrazing; all of which may result in sedimentation and increased water temperatures. Dams, irrigation diversions, and other migratory barriers also have negatively affected westslope cutthroat trout habitat and have interfered with their metapopulation dynamics; resulting in increasingly fragmented populations. Other threats include suitable habitat reduction as a result of climate change and sport fishing related mortality (McIntyre and Rieman 1995).

Western toad (*Anaxyrus boreas*)

The western toad is recognized as a Sensitive Species by the BLM. It is largely terrestrial and found in a variety of habitats from valley bottoms to high elevations. They breed in lakes, ponds and occasionally in slow flowing streams. They prefer shallow areas with muddy bottoms. Breeding typically occurs from May to July, and tadpoles will metamorphose when 2 to 3 months old (Reichel and Flath 1995). Juveniles can be found in dense aggregations adjacent to breeding grounds. They are susceptible to high mortality rates if measurable disturbance occurs shortly after metamorphosis as juveniles begin to migrate away from breeding areas.

Adult and juvenile toads are freeze intolerant and over-winter and shelter in underground caverns, or rodent burrows (Maxell 2000). Adults feed on a variety of ground dwelling invertebrates and are known to eat smaller individuals of their own species. Within the last 25 years, western toads have undergone population crashes in Colorado, Utah, southeast Wyoming and New Mexico (Ross et al. 1995, Corn et al. 1997). In the northern Rocky Mountains they have also undergone declines. Biologists believe, based on declines in other western states, they are depressed due to disease, most notably chytrid fungus.

We expect there are suitable habitats for toads (and other amphibians) across the project area. Outside of well-established lakes, ponds and wetlands that dependably provide habitat every year, some percentage amphibian habitat is transient in nature. Fluctuations in precipitation and/or beaver populations cause changes in the abundance and characteristics of ponds, wetlands, and stream side channels. Toads appear to be opportunists at some level and breeding sites sometimes occur in odd locations.

Toads have not been documented within the project area. Information on distribution and habitat association; however, implies toads are potentially present at some time.

Western pearlshell mussel (*Margaritifera falcata*)

The western pearlshell mussel is recognized as a Sensitive Species by the BLM *Margaritifera falcata* may be one of the longest living freshwater invertebrates and animals. Specimens have been aged at greater than 90 years (Vannote and Minshall 1982). The western pearlshell mussel has an elongate shell typically 2.5-4 inches long with a concave ventral edge. The interior shell has a purple to pink hue as the outside shell is dark brown to black.

The life history of this mussel consists of four basic life stages. The larval stage briefly parasitizes a host fish, by attaching to the gills. They fall off the host as a juvenile mussel. The larval parasitism on fish enables upstream transport to habitats otherwise difficult to reach by relatively immobile adult mussels. Western pearlshell glochidia are considered highly host specific (Bauer 1987) as they are typically restricted to salmonid fishes.

According to Stagliano (2010) they are found in cool-cold water, stable streams and rivers that are generally low to moderate gradient (1-2%) and wider than 2 meters. The average wetted stream width of streams with viable populations in Montana is 5.2 meters. The preferable benthic substrate is stable gravel and pebbles with a dominant substrate size of 32 mm. Generally, this is equivalent to a Rosgen Class C4 stream type (Rosgen 1996). Willows or alders commonly dominate the riparian zone. It can occur in sand or gravel or among cobble and boulders in moderate to higher gradient larger rivers

Its distribution is currently sporadic, while formerly being widespread and common in western Montana streams (Stagliano 2010). The reduction in distribution is probably, in many instances, related to the loss of its preferred native intermediate host, cutthroat trout. It is known to use other non-native salmonid species as hosts, including rainbow and brook trout. It appears however, successful reproduction and recruitment may occur uncommonly when native cutthroat are absent.

According to Stagliano 2010, the western pearlshell mussel continues to experience significant range reductions over the last 100 years. The primary cause of stream habitat deterioration in Montana is high fine sediment load, related to agricultural practices, which is one of the most serious pollutants of streams systems. Excess fine sediment can degrade mussel habitats by decreasing substrate permeability. This has a smothering effect on juvenile mussels and limits successful recruitment (Stagliano 2010).

Western pearlshells have not been found within the analysis area in Fred Burr Creek. In 2007, mussel surveys were conducted in lower Fred Burr Creek and in Flint Creek downstream from the mouth of Fred Burr Creek. In each survey, 300 meters of stream were surveyed and no mussels were observed.

Fred Burr Creek

Fred Burr Creek is a tributary to Flint Creek, which enters the drainage just south of the town of Philipsburg. The lower portion of Fred Burr Creek runs primarily through private land with the exception of a thin strip of BLM land at a power-line crossing. The upper portion of the drainage is mainly on National Forest land, although some private land is present. Fred Burr and Little Fred Burr Lakes are located within the drainage. Primary land use in the drainage has historically been mining. Historic photos indicate that in the early twentieth century, a large mine was in operation on Fred Burr Creek, which drastically altered the entire valley and portions of the channel and floodplain of Fred Burr Creek (Lindstrom et al 2008).

Two stream reaches of Fred Burr Creek were electrofished on September 12, 2007. The upper section was located above Forest Road 1567 on National Forest land. Twenty-six westslope cutthroat trout and 16 brown trout were captured in this section comprising 62% and 38% of the trout population, respectively (Table 3.8). The lower sampling site was located at river mile 3.2 on BLM land. A total of 23 brown trout and 13 rainbow trout were captured at this site (Table 3.8). Species composition differs from the upper site to the lower site with brown trout comprising a greater portion of the fish caught at river mile 3.2 and with rainbow trout being relatively abundant at river mile 3.2 and absent at river mile 6.3 (Lindstrom et al 2008).

WCT were not observed in the BLM reach of the stream at the time of the sampling, but it is possible they make up a very small portion of the fishery or are present in this reach during other times of the year. Given the fact rainbow trout are found to be abundant in the stream and found upstream in Fred Burr Lake the likelihood of WCT being hybridized is high. Genetic testing on WCT in this stream has not occurred.

Table 3.8 Montana Fish Wildlife and Parks electrofishing data collected in two sections of Fred Burr Creek in 2007 (Lindstrom et al 2008)

| Section Name | Species | Number of Fish Captured | Fish per 100 m (CPUE) | Mean Length (mm) | Length Range (mm) | Species Composition (%) |
|--------------|---------|-------------------------|-----------------------|------------------|-------------------|-------------------------|
| RM 6.3 | WCT | 26 | 26 | 145 | 87-216 | 62 |

| | | | | | | |
|-----------------|-------|----|----|-----|---------|----|
| | Brown | 16 | 16 | 155 | 106-233 | 38 |
| RM 3.2 (BLM) | Brown | 23 | 23 | 138 | 60-254 | 64 |
| | RBT | 13 | 13 | 163 | 90-231 | 36 |

Bull trout were not observed in either sampling reach. Nor are they documented having been observed in Fred Burr Creek according to the Montana Fisheries Information System, so they are not expected to occupy any portion of this stream.

Electrofishing surveys conducted by MFWP in Flint Creek during 2007 both upstream and downstream of Fred Burr Creek found 1 bull trout out of 1,044 fish observed. The dominant fish species documented during surveys in Flint Creek was found to be brown trout with less than 1 percent of the species composition comprised of bull trout (Lindstrom et al 2008). Other species observed in low densities were eastern brook trout and unidentified *Oncorhynchus* species (potentially rainbow trout, westslope cutthroat trout or hybrids).

Montana Fish Wildlife and Parks fisheries personnel conducted riparian assessments at each of the two electrofishing sections in Fred Burr Creek. The upper section received a 45/46 (98%) (Table 3.9). At this site, the stream appeared unaltered, and stream flow, riparian vegetation, and bank stability were good. This B channel was dominated by large boulders and large pools were present. At the downstream site, Fred Burr Creek received a slightly lower score of 54/58 (90%) (Table 3.9). This section of stream appeared to maintain less water and the banks were less vegetated and thus pools were shallower and less shaded. However, this site was still a boulder dominated B channel that maintained excellent bank stability. The reason for the reduced amount of water observed at the lower site on Fred Burr Creek is unknown. There were no diversions or ditches observed between the two sites, so it is suspected that a portion of this reach loses surface water to groundwater. Between the upper and lower sites, the creek runs through private land and was not thoroughly assessed. However, roadside observations indicated a potentially incised channel and altered riparian vegetation due to historic mining activities and potentially residential development (Lindstrom et al 2008).

Table 3.9 Montana Fish Wildlife and Parks riparian assessment results for the two sites sampled on Fred Burr Creek in 2007 (Lindstrom et al 2008)

| Section | Geomorphology | Vegetation | Fish Habitat | Total Score |
|--------------|---------------|-------------|--------------|-------------|
| RM 6.3 | 30/30 (100%) | 5/6 (83%) | 10/10 (100%) | 45/46 (98%) |
| RM 3.2 (BLM) | 30/30 (100%) | 15/18 (83%) | 7/10 (70%) | 54/58 (90%) |

3.6.2 Directs and Indirect Impacts

No Action – Direct and Indirect Impacts:

The no action alternative would result in no change to the aquatic resources. No impacts would result from the no action alternative. Species and habitat distribution and condition would remain as they are described in the existing condition of this EA.

Proposed Action - Direct and Indirect Impacts:

Marshall Grade Project Area:

The treatment units associated with Marshall Grade are located in the uplands and in habitat not associated with aquatic resources. Other than the potential for a western toad to be observed in the area due to their ubiquitous habitat use, no effect to aquatic resources are expected.

Fred Burr Project Area:

INFISH objectives:

Based on stream valley geomorphology and site potential tree height, we determined that with a 75-80 foot riparian habitat conservation area best defined this reach of Fred Burr Creek. We depicted the RCA in this case as a no activity zone from either side of the stream and that we would have no impact on the aquatic resource. This distance is roughly equal to one standing tree height; therefore, the potential for large woody debris recruitment to the stream in the future would remain. Large woody debris would remain within or above INFISH standards to provide habitat complexity as well as shade to the stream. Shading from the remaining dead trees as well as the deciduous regrowth along the stream would help to moderate stream temperatures in this short reach of Fred Burr Creek. Proposed project activities would not increase risk of sediment delivery to the stream given the flat hillslopes flanking the stream, the well vegetated banks and no activity zone.

Westslope cutthroat trout may be found in the stream adjacent to the project area, but it is unlikely that genetically pure WCT occupy this stream. No impacts are expected to any aquatic habitat therefore no impacts are expected to WCT (Table 3.10).

Bull trout, bull trout Critical Habitat, and western pearlshell mussels are not found within the analysis area and therefore no effects or impacts are expected (Table 3.10).

Western toads are not known to occupy the project area but given they can be found in a wide variety of habitats, it is possible that project related mortality could impact individual toads. No amphibian breeding areas are known to occur within or near the project area so it is not likely for concentrations or large numbers of toads to be impacted by the proposed activities (Table 3.10).

Table 3.10. Potential proposed project related impacts to fish , mussels & amphibians

| Species | Status | <i>No Effect (No Impact)</i> | <i>Not Likely to Adversely Affect (MIIH)</i> | <i>Likely to Adversely Affect (WIFV)</i> | <i>(Beneficial Impact)</i> |
|---|-----------------------------------|----------------------------------|--|--|--------------------------------|
| Bull Trout (<i>Salvelinus confluentus</i>) | Federally Listed Threatened | X | | | |
| Bull Trout Critical Habitat | Federally Listed | X | | | |
| Westslope cutthroat (<i>Oncorhynchus clarki lewisi</i>) | Sensitive | X | | | |
| Western toad (<i>Anaxyrus boreas</i>) | Sensitive | | X | | |
| Western pearlshell (<i>Margaritifera falcata</i>) | Sensitive | X | | | |

MIIH =may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or loss of viability to the population or species

WIFV =will impact individuals or habitat with a consequence that the action may contribute to a trend

towards federal listing or cause a loss of viability to the population or species

3.6.3 Cumulative Impacts

There are no direct or indirect effects to the above listed aquatic species; hence there are no cumulative impacts.

3.7 Water Quality

3.7.1 Affected Environment:

The State DEQ determined that Fred Burr Creek has impaired water quality pursuant to section 303(d) of the federal Clean Water Act (MTDEQ, 2016). Two beneficial uses, drinking water and aquatic life, are impaired due to arsenic, lead, and mercury from mill tailings. A Total Maximum Daily Load (TMDL) was established, from which DEQ's Water Quality Improvement Plan stresses the use of Best Management Practices for forestry activities (MTDEQ, 2012). A pollutant source assessment was conducted by BLM in 2012 on the parcel. Management recommendations from section 8.4 of the TMDL include streamside vegetation restoration, streambank stabilization, and timber harvest BMPs. The TMDL also recommends "reduce or eliminate concentrated runoff and discharges that generate sediment and/or heavy metals contamination to adjacent surface waters and groundwater to the extent practical". There would also be concern if contaminated bed sediments or bank soils were disturbed by the action.

Things that might impact water quality:

- Direct disturbance of streambed and bank sediments, some of which contain pollutant metals (MTDEQ, 2015).
- Delivery of sediment to the creek from the adjacent hillslopes
- Removal or alteration of streamside vegetation that provides shade, root stabilization, organic debris

The proposed action would involve no disturbance to the streambed or banks, or to streamside vegetation. Equipment entry is limited to at least 50 feet by the Montana Streamside Management Zone Law (Montana DNRC, 2006). As much as another 50 feet have been added to the no-equipment zone to comply with InFish Riparian Management Objectives resulting from a site-specific assessment (see section 3.6.2). Ground-based harvest machinery and prescribed burning will bare approximately 50% of the treatment area soils for scarification and regeneration (see 2.3). The soils are a very-stony to extremely-stony sandy loam of the Comad-Elkner Complex whose characteristics include: excessive permeability (excessively-drained), droughty, limited available water capacity, severe plant competition, and moderate erosion hazard (NRCS, 2016). The gravelly to stony soils textures are less susceptible to compaction than the clayey and silty textures. Luckow and Guldin (2007) stated that compaction can be minimized on non-rocky soils by logging during dry soil conditions, whereas logging during moist soil conditions on rocky soils is not as great a concern because the soil rock content buffers compaction.

Ground-based harvest on Marshall project area would be 138 acres on very deep somewhat excessively drained gravelly loams of the Elve and Evaro series (NRCS, 2016). The treatment would be on upper slope and ridge positions on straight and convex slopes. Ground-based equipment on these non-rocky soils would occur during dry or frozen soil conditions, or where slash depth is adequate to otherwise prevent compaction.

3.7.2 Direct and Indirect Impacts

No Action – Direct and Indirect Impacts:

The stand will continue to accumulate downed dead trees. This would increase fuel loading for X years and increase the hazard of a higher-severity fire, the risks of which would include loss of soil cover, hydrophobic soils, overland flow, erosion, and sediment delivery to Fred Burr Creek in the event of high-intensity rainfall. In this scenario water quality may be temporarily impaired by added sedimentation during storm runoff. However, it is unlikely to contribute any of the constituent metals pollutants since these are likely confined to bed and bank sediments in the reach (MTDEQ, 2015) and not in the upland soils on the adjacent hillsides.

Without a fire event during the period of higher fuel buildup, the stand would progress with regeneration of xxx into a stand characterized by.....due to dense ground cover, organic matter buildup, and inherently high plant competition on the soil type. Erosion and sediment delivery hazard would likely maintain status quo, wherein no hazard was identified in the existing condition. In this scenario, water quality would remain the same as existing condition.

Proposed Action - Direct and Indirect Impacts:

There would be no direct impacts to water quality since no activity or disturbance would occur within a minimum of 50 feet of the creek. Any pollutant metals in the streambed or banks would not be disturbed.

Indirect impacts of sediment delivery from fire would not occur with the salvage and reduced fuel loading.

Indirect impacts of offsite sediment delivery of sheet-wash soils bared from scarification is unlikely with the presence of the 50-foot SMZ and up to 80 feet for InFish RHCA widths of vegetation, combined with the gentle slopes, high rock content, and high soil permeability. Such a hazard might exist during the first summer in the event of a high-intensity thundershower, and reduce greatly from there on given rapid plant regrowth assumed from the soil descriptor for 'severe' plant competition.

WEPP (Water Erosion Prediction Project, USDA 2016) is a web-based erosion prediction tool for estimating erosion hazard and sediment movement. Simulations were run for both project areas with the assumption of 50%. WEPP predicts no sediment delivery off the hillslopes.

Coarse woody debris for DF/CARU recommended at 12-25 t/ac (Graham et al. 1994) to maintain long-term soil productivity.

3.7.3 Cumulative Impacts to Fred Burr water quality:

Recreational "mudding" crossing and swimming hole

Much of the BLM reach (~2300 feet) has either boulder-armored banks or well-vegetated banks with little bank erosion. A 100-foot portion of the reach has been used as a swimming hole and a truck crossing with associated bank denudation and erosion.

Bridge and road construction (Discovery ROW)

Road construction for the Fred Burr ROW began in 2015 and is partially completed to date. Bridge construction has not begun to date. Impacts were analyzed in an Environmental Assessment (BLM, 2014) and a low level of water quality impacts were expected from this action.

3.8 Recreation and Visuals

3.8.1 Affected Environment:

Marshall Grade Project Area:

There is no public access to the Marshall Creek area except from walking in from the Forest Service administered lands from the north. As such, recreational opportunities for the general public are limited. The landowners around the area use the public lands for hunting and possibly hiking/walking.

The Marshall Creek area was classified as a Visual Resource Management Class IV. Lands classified as Class IV are not generally visible from key scenic viewpoints. Contrasts may attract attention and be a dominant feature of the landscape in terms of scale; however, the change should repeat the basic elements (form, line, color, texture) inherent in the characteristic landscape.

Fred Burr Project Area:

Dispersed recreational use on the BLM administered lands in the Fred Burr area include swimming, hiking, hunting, ATVing and snowmobiling. The dominant use is recreating at the swimming area. The swimming area is accessed by a narrow gravel road connected to Rumsey Road and has been developed and used by the area residents for many years. The BLM does not manage the area as a developed recreation site.

The Fred Burr area was classified as a VRM Class III in the Garnet RMP. Land classified as Class III can support a range of management activities while recognizing the scenic value of these lands as visual background. Contrasts to the basic elements (form, line, color, texture) caused by a management activity may be evident and begin to attract attention in the characteristic landscape. However, the changes should remain subordinate to the existing characteristic landscape.

3.8.2 Direct and Indirect Impacts

No Action – Direct and Indirect Impacts:

Under the No Action Alternative there would be no direct or indirect effects to recreation and visuals in the Marshall Creek Area. In the Fred Burr area, recreationists could be affected by trees falling down around the swimming area.

Proposed Action - Direct and Indirect Impacts:

Under the Proposed Action, timber harvest operations would have a short term direct effects to recreation. Visuals will not be affected as unit shapes will be irregular.

3.8.3 Cumulative Impacts:

There are no anticipated cumulative impacts to recreational use or visual integrity as a result of other actions combining with the proposed action.

3.9 Cultural Resources

3.9.1 Affected Environment:

Marshall Grade Project Area:

Known cultural resources in the area are the remains of a cabin and artifact scatter, which was determined not eligible for the National Register, however most of the proposed project area has not been surveyed for cultural resources. There is local history of Fred Burr using an “old Indian Trail” to travel from Flint Creek valley to the Bitterroot valley. According to the website www.granitecountyhistory.com a segment of the trail Burr used goes through the northern part of the Marshall Grade project area. During the cultural survey

this area will be surveyed closely to identify if trail segments remain. Hand crews may be recommended in these areas.

Most of the proposed project area has not been surveyed but will be surveyed before the project is implemented on the ground. In the event cultural resources are found, the project design may be modified to avoid cultural resources. Other mitigation measures may also be implemented if needed.

Fred Burr Project Area:

There have been three previous cultural resource surveys conducted in this project area. According to the literature no cultural resources have been located. However, not all of the proposed project area has been surveyed for cultural resources. In addition to Marshall Grade this area will be surveyed for cultural resources this summer prior to project implementation. In the event cultural resources are found, the project design may be modified to avoid cultural resources. Mitigation measures may also be implemented if avoidance isn't an option, however, avoidance/project modification will be the goal.

3.9.2 Direct and Indirect Impacts

No Action – Direct and Indirect Impacts:

The No Action Alternative would not have adverse direct, indirect or cumulative effects to cultural resources in either project area.

Proposed Action - Direct and Indirect Impacts:

Marshall Grade and Fred Burr Project Areas:

Direct impacts to cultural resources in either project area could damage and/or destroy cultural resources. These types of impacts could be direct damage from large, mechanized equipment, inadvertent cutting of a Culturally Modified Tree (CMT) or organic features burning in a fire. To mitigate this CMTs will be flagged and treated with verbinone or carbarol to prevent insect infestations.

Indirect impacts to cultural resources would be impacts to cultural resources such as looting from exposing buried archaeological sites due to timber removal, erosion and road building. Best Management Practices (BMPs) will be applied to the project to mitigate inadvertent discoveries.

3.9.3 Cumulative Impacts:

The geographic area of analysis for cumulative effects is the Area of Potential Effect (APE). This includes BLM managed land. Four previous projects have been conducted in the APE, in which Class III Cultural Resource Inventories were completed. Three of the inventories were completed in the Fred Burr project area and one was completed in the Marshall Grade area. One inventory in the Fred Burr project area resulted in the recordation of a historic site which a later inventory could not relocate. The remaining inventories were negative. The fourth inventory was located in a small portion of the Marshall Grade project area and resulted in a historic site that was determined to be not eligible for the National Register and SHPO concurred on September 26, 1996. Adverse cumulative effects to cultural resources are not anticipated with this project as the likelihood for cultural resources being present is low, however, in the event that cultural resources are located then mitigation measures shall be applied to lessen the effects.

3.10 Air Quality

3.10.1 Affected Environment:

The project area maintains good air quality during the majority of the year. Valley inversions are common in the fall and winter and air quality may be reduced during this period. Spring and fall atmospheric conditions usually favor smoke dispersal which minimizes the adverse effects of open burning. The burning proposed for this project would be in the spring or fall depending on environmental conditions. Historically, wood smoke from slash burning and wildfires is the most common reason for reduced air quality in the vicinity of the project although windstorms can also carry dust from fields and roads into populated areas. While smoke can adversely affect air quality it is usually dispersed in less than 48 hours by unstable air and winds.

All open burning in Montana is regulated by the Montana Department of Environmental Quality (MDEQ). Major prescribed burners, which include the Bureau of Land Management, have formed the Montana/Idaho Airshed Group. This group has established an air quality Monitoring Unit that provides daily air quality predictions and restrictions to its members from March 1 to November 30. The Bureau of Land Management and the Forest Service are permitted to burn based on compliance with burning restrictions set by the Airshed Group. Burning in Missoula County is also permitted and monitored by the Missoula County Health Department.

3.10.2 Direct and Indirect Impacts

No Action – Direct and Indirect Impacts:

There would be no quantifiable direct impacts to air quality from the no-action alternative since no pile burning would occur. If a wildfire should burn the site, air quality impacts from smoke could affect the area for a few days or more depending on the size and intensity of the fire. Wildfire would most likely occur during the summer months when visitor and recreation use in the area is the highest. This could impact visitor use to the area during and post wildfire.

Proposed Action - Direct and Indirect Impacts:

Slash burning has the greatest potential to adversely affect air quality if not properly timed. The BLM is a member of the Montana State Airshed Group and all prescribed burning is approved through the Airshed Coordinator to protect air quality.

BLM also works closely with Missoula County to protect air quality. Implementing the Proposed Action in accordance with airshed protection procedures will result in no important adverse effects on air quality. Machinery operations would result in a minor, short-term increase of exhaust and dust in the air.

Although the slash burns would take place under weather conditions when smoke dispersion forecasts are favorable and air quality standards would not be violated, there would be some air quality impacts on-site and in the surrounding area. Transport winds would carry and disperse smoke plumes during the day, but nighttime conditions would likely result in some drift smoke into the immediate vicinity of the burn; as well as, into some of the surrounding drainages and valleys. This drift smoke would most likely result in a light to moderate haze one or two days after the burn. The haze could be expected before sundown and could remain until the middle of the next day following the burn, until daytime winds dispersed the residual smoke. The areas most likely to be affected by this smoke would be within the Flint Creek and Rock Creek drainages. Smoke could impair visibility for recreationists. In accordance with standard procedures, roads in and around prescribed burn sites would be clearly posted to alert motorists, pedestrians, those with respiratory problems and others affected by smoky conditions.

3.10.3 Cumulative Effects

There are no anticipated cumulative effects to air quality as a result of other actions combining with the proposed action.

CHAPTER 4 PERSONS, GROUPS, AND AGENCIES CONSULTED

During preparation of the Marshall Fred Vegetation Management Project EA, the public was notified of the proposed action through on the Missoula Field Office NEPA Register on 7/27/2015. Contacts established in response to the notice are shown below. The process used to involve the public included a public meeting that was held in Philipsburg, MT on February 10, 2016 and was posted in the Philipsburg Mail newspaper on February 4, 2016.

Table 4.1. List of Persons, Agencies and Organizations Consulted

| Name/Agency | Purpose & Authorities for Consultation or Coordination | Findings & Conclusions |
|-------------------------------------|--|---|
| U.S Fish & Wildlife Service (USFWS) | Information on Consultation, under Section 7 of the Endangered Species Act (16 USC 1531) | The Service agrees, by letter dated March 30, 2016, that the proposed action may affect, not likely to adversely affect grizzly bears because; lack of occurrences in the area, if they were to occur disturbance is not expected to result in significant effects, indirect effects to forage are likely to be beneficial. It was also determined that the proposed project would have no effect on Canada Lynx. |

List of Preparers

Table 4.2. List of Preparers

| Name (and agency, if other than BLM) | Title | Responsible for the Following Section(s) of this Document |
|--------------------------------------|---|--|
| Michael Walton | Forester | IDT Project Lead, Vegetation Health and Hazardous Fuels, Air Quality |
| Jim Sparks | Wildlife Biologist | Wildlife and Wildlife Habitat |
| Steve Bell | Rangeland Conservationist | Rangeland Vegetation and Health |
| Ken Cook | Noxious and Invasive Species Specialist | Noxious Weeds |
| Dan Downing | Fisheries Biologist | Aquatic Species and habitat |
| Steve Flood | Hydrologist | Water Quality in Fred Burr Creek |
| Maria Craig | Outdoor Recreation Planner | Recreation and Visuals |
| Jody Miller | Archeologist | Cultural Resources |

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