Mill Creek Timber Sale

Environmental Assessment

September 21, 2009
Montana Department of Natural Resources and Conservation
Southwestern Land Office
Missoula Unit

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FINDING
MILL CREEK TIMBER SALE

An interdisciplinary team (ID Team) has completed the Environmental Assessment (EA) for the proposed Mill Creek Timber Sale prepared by the Montana Department of Natural Resources and Conservation (DNRC). After a review of the EA, project file, public correspondence, Department Administrative Rules, policies, and the State Forest Land Management Plan (SFLMP), I have made the following decisions:

1. ALTERNATIVE SELECTED

Two alternatives were presented and the effects of each alternative were fully analyzed in the EA:

1. The No Action Alternative
2. The Action Alternative

The Action Alternative proposes to harvest approximately 2 million board feet (MMBF) of timber on 448 acres. The No Action Alternative does not include the harvest of any timber. Subsequent review determined that the alternatives, as presented, constituted a reasonable range of potential activities.

For the following reasons, I have selected the Action Alternative without additional modifications:

a) The Action Alternative meets the Project Need and the specific Objectives of the Proposed Action (Desired Outcomes and Condition) as described on pages 1 through 4 of the EA. The Action Alternative would produce an estimated $260,000 ($130/MBF) return to the Common School (CS) Trust, while providing a mechanism whereby the existing timber stands would be moved towards conditions more like those, which existed historically.

b) The analysis of identified issues did not disclose any reason compelling the DNRC to not implement the timber sale.

c) The Action Alternative includes mitigation activities to address environmental concerns identified during both the Public Scoping phase and the project analysis.

2. SIGNIFICANCE OF IMPACTS

For the following reasons, I find that the Action Alternative will not have significant impacts on the human environment:

a) **Soils-**With the implementation of BMPs and the recommended mitigation measures, the proposed harvest operations present a low risk of detrimental impacts to soils. Existing roads would be improved to meet BMPs. Leaving 10-15 tons of large, woody debris on site will provide for long-term soil productivity. Harvest mitigation measures such as skid trail planning and season of use limitations will limit the potential for severe soil impacts.

b) **Water Quality-**There would be a low risk of direst or indirect impacts to water quality or downslope beneficial uses within the watershed. There is very low risk of cumulative impacts to water quality or beneficial uses from increases in water yield or sediment delivery. Water Quality Best Management Practices for Montana Forests (BMPs) and the Streamside

Management Zone (SMZ) law will be strictly adhered to during all operations involved with the implementation of the Action Alternative.

c) **Cumulative Watershed Effects-**Estimated increases in annual water yield for the proposed action has been determined to be negligible by the DNRC Hydrologist. Increases in sediment yield are expected to be negligible due to the amount of area treated, location along the landscape, replacement and/or improvement of existing culverts and mitigations designed to minimize erosion.

d) **Noxious Weeds**-Equipment will be cleaned prior to entering the project area, which will reduce the likelihood of weed seeds being introduced onto treated areas. The DNRC will monitor the project area for two years after harvest and will use an Integrated Weed Management strategy to control weed infestations should they occur.

e) **Forest Conditions and Forest Health-**The proposed action would reduce stocking levels and dwarf mistletoe infection rates within treated stands. The remaining stands would likely emulate those conditions which existed prior to European settlement, with seral species dominant. Stand productivity would be expected to increase.

f) **ORV Access-**Construction of new roads could result in increased activity by ORVs. Installation of gates, barriers and signage would be required as a contract stipulation to regulate ORV disturbance.

g) **Aesthetics-**New road construction, reduced stocking levels, fresh slash and skid trails could affect the appearance of the project area. It is likely that, following treatment, the project area would appear very similar to the managed stands on adjacent ownerships.

h) **Dust and Truck Traffic-** Implementation of the recommended mitigations-i.e. strict adherence to posted speed limits and application of dust control measures if necessary should minimize the opportunity for conflicts between log trucks, other traffic and/or residents within the project area.

i) **Old Growth-**Implementation of the Action Alternative would reduce the acreage of Old Growth stands within the project area from 122 acres to 94 acres. 32 acres of Old Growth would not be treated.

j) **Wildlife-**The proposed harvest operations present a minimal likelihood of negative impacts to Threatened and Endangered Species. Those potential impacts that do exist have been mitigated to levels within acceptable thresholds. The same is true for those species that have been identified as "sensitive" by the DNRC. The effects of the proposed action on Big Game species would be low to moderate due to the loss of desirable cover on adjoining industrial timberlands and the close proximity of several subdivisions.

3. PRECEDENT SETTING AND CUMULATIVE IMPACTS-

The project area is located on State-owned lands, which are "principally valuable for the timber that is on them or for growing timber or for watershed" (**MCA 77-1-402**). The proposed action is similar to past projects that have occurred in the area. Since the EA does not identify future actions that are new or unusual, the proposed timber harvest is not setting precedence for a future action with significant impacts.

Taken individually and cumulatively, the identified impacts of the proposed timber sale are within established threshold limits. Proposed timber sale activities are common practices and none of the project activities are being conducted on fragile or unique sites.

The proposed timber sale conforms to the management philosophy adopted by DNRC in the SFLMP and is in compliance with existing laws, Administrative Rules, and standards applicable to this type of action.

4. SHOULD DNRC PREPARE AN ENVIRONMENTAL IMPACT STATEMENT (EIS)?

Based on the following, I find that an EIS does not need to be prepared:

a) The EA adequately addressed the issues identified during project development, and displayed the information needed to make the pertinent decisions.

b) Evaluation of the potential impacts of the proposed timber sale indicate that significant impacts to the human environment will not occur as a result of the implementation of the Action Alternative.

c) The ID Team provided sufficient opportunities for public review and comment during project development and analysis.

/s/ Jonathan E. Hansen
Missoula Unit Manager
December 15, 2009

1.0 Purpose and Need

1.1 Introduction

The Montana Department of Natural Resources and Conservation (DNRC) is proposing to harvest timber in the Mill Creek vicinity. The proposed project area is composed of 448 acres of Common Schools Trust land in Section 16, T16N R20W approximately 2.5 miles southwest of Arlee, Montana (see figure 1.1). Under the proposed action, the DNRC would harvest approximately 2 million board feet (2,000 mbf) from approximately 300 acres. The proposed action would be implemented as early as June, 2010 and could continue until September, 2013.

The school trust lands involved in the proposed project are within the administrative boundaries of the DNRC Kalispell Unit, located in Kalispell, MT. Responsibility for the project was assigned to the DNRC Missoula Unit in 2004. Unit level analysis performed in this EA is based on data from the Kalispell Unit.

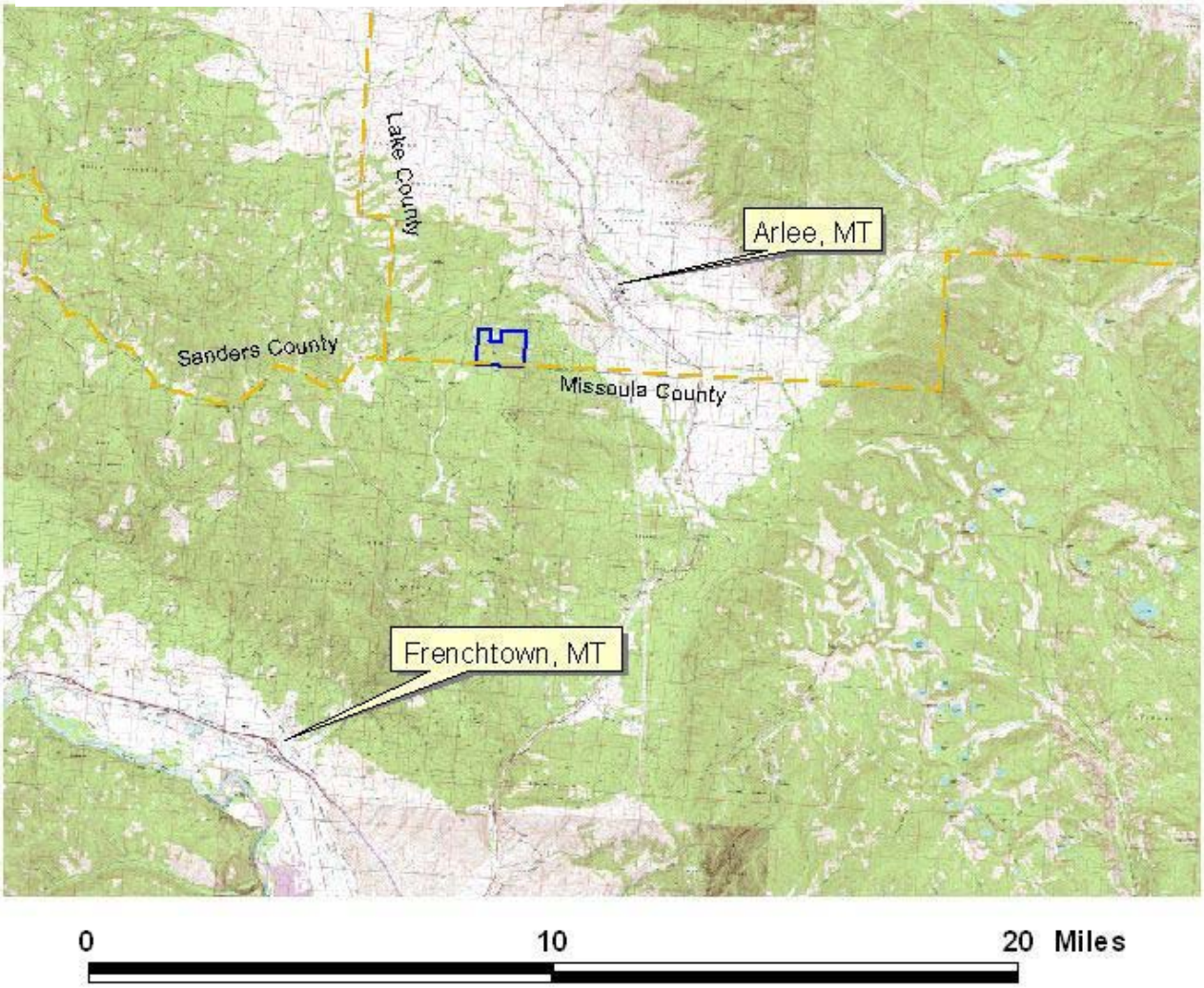
1.2 Project Need

The lands involved in the proposed project are held in trust by the State of Montana for the support of specific beneficiary institutions. These include public schools, state colleges and universities, and other specific state institutions such as the School for the Deaf and Blind (Enabling Act, February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners(Land Board) and the DNRC are required by law to administer these Trust Lands to produce the largest measure of reasonable and legitimate long term advantage for the beneficiary institutions (Section 77-1-202, MCA). All forested lands involved in the proposed project would be managed in accordance with DNRC's State Forest Management Plan (SFLMP), Administrative Rules for Forest Management (ARMs: ARM 36.11.401 – 456), and other applicable state and federal law.

On May 30, 1996, the DNRC released the Record of Decision on the State Forest Land Management Plan (SFLMP). The Land Board approved the implementation of the SFLMP on June 17, 1996. The DNRC will manage the lands involved in this project according the philosophy outlined in the SFLMP, which states:

> "Our premise is that the best way to produce long-term income for the trust is to manage intensively for healthy and biologically diverse forests. Our understanding is that a diverse forest is a stable forest that will produce the most reliable and highest long-term revenue stream. … In the foreseeable future timber management will continue to be our primary source of revenue and our primary tool for achieving biodiversity objectives (DNRC, SFLMP Record of Decision 1996 [ROD-1])."

Figure 1.1 Mill Creek Project Area



Mature forest stands in the project area are heavily infected with parasitic Douglas-fir mistletoe and western larch mistletoe (*Arceuthobium douglasii* and *Arceuthobium laricis*, respectively) that reduce tree growth and cause an growth abnormality know as a "witches broom" (figure 1.2)(Hagle et. al, 2003). Infection rates are as high as 80-100% of mature trees in some stands (visual estimate) resulting in a heavy accumulation of fuel in the wildand/urban interface adjacent to Arlee, Montana.

Reducing the occurrence of dwarf mistletoe and recovering the value of infected trees by treating these stands complies with the management philosophy outlined in the SFLMP and ARM's for Forest Management.

Figure 1.2: Douglas-fir Infected with Dwarf Mistletoe in the Project Area

1.3 Objectives of the Proposed Action (Desired Outcomes and Conditions)

In order to fulfill the management philosophy adopted through the SFLMP and the ARM's for Forest Management, the DNRC has set the following specific project objectives:

- Harvest sufficient timber volume to generate revenue for the Common Schools (CS) Trust grant.

- Reduce the occurrence of Douglas-fir mistletoe and western larch mistletoe to improve forest health and maintain stand productivity.

- Reduce heavy fuel accumulations in the wildland/urban interface in the north half of the project area.

1.4 Decisions to be made

The following analysis will be performed by the Decision Maker and incorporated into the Finding at the beginning of this document:

- Determine if alternatives meet the project objectives.
- Determine which alternative should be selected.
- Determine if the selected alternative would cause significant effects to the human environment, requiring the preparation of an Environmental Impact Statement (EIS).
- Determine the economic and logistical feasibility of the project.

1.5 Relationship to the State Forest Land Management Plan and Administrative Rules for Forest Management

The State Forest Land Management Plan (SFLMP) established the agency's philosophy for the management of forested Trust Lands which states:

"Our premise is that the best way to produce long-term income for the trust is to manage intensively for healthy and biologically diverse forests. Our understanding is that a diverse forest is a stable forest that will produce the most reliable and highest long-term revenue stream. … In the foreseeable future timber management will continue to be our primary source of revenue and our primary tool for achieving biodiversity objectives (DNRC, SFLMP Record of Decision 1996 [ROD-1])."

The management direction provided in the SFLMP comprises the framework for the project planning and forest management activities. DNRC's ARM's for Forest Management are the specific legal resource management standards and measures under which DNRC implements the SFLMP and subsequently its forest management program.

The proposed action is limited to specific management activities that are needed to implement the project and provide resource protection. This Environmental Assessment (EA) documents site-specific analysis and is not a general management plan or programmatic analysis of the area. The scope of this EA was determined through DNRC interdisciplinary analysis and public involvement.

1.6 History of the Planning and Scoping Process

The public scoping process, which begins during the initial stage of an EA, is used to inform the public that a state agency is proposing an action. The public has the

opportunity to express their comments or concerns about the possible effects of the project.

Public scoping was initiated in December, 2004 with notices published in the *Charkoosta News, Lake County Ledger* and *The Advertiser*. Notices were also posted along public roads in the project vicinity and mailed to adjacent landowners and individuals, organizations and agencies that have expressed interest in DNRC activities including The Confederated Salish and Kootenai Tribes (CS&KT). The comment period was open for 31 days. Subsequent requests for input were mailed and emailed to the CS&KT Tribal Preservation, Tribal Lands and Tribal Law and Order Departments during the course of project development. Written and/or verbal comments were received in the form of letters, emails and personal communication. Issues identified in through the scoping process are included in section *1.9 Issues and Concerns* of this EA.

The following resource specialists were involved in the project design, assessment of potential impacts and development of mitigation measures:

Wayne Lyngholm – Project Leader/Management Forester, DNRC Missoula Unit
Jeff Rupkalvis – Supervising Forester, DNRC Missoula Unit
Jonathan Hansen – Unit Manager, DNRC Missoula Unit
Jeff Collins – Hydrologist/Soil Scientist, DNRC Southwest Land Office
Mike McGrath – Wildlife Biologist, DNRC Southwest Land Office
Dana Boruch – Right of Way Specialist, DNRC Southwest Land Office
Patrick Rennie – DNRC Archeologist, Agriculture and Grazing Management Bureau, Helena, MT.

1.7 Other Environmental Assessments (EA's) Related to this Project

Several other projects are either recently completed, in progress or are in development within the general area of the proposed Mill Creek Timber Sale. Table 1.1 displays the name of the proposed activity, the year when the activity would be initiated or active and the type of activity proposed. Of the projects listed, all are outside of any analysis area used in this assessment and would have no measurable cumulative effects on wildlife considered in this assessment.

Table 1.1: OTHER DNRC ACTIVITIES

Project Name	Approximate Air Miles from Mill Creek	Year of Proposed Activity	Status	Description of Proposed Activity
Fournier Creek Timber Sale	9	2007	Completed	Fire Salvage
Roman – Sixmile Timber Sale	9	2007	In Progress	Commercial Thinning, Overstory Removal, Precommercial Thinning

Table 1.1: OTHER DNRC ACTIVITIES (continued)				
Evaro Thinning	9	2009	Completed	Precommercial Thinning
Deer Creek Timber Sale	25	2010	In Development	Shelterwood
Tarkio Timber Sale	30	2011	In Development	Commercial Thinning, Individual Tree Selection

1.8 Other Agencies with Jurisdiction/Permit Requirements

The Project Area is within the boundaries of the Flathead Indian Reservation. The DNRC will be requesting approval from the Confederated Salish and Kootenai Tribes (CS&KT) for harvest activities, construction of new roads and commercial use of roads administered by CS&KT Tribal Lands Department.

DNRC is classified as a major open burner by the Montana Department of Environmental Quality (DEQ), and is issued a permit from the DEQ to conduct burning activities on State lands managed by the DNRC. As a major open burning permit holder, DNRC agrees to comply with all of the limitations and conditions of the permit.

DNRC is a member of the Montana/Idaho Airshed Group, which regulates prescribed burning, including both slash and broadcast burning, related to forest management activities done by DNRC. As a member of the Airshed Group, DNRC agrees to burn only on days approved for good smoke dispersion as determined by the Smoke Management Unit in Missoula, MT.

1.9 Issues Studied in Detail

1.9.1 Soil Resources

There is a concern that the proposed management activities could adversely affect soil resources through displacement or compaction depending on the area and degree of soil impacts.

1.9.2 Water Quality

There is a concern that the proposed action may cause impacts to water quality and quantity and result in cumulative watershed effects.

1.9.3 Noxious Weeds

Noxious weed invasion and spread negatively influence surface cover, erosion and native species. Disturbance events such as timber harvest activities could result in the invasion and spread of noxious weeds.

1.9.4 Forest Conditions and Forest Health

Management activities could produce stand conditions (e.g. structure and species composition) that differ from historic conditions. Conversely, forest productivity may continue to decline as dwarf mistletoe infection persists and tree mortality increases in the absence of management. High tree mortality could persist as a result of infection, resulting in heavy dead fuel accumulation.

1.9.5 ORV Access

The construction of new roads may cause an increase in ORV activity in the project area and on adjacent parcels. Unmanaged ORV use can result in recreation conflict, wildlife disturbance, wildfire risk and soil and vegetation damage.

1.9.6 Aesthetics

The project area is visible from the Jocko Valley floor and Highway 93. Timber harvesting and road construction associated with the proposed action could adversely affect the aesthetic value of this area. Roads, skid trails, skyline yarding corridors and canopy openings may appear unnatural. Untreated logging slash, damaged trees, stumps and uniform tree spacing may detract from the natural appearance associated with unmanaged forests.

1.9.7 Economic Benefits and Project Revenue

Concern has been raised that the proposed project may not be economically viable.

1.9.8 Dust and Truck Traffic

Heavy truck traffic associated with the project may cause a potential traffic hazard on public roads. Dust created by trucks may become a nuisance to adjacent residents during periods of dry weather.

1.9.9 Old Growth

Old Growth may occur in the project area and could be impacted by the proposed project.

1.9.10 Endangered Species

1.9.10.1 Grizzly Bears

Timber harvest and associated activities could alter habitat or created disturbance that could be detrimental to grizzly bears.

1.9.10.2 Canada Lynx

Timber harvest and associated activities could alter habitat or create disturbance that could be detrimental to lynx.

1.9.11 Sensitive Species

1.9.11.1 Pileated Woodpecker

Timber harvest and associated activities could alter habitat or create disturbance that could be detrimental to lynx.

1.9.11.2 Fisher

Timber harvest and associated activities could alter habitat or create disturbance that could be detrimental to fishers

1.9.11.3 Flammulated Owls

Timber harvest and associated activities could alter habitat or create disturbance that could be detrimental to flammulated owls.

1.9.12 Big Game

1.9.12.1 Elk

Timber harvest and associated activities could alter habitat or create disturbance that could be detrimental to elk.

1.9.13 Other Species

1.9.13.1 Northern Goshawk

Timber harvest and associated activities could alter habitat or create disturbance that could be detrimental to Northern Goshawks

1.10 Issues Eliminated from Further Study

1.10.1 Adjacent Management

There is concern that the proposed action would not “go along” with tribal management on adjacent lands. The DNRC and the CS&KT Tribal Forestry and Tribal Lands Departments have maintained communication during project development. These agencies share mutual programmatic objectives of maintaining habitat and forest health across ownership boundaries. The proposed action would require coordination to accomplish road maintenance and transportation plan objectives and the DNRC will be requesting approval of the project from the CS&KT Tribal Council. As a result, there is minimal risk of non-cooperation with tribal management agencies or major deviation from adjacent harvest patterns and will not be analyzed further for this proposed action.

1.10.2 Mill Creek Water Quality, Quantity and Fisheries

Initially, the Mill Creek Watershed and Finley Creek watersheds were considered for this analysis. The DNRC project area straddles a ridge with approximately 433 acres in the Finley creek watershed and 21 acres in the Mill Creek watershed. This impact analysis will be limited to the Finley Creek watershed since the portion of the proposed project and access roads in the Mill Creek watershed is very small and does not include any streams, stream crossings on the access road or sites with surface waters. Thus, the proposed actions would present no potential impacts to water quality or fisheries in the Mill Creek watershed.

1.10.3 Fisheries

There is a concern that timber harvest may affect fish habitat in the Finley Creek watershed. Finley Creek supports populations of fluvial Westslope Cutthroat Trout (a sensitive species) and brown trout. Land management activities such as timber harvest and road construction can impact fish habitat primarily by accelerating sediment delivery to local stream channels and by decreasing large woody debris recruitment through the removal of trees near stream channels. There are no streams in the DNRC section 16 and no connectivity to down slope streams, thus there would be no water quality or habitat impacts from proposed road construction or harvest activities.

The proposed access roads V-4200 and V-4400 cross two unnamed intermittent streams that flow to Finley Creek through section 21, T 16N, R20W. These streams are not fish habitat due to intermittent flow in the mid reach with shallow depth, narrow and steep stream gradient and dewatering in the lower reach. A DNRC hydrologist reviewed the access roads and determined that two road crossings of perennial streams require minor maintenance repairs, such as rock armoring, and restoration of road surface drainage features to reduce sediment. No streamside harvest would occur that could reduce woody debris or impact fish bearing streams. The project area also does not contain any drainage features with direct connectivity to streams or downstream fisheries habitat in Finley Creek or Mill Creek. Therefore there is low risk of direct, indirect or cumulative impacts to fisheries occurring with the proposed project. Based on the absence of fish habitat and stream connectivity, fisheries and their habitat are dismissed from further analysis for effects of this project.

1.10.4 Bald Eagles

The Jocko River eagle territory occurs approximately 3.3 miles north of the project area. However, the proposed action is upslope, and away from water sources. Any proposed hauling near the known eagle nests would likely occur along Highway 93. Thus, there would likely be minimal risk of direct, indirect, or cumulative effects to bald eagles, and will not be analyzed further for this proposed action.

1.10.5 Gray Wolves

The edge of the He-Wolf Mountain pack's territory had been located approximately 3 miles west of the project area. Over the past couple years, a few radio-locations for members of the pack occurred in the Mill Creek area. However, due to continued conflicts with livestock, the last member of the pack was removed in March 2008 (Stacey Coville, Confederated Salish & Kootenai Tribes, personal communication, 29 July 2008). As a result, there would likely be minimal risk of direct, indirect, or cumulative effects to wolves, and they will not be analyzed further for this proposed action.

1.10.6 Black-backed Woodpeckers

There is concern that timber harvest activities would negatively impact black-backed woodpeckers. The project area is not currently experiencing an outbreak of *Dendrocthonous* beetles, and has not burned recently. Burned areas and bug-hit areas lend themselves to being suitable black-backed woodpecker habitat (Bull et al. 1986). Additionally, nearly 47,745 acres burned on two large fires within 28 miles of the project area in 2007. Thus, these recently burned areas would be more likely to concentrate populations of black-backed woodpeckers. As a result, there would likely be minimal risk of direct, indirect, or cumulative effects to this species from the proposed action.

1.10.7 Other Species

The following species were considered but eliminated from detailed study due to lack of habitat present: Peregrine Falcon, Harlequin Duck, Townsend's Big-eared Bat, Coeur d'Alene Salamander, Northern Bog Lemming, Mountain Plover, Common Loons and Columbian Sharp-tailed Grouse.

1.10.8 Cultural or Paleontologic Resources

In August, 2006, the DNRC contacted the Confederated Salish and Kootenai Tribal Preservation Department requesting input on identification of culturally important sites within the project area. No sites of cultural importance were identified through this communication.

During June 22-25, 2009, the DNRC archeologist conducted an inventory of cultural resources within the project area. The area of potential effect (APE) consists of the entire parcel (448 acres) legally described as Section 16, T16N R20W. The APE is within the boundaries of the Flathead Indian Reservation. Despite a detailed examination of the area of potential effect, no cultural or paleontologic resources were identified. As a result, there would likely be minimal risk of direct, indirect, or cumulative effects to cultural or paleontologic resources from the proposed action. If cultural resources are uncovered during project operations, the DNRC archaeologist would be contacted immediately to assist the administrative officer in developing appropriate mitigations to avoid or minimize adverse risk to those resources.

2.0 Alternatives Including the Proposed Action

2.1 Introduction

Chapter 2 describes the alternatives developed and considered in this EA. Summaries and comparisons are included for the activities associated with each alternative. The potential environmental consequences of these activities are included for comparison. Information regarding alternatives is presented in greater detail in chapters 3 and 4.

2.2 Development of Alternatives

2.2.1 History and Process Used to Formulate Alternatives

Public scoping was initiated in December, 2004. Written responses were received from Al and Sandra Aschenbrenner, Kenneth Camel and The Ecology Center. Additional comments were received through personal communication with adjacent landowners. In August of 2007, a DNRC Interdisciplinary Team (IDT) began project area analysis and internal review to develop a management plan. Public comment and IDT input identified issues and shaped alternatives. Issues identified during the scoping process are summarized in Chapter 1: Purpose and Need.

2.3 Description of Alternatives

2.3.1 Alternative A: Deferred Harvest (No Action)

Activities associated with Alternative B: Harvest would not occur in the project area at this time. No revenue would be generated for the Common Schools Trust from the specific lands in the project area. DNRC approved activities would continue in the project area. Dwarf mistletoe infection would likely persist, resulting in lost revenue to the trust, non-compliance with the trust mandate and continued accumulation of hazardous fuels.

2.3.2 Alternative B: Harvest

Alternative B: Harvest was developed to address relevant issues, comply with applicable regulations and laws, provide effective mitigation for potential impacts and achieve project objectives. The proposed harvest would include removal of approximately 2 MMBF (million board feet) of Douglas-fir, western larch, lodgepole pine, sub-alpine fir and grand fir from approximately 300 acres through a combination of sanitation harvest, commercial thinning and individual tree selection prescriptions (see Figure 2.1). Mature ponderosa pine, western larch and Douglas-fir that are free of dwarf mistletoe infection would be retained where available. A minimum of two snags and two snag recruits per acre or one snag and one snag recruit per acre would be retained on site depending on habitat type group as required by the Montana Administrative Rules for Forest Management (ARM 36.11.411) Snag recruits infected with dwarf mistletoe may be clumped to inhibit the spread of mistletoe into subsequent

regenerating stands. Approximately 149 acres of the project area may be deferred from harvest.

Approximately 75% of the slash produced by the project would be burned or removed from the site or to avoid further accumulation of dead fuel. Some slash would be retained to facilitate nutrient cycling and provide coarse woody debris (ARM 36.11.409 and 36.11.414).

2.3.2.1 Harvest Unit Designation

Stands were identified for treatment based on field reconnaissance by project IDT. Presence and level of dwarf mistletoe infections and quality of potential leave trees for residual stands drove prioritization for treatment. Harvest prescriptions developed to meet project objectives based on current stand conditions are identified in Table 2.1.

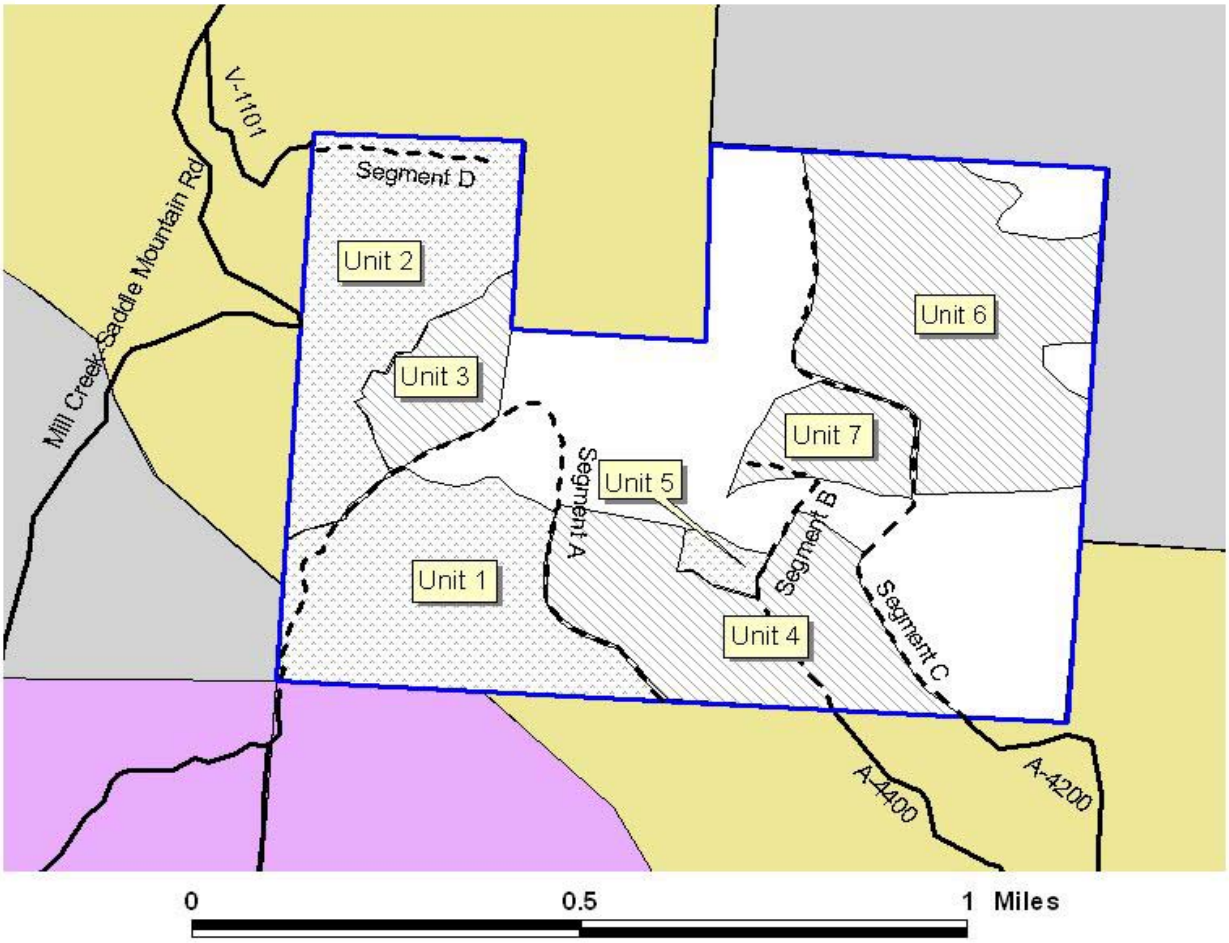
Table 2.1 Description of Proposed Silvicultural Treatments

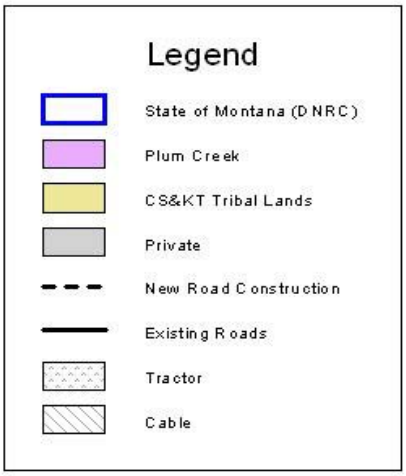
Prescription	Description	Proposed Harvest Units	Acres
Individual Tree Selection (ITS)	In multi-aged stands that are dominated by healthy western larch and Douglas-fir, an ITS prescription would restore and maintain existing old growth stands and retain old growth characteristics in stands where dwarf-mistletoe infection is less prevalent. Stands designated for ITS also typically contain healthy vigorous codominant and intermediate western-larch which would be retained on a 20-30 foot spacing. Nearly all large trees (>20” DBH) would be retained in these stands.	Unit 1	63

Prescription	Treatment Description	Proposed Harvest Units	Acres
Sanitation (SAN)	A sanitation harvest applied to portions of the project area that are heavily infected with dwarf-mistletoe would remove infected trees and retain large snags, green snag recruits and healthy trees when present. These stands exhibit decadence and heavy fuel loading from dead/fallen dwarf-mistletoe infected Douglas-fir and shade tolerant grand fir in the understory.	Units 2,3 and 5	83
Sanitation/Selection (SAN/SEL)	The clumpy nature of dwarf-mistletoe infection in some stands would require a combination SAN/SEL prescription to remove infected trees while retaining large uninfected dominant and codominant western larch and ponderosa pine. Infected trees exhibiting old growth characteristics would be removed from old growth stands.	Unit 4	56
Sanitation/Commercial Thin (SAN/CT)	In younger even-aged stands, clumps of trees heavily infected with dwarf mistletoe would be removed and healthy vigorous Douglas-fir, ponderosa pine and western larch would be thinned to reduce competition and maintain stand health.	Units 6 and 7	99

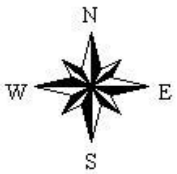
Approximately 3 miles of new road construction would occur to access the project area. Maintenance of roads on adjacent property could include grading, surfacing, ditching and installation of drainage features such as culverts and drain dips to meet Forestry Best Management Practices (BMP's). Gates would be installed on new roads at appropriate locations to regulate ORV access.

Figure 2.1 Alternative B: Harvest





Unit	Treatment	Acres
Unit 1	ITS	63
Unit 2	SAN	60
Unit 3	SAN	19
Unit 4	SAN/SEL	56
Unit 5	SAN	4
Unit 6	SAN/CT	83
Unit 7	SAN/CT	16
	Total	**301**



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2.4 Mitigation Measures of Alternative B: Harvest

Mitigations would be incorporated into project design, as a contract stipulation or may be implemented programmatically. The following discussion will address mitigation actions associated with the project.

2.4.1 Water Quality, Soils and Cumulative Watershed Effects Mitigations

2.4.1.1 Harvest Unit Design

- The DNRC would locate, mark and maintain suitable water resource protection boundaries including Streamside Management Zones (SMZ'S), Riparian Management Zones (RMZ's) and Wetland Management Zones (WMZ's) adjacent to streams and wetlands consistent with the State Forest Land Management Plan rules.

- Equipment restriction zones would be established to protect sensitive and moist soils.

- The contractor and sale administrator would agree to a general skidding plan prior to equipment operations.

- Ground based skidding would be limited to slopes of 45% or less.

- Operating season limitations for ground based skidding would protect vegetation and prevent rutting and soil compaction by requiring dry (< 20% moisture content), frozen or snow covered soil conditions for equipment operation.

- Soil moisture conditions would be monitored prior to equipment operation and throughout the project.

- Contract stipulations would require grass seeding and installation of drainage features and vehicle barriers. Slash would be placed on skid trails to protect soils and reduce erosion potential.

- Retention of 5-15 tons/acre (old and new) coarse woody debris (CWD) greater than 3" diameter would be retained for nutrient cycling and erosion control.

2.4.1.2 Road Design and Location

- Forestry BMP's would be the minimum standard for all road construction and maintenance associated with the project.

- Existing roads on adjacent ownerships would be improved and maintained in association with the proposed project.

- Road improvements to prevent surface erosion and sediment delivery would include the installation of drainage features, ditching and surface blading.

- Gates would be installed to control surface damage from vehicles.

- Grass seed would be applied to newly constructed road cuts, fills and disturbed soils immediately after excavation.

- Road ditches with direct delivery to streams or ephemeral draws would be filtered at the ditch outlet by using slash or filter fabric and straw bales.

2.4.2 Noxious Weed Mitigations

- All road construction and harvest equipment would be cleaned of plant parts, mud and weed seed to prevent the introduction of noxious weeds.

- Equipment would be subject to inspection by the sale administrator prior to arriving on site.

- Newly constructed or reconstructed road cuts, fills and disturbed soils would be grass seeded immediately after harvest.

- Weed spraying may be required as a contract stipulation.

- Monitoring of the project area would continue to determine the need for future weed control treatments.

2.4.3 ORV Access Mitigations

- Gates would be installed at appropriate locations on new roads or on existing roads that access new road segments.

- Signage displaying road closure restrictions would be posted at gate locations.

- Monitoring of ORV activity to identify potential problems would continue after project completion.

2.4.4 Aesthetics Mitigations

- Snags, snag recruits and crop trees free of dwarf mistletoe infection would be retained.

- Approximately 150 acres of the project area would be deferred from harvest, including visible slopes and ridges with minimal canopy coverage.

- Harvest unit layout would be designed to mimic management patterns on adjacent lands administered by the CS&KT.

- New roads would be located to minimize construction in natural openings.

2.4.5 Truck Traffic and Dust Mitigations

- Trucks would be required to obey posted speed limits on all public roads.

- As a contract stipulation, dust control may be required on unpaved roads near residence

2.4.6 Old Growth Mitigations

- Approximately 32 acres of the project area identified as old growth would be deferred from the proposed harvest. No harvest would occur in deferred stands.

- Approximately 62 acres of the project area identified as old growth would receive an old growth maintenance treatment, retaining sufficient large trees to meet the DNRC definition of old growth after harvest.

2.4.7 Wildlife Mitigations

- Of 142 acres of mapped other lynx habitat in the project area, 40 acres would be deferred from harvest.

- Of 106 acres of mapped lynx mature foraging habitat, 21 acres would be deferred from harvest.

- Of 54 acres of mapped lynx denning habitat, 8 acres would be deferred from harvest.

- An additional 5 acres of lynx denning habitat with a good distribution of large downed logs and root wads interspersed with advanced regeneration would have an equipment restriction zone surrounding it to conserve the potential denning structures.

- Of 158 acres of the project area identified as suitable pileated woodpecker habitat, 43 acres would be deferred from harvest.

- Of approximately 276 acres of the project area identified as fisher preferred habitat types, approximately 120 acres would be deferred from harvest.

- Of approximately 150 acres of flammulated owl preferred habitat types in the project area, 66 acres would be deferred from harvest.

- Of approximately 306 acres of the project area identified as elk winter range, 126 acres of elk winter range snow intercept cover would be retained post-harvest.

- Of approximately 451 acres of potential goshawk nesting habitat identified in the project area, 139 acres would be retained post-harvest

2.5 Description of Relevant Past, Present and Reasonably Foreseeable Future DRNC Activities Not Part of the Proposed Action

2.5.1 Past Relevant Actions

Evidence of historic timber harvest exists on the site, probably around the turn of the century when the first roads were built in the vicinity. No written record of the harvest was found in the DNRC's records.

2.5.2 Present Relevant Actions

Non-motorized recreation probably occurs in the project area. Firewood cutting is common where existing adjacent roads terminate at the property boundary.

2.5.3 Future Relevant Actions

Timber Management

The DNRC would likely continue to pursue opportunities to manage timber stands in the project area.

2.6 Summary Comparison of Activities, Predicted Achievement of the Project Objectives, and Predicted Environmental Effects of All Alternatives

2.6.1 Summary of Comparison of Activities

Table 2.2 provides a summary of the attributes associated with each alternative.

Table 2.2 Summary Comparison of Activities

Project Attribute	Alt. A: No Action	Alt. B: Harvest
Estimated Volume Harvested (Million Board Feet)	0	2.0
Estimated Gross Revenue to the State (est. stumpage rate of $130/mbf + Forest Improvement Income of 31.31/mbf)	$0	$322,620
Estimated Net Revenue to the Common Schools Trust (est. stumpage rate of $130/mbf)	$0	$260,000
Estimated Forest Improvement Income ($31.31/mbf)	$0	$62,620
Total Acres within the Project Area	448	448
Total Acres Treated in the Project Area	0	300
Sanitation of Dwarf Mistletoe(acres)	0	280
Tractor Yarding (acres)	0	150
Cable Yarding (acres)	0	130
New Road Construction (miles)	0	2.7
Existing Road to be Improved or Maintained (miles)	0	12

2.6.2 Predicted Achievement of Project Objectives

Alternative B: Harvest was designed to meet project objectives while providing for resource protection. Approximately $260,000 in net revenue would be generated to benefit the Common Schools Trust. Treatment would remove or significantly reduce dwarf mistletoe infection from approximately 280 acres of the project area. Slash removal associated with the project would reduce fuel accumulations in the wildland/urban interface. A summary is provided in table 2.3.

Table 2.3 Predicted Achievement of Project Objectives

Project Objective	Indicator of Attainment	Alternative A: Deferred Harvest (No Action)	Alternative B: Harvest
Harvest sufficient timber volume to generate revenue for the Common Schools (CS) Trust.	Timber volume to be harvested.	No Timber would be harvested in association with the proposed project.	Approximately 2 million board feet of saw timber would be harvested.

Project Objective	Indicator of Attainment	Alternative A: Deferred Harvest (No Action)	Alternative B: Harvest
Reduce the occurrence of Douglas-fir mistletoe and western larch mistletoe to improve forest health.	Acres of dwarf mistletoe infected stands to be treated.	No stands would be treated in association with the proposed project.	Approximately 280 acres of mistletoe infected stands would be treated.
Reduce heavy fuel accumulations in the project area.	Acres treated to reduce heavy fuel accumulations.	No Acres would be treated to reduce heavy fuel accumulations.	Fuel reduction would occur on approximately 300 acres.

2.6.3 Summary Comparison of Predicted Environmental Effects

Table 2.4 provides a summary comparison of the predicted effects of alternatives.

Table 2.4 Summary Comparison of Predicted Effects of Alternatives

Issue	Alternative A: Deferred Harvest (No Action)	Alternative B: Harvest
Soil Resources	No effects to soil resources would be expected.	With the implementation of BMP's and the recommended mitigation measures, the proposed harvest operations present a low risk of detrimental impacts to soils. Existing roads would be improved to meet BMP's.
Water Quality	Minimal effects to water quality would be expected. Potential for wildfire in the absence of management could result in water quality impacts.	There would be low risk of direct or indirect impacts to water quality or down slope beneficial uses within the watershed. There is very low risk of cumulative impacts to water quality or beneficial uses from increases in water yield or sediment delivery.

Issue	Alternative A: Deferred Harvest (No Action)	Alternative B: Harvest
Noxious Weeds	Potential for gradual increase in noxious weeds over time from adjacent infestations.	Potential increase in noxious weed density and occurrence due to soil disturbance and decreased tree canopy coverage. Integrated weed management efforts would occur. Control efforts would emphasize treatment of any new noxious weeds.
Forest Conditions and Forest Health	Persistent dwarf-mistletoe infection would likely result in continued mortality and heavy fuel accumulation. Dominance by shade tolerant species would be expected.	The proposed action would reduce stocking and dwarf-mistletoe infection rates. Subsequent stands would likely be closer to conditions existing prior to European settlement, with seral species dominant. Stand productivity would be expected to increase.
ORV Access	No change from existing conditions would be expected.	Construction of new roads could result in increased activity by ORV's. Installation of gates, barriers and signage would be required as a contract stipulation to regulate ORV disturbance.
Aesthetics	Mortality associate with dwarf-mistletoe or high intensity fire could affect the appearance of the project area.	New road construction, reduced stocking levels, fresh slash and skid trails could affect the appearance of the project area. It is likely that the project area would appear very similar to managed stands on adjacent lands.
Dust and Truck Traffic	No change from existing conditions would be expected	Operation of equipment and log trucks could present a temporary increase in noise, dust and traffic for the duration of the proposed action. Dust control and speed limits could be incorporated as a contract stipulation

Issue	Alternative A: Deferred Harvest (No Action)	Alternative B: Harvest
Old Growth	Gradual decline in old growth would be expected. A major stand replacement disturbance could drastically reduce the amount of old growth.	Old growth stands would be reduced from 122 acres to 94 acres of the project area. 32 acres of old growth would be deferred from the harvest under the proposed action.
Grizzly Bears	No change from existing conditions would be expected.	Low risk of direct, indirect and cumulative effects to grizzly bears. Road closures would be maintained and visual screening would limit sight distance.
Canada Lynx	No change from existing conditions would be expected.	Low to moderate risk of direct, indirect and cumulative effects to Canada Lynx. 69 acres of lynx habitat would be deferred from the proposed action. Lynx denning habitat and a continuous habitat corridor would be retained.
Pileated Woodpeckers	No change from existing conditions would be expected.	Low to moderate risk of direct, indirect and cumulative effects to pileated woodpeckers. 50 acres of suitable habitat and 37 acres of potential habitat would be deferred from the proposed action. Snags and snag recruits would be retained in harvest units.
Fisher	No change from existing conditions would be expected.	Low risk of direct, indirect and cumulative effects to Fishers. 120 acres of fisher preferred habitat would be deferred from the proposed action.

Issue	Alternative A: Deferred Harvest (No Action)	Alternative B: Harvest
Flammulated Owls	No change from existing condition would be expected.	Potential positive direct and indirect effects and negligible cumulative effects to flammulated owls. Reducing canopy closure and creating small openings could improve habitat for flammulated owls.
Elk	No change from existing condition would be expected.	Low to moderate risk of direct and indirect effects and low risk of cumulative effects to elk. Snow intercept cover may be reduced on 180 acres of elk winter range within the project area. Elk summer range may be improved by increasing forage production.
Northern Goshawk	No change from current conditions would be expected.	Moderate risk of direct and indirect effects and low to moderate risk of cumulative effects to goshawks. The proposed action could temporarily reduce the suitability of nesting habitat on 300 acres of the project area.

3.0 Affected Environment

3.1 Introduction

Chapter 3: Affected Environment describes the relevant resources that would affect or be affected by the alternatives if they were implemented. This chapter also describes the existing environment and includes effects of past and ongoing management activities within the analysis area that might affect project implementation.

In conjunction with the description of the Alternative A: Deferred Harvest (No Action) in Chapter 2 and with the predicted effects of the alternatives, the public can compare the effects of Alternative B: Harvest.

3.2 Description of Relevant Resources

3.2.1 Geology and Soils

The analysis area for geology and soil resources includes the access roads to the project area and the State-owned section. The soils analysis included an evaluation of soil survey data and on-site field review for soil properties and current conditions to assess past effects. The State section supports mixed forest stands of lodgepole pine, Douglas-fir, ponderosa pine, western larch and subalpine fir. Bedrock geology is Piegan formation limestone, and rock outcrops are common along ridges. Slopes are stable and no unique geologic features were identified in the project area. The native road material is very rocky and coarse with good to excellent material quality for roads and resistant to erosion.

Soils are generally described here and tend to be shallower than the typical soil profile descriptions in the Lake County Soil Survey. The shallow soils are due in part to the scouring effect of the flooding of ancient Lake Missoula that washed and redistributed surface soils. Soils located in the project area are a combination of 3 primary forest soil groups with similar interpretations. Group 1 on the steeper sideslopes of 30-60% have shallow to moderately deep very gravelly loam soils with silty volcanic ash surfaces on the northerly aspects and concave slopes (Holloway, Courville and Mitten soils). Potential productivity for plant growth is greater on these sites supporting mixed species including western larch due to higher moisture associated with the ash topsoils. These are well drained soils. Erosion risk is moderate, due to high coarse fragments and increases with slope. Compaction risk with equipment operations is moderate. Displacement risk is moderate on slopes less than 45% and severe on steeper slopes. Slopes up to 45% are suitable for ground skidding operations. Cable yarding on steeper slopes would effectively minimize soil displacement and erosion. Holloway soils on 15-30% slopes have higher productivity and are well suited for ground skidding operations.

Group 2 soils include Winkler and Tevis series on more convex slopes of 30-60% and southerly aspects, have similar soils at depth. Surface soils tend to be thinner with intermittent or no silty ash surface and slightly lower productivity. These soils are more

coarse textured and droughty supporting Douglas-fir and Ponderosa pine. These are well drained on the Winkler soils. The Winkler soils are droughtier, and include some mixed grassland sites. Plant competition is a concern for quick reforestation of these soils. Sanitation and selection harvest can help retain shade and improve reforestation success. Erosion risk is moderate, due to high coarse fragments and increases with slope. Compaction risk with equipment operations is moderate. Displacement risk is moderate on slopes less than 45% and severe on steeper slopes.

Predominate slopes of 10-40% are well suited to ground based skidding operations. Both soil groups have a long season of use. There has been limited salvage harvest and thinning on more moderate slopes in the section and those units have principally regenerated to conifers, and revegetated with no erosion problems or excessive soil impacts were identified.

3.2.2 Effected Watershed

The water resources analysis area for water quality and cumulative watershed effects includes the access roads to the project area and the State-owned section. This analysis included an evaluation of water resource data (NRIS 2009, MTDEQ, MDOT), aerial photos and on-site field review for current conditions to assess past effects. The proposed action is located on state trust land within Section 16, T16N, R20W of Lake County. The terrain includes gentle to steep slopes along a broad ridge located over 1 mile southwest of Finley Creek. This broad ridge forms a divide between Mill Creek to the southwest and the watershed analysis area that includes the sloping face drainage of several unnamed tributaries of Lower Finley Creek HUC 1701020705.

Finley Creek is a 4th order tributary to the Jocko River that flows into the lower Flathead River. Finley Creek is not located within the state section 16 or near any of the proposed road construction, existing roads proposed for access use or the proposed harvest areas. While USGS topographic maps of the area indicate that there are several discontinuous stream segments in the state section, actually there is only one short intermittent and discontinuous segment, likely due to the low precipitation range, convex slopes that disperse runoff and rocky nature of soils and terrain. Elevations in the section range from 3800 to 5340 feet. Within the analysis area, average precipitation is a low of 15 inches at Arlee, downslope of the project up to approximately 26 inch average precipitation in the project section, mainly occurring as snow. Runoff is estimated at 7.74 inches/ year in the project section, which infiltrates rapidly.

The Clark Fork River drainage, including tributaries to the Flathead River, is classified as B-1 in the Montana Surface Water Quality Standards. The B-1 classification is for multiple use waters suitable for domestic use after conventional treatment, growth and propagation of cold-water fisheries, associated aquatic life and wildlife, agricultural, and industrial uses. Among other criteria for B-1 waters, no increases are allowed above naturally occurring concentrations of sediment, which will prove detrimental to fish or wildlife. Naturally occurring includes conditions or materials present from runoff on developed land where all reasonable land, soil, and water conservation practices have been applied. Reasonable practices include methods, measures, or practices that protect present and reasonably anticipated beneficial uses. The State has

adopted Forestry Best Management Practices through its Non-point Source Management Plan as the principle means of controlling non-point source pollution from silvicultural activities.

No water rights or developments are listed within the state section or along the access route. Downslope beneficial uses in Lower Finley Creek and the Jocko River area include: domestic water sources, irrigation, livestock watering, wildlife, and cold-water fisheries.

Land management activities such as timber harvest and road construction could impact water quality primarily by accelerating sediment delivery to local stream channels and draw bottoms. These impacts are caused by erosion from road surfaces, skid trails, log landings and by the removal of vegetation along stream channels. This analysis is based on a coarse filter screening approach for watershed evaluation and on-site field review of the project area for water quality impacts. Within the Finley Creek watershed, there are locations with water quality impacts due to sediment from roads that do not meet BMP's, utility corridors, agriculture and grazing impacts on stream channels. The Confederated Salish and Kootenai Tribes have completed several restoration projects on Finley Creek to improve fish habitat impacts related to irrigation and roads. On-going road construction of Highway 93 between Evaro and Arlee has erosion control measures in place and short term effects to water quality were are assessed in the MDOT Highway 93 SEIS.

There is no stream connectivity between the proposed sale area and Finley Creek and no sources of sediment in DNRC project section 16, T16N, R20W. No 303(d) listed impaired streams occur in the project area or on the proposed haul route. The 303(d) list was compiled by the Montana Department of Environmental Quality as required by Section 303(d) of the Federal Clean Water Act and the EPA Water Quality Planning and Management Regulations (40 CFR, Part 130). Under these laws, the State was required to identify water bodies that do not fully meet water quality standards or beneficial uses are threatened.

The proposed haul route utilizes existing roads V4000 that begins at Highway 93, and V4200 and V4400. The existing access roads have steep grades and segments of the roads have inadequate surface drainage that has resulted in road surface erosion. Two existing crossing locations had filling on the inlets that require maintenance cleaning and some rock armoring.

3.2.2.1 Cumulative Watershed Effects

Cumulative watershed effects can be characterized as impacts on water quality and quantity that result from the interaction of disturbances, both human-caused and natural. Tree canopy reduction by tree mortality or timber harvest activities can affect the timing of runoff, increase peak flows and increase the total annual water yield of a particular drainage. DNRC completed a coarse filter evaluation of watershed conditions and cumulative effects as outlined in the Forest Management Rules (ARM 36.11.423) concerning watershed management. The coarse filter approach consisted of on-site evaluations of harvest areas, roads and drainage features, combined with assessing the extent of past harvest activities, through the use of maps and aerial photographs. The

cumulative watershed effects analysis area considered the Lower Finley Creek watershed and more specifically Section 16, T16N, R20W where the proposed harvest is planned, and the adjacent unnamed face drainages along the proposed road access routes. The face drainages include several ephemeral draws and two intermittent and discontinuous streams on a larger convex ridge position, that tends to distribute rather than concentrate surface drainage, combined with rocky well drained subsoils has resulted in minimal if any surface runoff.

Previous harvest activities occurred on about 7% of the DNRC parcel and were limited to small salvage operations on more moderate slopes on the ridgeline with no evidence of off-site erosion or watershed impacts. Approximately 35% of the lower Finley Creek Watershed is forested and 22% has been harvested, mainly over 20 years ago. Past harvest on adjacent tribal and private ownership are generally well stocked with advanced tree regeneration. The older harvest has regenerated to conifers. No cumulative watershed effects from off-site sedimentation from DNRC roads or previous harvest units were identified in the project area.

3.2.3 Noxious Weeds

Spotted knapweed occurs along portions of the existing access road system mainly on roadsides and on drier southerly aspects. Spotted knapweed and spot infestations of thistle and houndstongue occur on the existing access roads. Most roadsides have well established vegetation that competes with weeds.

3.2.4 Forest Conditions and Forest Health

The DNRC is committed to maintaining biodiversity by managing for appropriate stand structures and compositions on state lands (ARM 36.11.404). Appropriate stand cover types are determined by a site specific model (ARM 36.11.405) that considers the ecological characteristics of the site (habitat type, current stand conditions, climate, disturbance regime, etc.) and estimated historical cover type conditions that existed on the site prior to European settlement. Approximately 58% of stands in the project area currently exist as appropriate cover types as identified by the DNRC Forest Management Bureau SLI.

Table 3.1 Cover Type Conditions within the Project Area

Current Cover Type	Appropriate Cover Type	Acres	Percent of the Forested Project Area
Mixed Conifer	Western larch/Douglas-fir	24	5.5%
Mixed Conifer	Ponderosa Pine	33	7.6%
Western Larch/Douglas-fir	Western larch/Douglas-fir	249	57.5%
Western larch/Douglas-fir	Ponderosa Pine	33	7.6%
Douglas-fir	Western larch/Douglas-fir	21	4.8%
Douglas-fir	Ponderosa Pine	73	16.9%

The DNRC considers the role of all stand age classes in maintaining biodiversity. Field sampling was used to calculate the current stand age class distribution for the project area. (Table 3.2)

Table 3.2 Percent Age Class Distribution by Species						
	Age Class (years)					
Species	**< 50**	**50-99**	**100-149**	**150-199**	**200-249**	**250+**
AF	18.5	59.7	20.18	1.63	0	0
DF	1.65	48.66	40.68	8.19	.57	.25
ES	100	0	0	0	0	0
GF	8.19	81.98	8.15	.98	.7	0
LP	0	56.28	41.88	0	1.84	0
PP	59.43	22.24	4.51	1.34	6.15	6.33
RC	100	0	0	0	0	0
WL	0	31.22	42.95	10.6	9.95	5.27
Total	6.51	52.04	32.32	6.08	2.03	1.02

Stands in the project are mostly typical multistoried climax forests. Seral species such as western larch and ponderosa pine that historically dominated the site are being replaced by shade tolerant grand fir, Douglas-fir and sub-alpine fir. Heavy fuel loading is resulting from mortality and abnormal growth associated with heavy dwarf mistletoe infection of up to 80-100% of mature trees in some stands. Stands in the northeast corner of the project area are typically in better condition, more even-aged and exhibit a lower rate of dwarf-mistletoe infection.

3.2.5 ORV access

Operation of ORV's occurs on unmaintained two track roads in southwest corner of the project area that have been pioneered to facilitate firewood cutting behind locked gates.

3.2.6 Aesthetics

The project area is visible from Highway 93 and residential areas south of Arlee, MT. Forest management on tribal lands adjacent to the project area has produced a mosaic of unharvested stands, recent cutting units and older units with dense regeneration (Figure 3.1: Project Area from Highway 93 South of Arlee, MT). There are no developed recreation opportunities in the project area and recreational use is minimal.

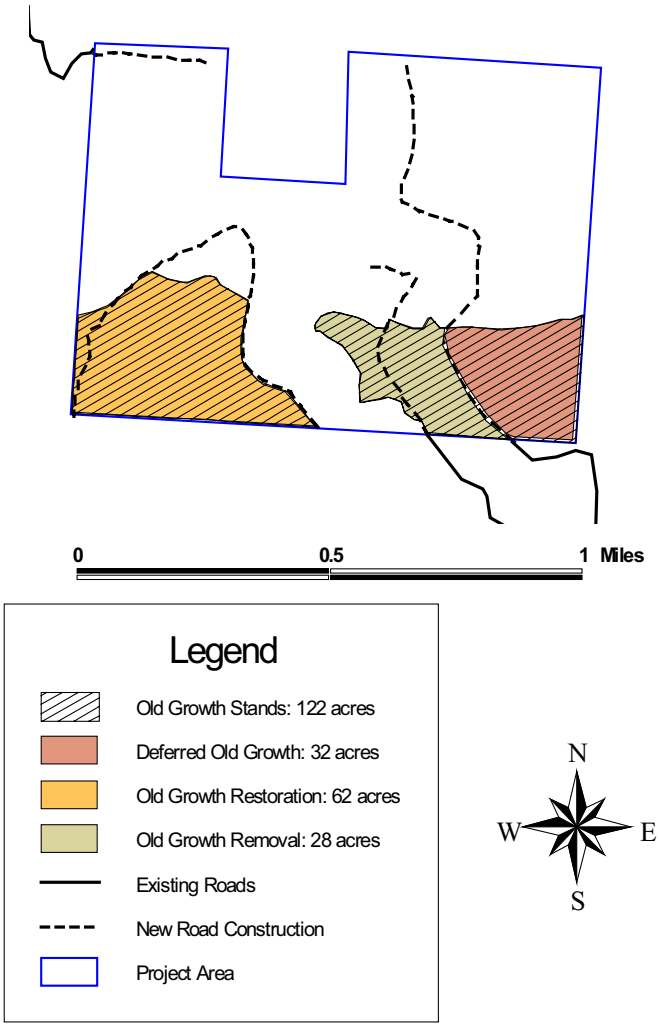
Figure 3.1: Project Area from Highway 93 South of Arlee, MT

3.2.7 Old Growth

The DNRC uses the minimum criteria described by *Green et. al. (Old Growth Forest Types of the Northern Region, 1992)* to identify old growth stands on school trust lands. *Green et. al.* describes characteristics of old growth forests in Montana and defines the minimum number of trees per acre of a specified diameter at breast height (dbh) and age for each old growth type. Stands within the project area that meet or exceed those minimum dbh and age criteria were identified as old growth through field sampling and/or review of the DNRC Stand Level Inventory (SLI) database. Approximately 122 acres of the project area were identified as old growth (Figure 3.2).

The absence of natural disturbance is evident on these sites, with heavy dwarf mistletoe infection in mature trees and increasing dominance by shade tolerant species. These are almost entirely multi-storied stands of Douglas-fir/western larch cover type with grand fir, Douglas-fir and subalpine fir in the understory.

Figure 3.2: Old Growth Stands



3.2.8 Threatened and Endangered Species

3.2.8.1 Grizzly Bear (Federally Threatened)

Grizzly bears are the largest terrestrial predators in North America, feasting upon deer, rodents, fish, roots and berries, as well as a wide assortment of vegetation (Hewitt and Robbins 1996). Depending upon climate, abundance of food, and cover distribution, home ranges for male grizzly bears in northwest Montana can range from 60 - 500 mi^2 (Waller and Mace 1997). The search for food drives grizzly bear movement, with bears moving from low elevations in spring to higher elevations in fall, as fruits ripen throughout the year. However, in their pursuit of food, grizzly bears can be negatively impacted through open roads (Kasworm and Manley 1990). Such impacts are manifested through habitat avoidance, poaching, and vehicle collisions.

The Mill Creek parcel is approximately 9 miles west of the Northern Continental Divide Ecosystem grizzly bear recovery area. The parcel may receive use by grizzly bears due to past reports of bears along the Ninemile Divide. Thus, the proposed project area may be part of one or more grizzly bear home ranges. Therefore, the cumulative effects analysis area for grizzly bears encompasses 623 square miles (398,853 acres), including portions of the Ninemile Divide, the Rattlesnake Wilderness, and the tribal Primitive Area.

Grizzly bears are known to be more vulnerable to human interaction in areas with high open road densities or ineffective road closures. Currently there are 1.2 miles of open road per square mile (simple linear calculation; 746 miles of open road), and 1.48 total miles of road per square mile (923 miles of road), within the 623 square mile grizzly bear analysis area. Within the project area, there are approximately 0.96 miles of open and total road per square mile (project area is approximately 0.625 square miles; simple linear calculation).

3.2.8.2 Canada Lynx (Federally Threatened)

Lynx are currently classified as threatened under the Endangered Species Act. In North America, lynx distribution and abundance is strongly correlated with snowshoe hares, their primary prey. Lynx foraging habitat has recently been characterized as having high horizontal cover, an abundance of shrub cover, large diameter trees during winter, and is typically in spruce-fir forest (Squires et al. 2006). Typically, lynx inhabit early- to mid-successional lodgepole pine, subalpine fir, and Engelmann spruce forest. For denning sites, the primary component appears to be large woody debris, in the form of down logs, root wads, and rock piles (Koehler 1990) surrounded by high horizontal cover (Squires et al. 2006, Squires and Laurion 2000, Mowat et al. 2000). These den sites are usually in mature, mesic forests on northeast aspects. Lynx also den along the edges of regenerating forests where trees have blown down into jackstrawed piles of woody debris (Squires et al. 2006, Ruediger et al. 2000).

Elevations in the project area range from 3,840 to 5,339 feet, and approximately 302 acres of suitable habitat occur in the project area. There are approximately 54 acres of mapped denning habitat, 106 acres of mapped mature foraging habitat, and 142 acres of mapped other lynx habitat (SLI database 20060928 version). Other lynx habitat is defined as forested lands in lynx habitat that do not meet the habitat definitions for denning, mature foraging, young foraging, or temporary non-lynx habitat, but serve to provide cover to facilitate movement and acquisition of alternative prey species, such as red squirrels (ARM 36.11.403). Snowshoe hares are important lynx prey and are associated with dense young lodgepole pine stands, as well as mature stands with subalpine fir understories. An approximately 57,792 acre analysis area was developed for lynx that encompassed the project area and utilized topography and habitat for its creation. Table 3.2 describes the land ownership within the 57,792 acre cumulative effects analysis area.

Table 3.3. Land ownership within the 57,792 acre lynx analysis area.

Land Owner	Acres
Water	6
Bureau of Indian Affairs	164
Plum Creek	1329
Montana DNRC	2,507
Private Lands	6,752
U.S. Forest Service	6,759
Flathead Tribal Lands	40,278

3.2.9 Sensitive Species

3.2.9.1 Pileated Woodpecker

The pileated woodpecker is one of the largest woodpeckers in North America (15-19 inches in length), feeding primarily on carpenter ants (*Camponotus* spp.) and woodboring beetle larvae (Bull and Jackson 1995). The pileated woodpecker nests and roosts in larger diameter snags, typically in mature to old-growth forest stands (Bull et al. 1992, McClelland et al. 1979). Due primarily to its large size, pileated woodpeckers require nest snags averaging 29 inches dbh, but have been known to nest in snags as small as 15 inches dbh in Montana (McClelland 1979). Pairs of pileated woodpeckers excavate 2-3 snags for potential nesting sites each year (Bull and Jackson 1995). Snags used for roosting are slightly smaller, averaging 27 inches dbh (Bull et al. 1992). Overall, McClelland (1979) found pileated woodpeckers to nest and roost primarily in western larch, ponderosa pine, and black cottonwood. The primary prey of pileated woodpeckers, carpenter ants, tend to prefer western larch logs with a large end diameter greater than 20 inches (Torgersen and Bull 1995). Thus, pileated woodpeckers generally prefer western larch and ponderosa pine snags > 15 inches dbh for nesting and roosting, and would likely feed on downed larch logs with a large end diameter greater than 20 inches.

The most abundant habitat type (Pfister et al. 1977) within the affected area is Douglas-fir/ninebark/ pinegrass phase (Stand Level Inventory database). Within the affected parcel, there are approximately 158 acres that are predominately ponderosa pine or western larch, with average stand diameter ≥ 15 inches dbh that would be considered suitable pileated woodpecker habitat (crown cover ≥ 40%; SLI database). The cumulative effects analysis area will encompass the project area and a one mile radius surrounding it. Pileated woodpeckers have been seen and/or heard throughout the project area during several field visits and may be nesting on the parcel (M. McGrath, Wildlife Biologist, personal observations).

3.2.9.2 Fisher

The fisher is a medium-sized animal belonging to the weasel family. Fishers prefer dense, lowland spruce-fir forests with high canopy closure, and avoid forests with little overhead cover and open areas (Powell 1978, Powell 1977, Kelly 1977, Clem 1977, Coulter 1966). For resting and denning, fishers typically use hollow trees, logs and stumps, brush piles, and holes in the ground (Coulter 1966, Powell 1977).

Within a 1-mile radius of the project area, there are approximately 1,752 acres of fisher preferred habitat types, with approximately 276 acres on the affected parcel.

3.2.9.3 Flammulated Owl

The flammulated owl is a tiny forest owl that inhabits warm-dry ponderosa pine and cool-dry Douglas-fir forests in the western United States and is a secondary cavity nester. Nest trees in 2 Oregon studies were 22-28 inches dbh (McCallum 1994). Habitats used have open to moderate canopy closure (30 to 50%) with at least 2 canopy layers, and are often adjacent to small clearings. It subsists primarily on insects and is considered a sensitive species in Montana. Periodic underburns may contribute to increasing habitat suitability for flammulated owls because low intensity fires would reduce understory density of seedlings and saplings, while periodically stimulating shrub growth. Within the project area there are approximately 150 acres of flammulated owl preferred habitat types.

3.2.10 Big Game

3.2.10.1 Elk

Densely stocked thickets of conifer regeneration and overstocked mature stands provide thermal protection and hiding cover for elk in winter, which can reduce energy expenditures and stress associated with cold temperatures, wind, and human-caused disturbance. Additionally, extensive (e.g., ≥250 acres) areas of forest cover ≥0.5 miles from open roads serve as security for elk. Areas with densely stocked mature trees are also important for snow interception, which makes travel and foraging less stressful for elk during periods when snow is deep. Dense stands that are well connected provide for animal movements across wintering areas during periods with deep snow, which improves their ability to find forage and shelter under varied environmental conditions. Thus, removing cover that is important for wintering elk through forest management activities can increase their energy expenditures and stress in winter. Reductions in cover could ultimately result in a reduction in winter range carrying capacity and subsequent increases in winter mortality within the local elk herd.

The project area contains winter and summer range for elk. Within the approximately 65,310 acre cumulative effects analysis area, as defined by a surrounding contiguous block of elk winter range and topography, there is approximately 40,105 acres of elk winter range, approximately 3,318 acres of which is designated as critical elk winter range. Within the project area, there are approximately 306 acres of elk winter range, none of which is designated as crucial winter range habitat. Additionally, there is no security cover within the project area due to either an abundance of open roads near the

parcel or insufficient area for habitat >0.5 mile away from an open road. Within the project area, there are approximately 451 acres of densely canopied forest, which could provide snow-intercept, and possibly thermal cover for deer and elk.

3.2.11 Other Species

3.2.11.1 Northern Goshawk

The northern goshawk (hereafter goshawk) is a forest habitat generalist with specific nesting habitat requirements (McGrath et al. 2003, Squires and Reynolds 1997, Reynolds et al. 1992). The goshawk forages on a wide range of species, with the most predominant prey being snowshoe hare, Columbian ground squirrels, red squirrels, blue and ruffed grouse, northern flickers, American robins, gray jays, and Clark's nutcrackers (Clough 2000, Squires 2000, Watson et al. 1998, Cutler et al. 1996, Boal and Mannan 1996, Reynolds et al. 1992). Thus, given the diverse array of prey species, goshawks forage from a diverse array of habitats. However, (Beier and Drennan 1997) found goshawks to forage in areas based primarily on habitat characteristics rather than prey abundance. Beier and Drennan (1997) found goshawks to forage selectively in forests with a high density of large trees, greater canopy closure, high basal area, and relatively open understories. For nest stands, goshawks will nest in pine, fir, and aspen stands on north-facing slopes that are typically in the stem exclusion or understory reinitiation stages of stand development, with higher canopy closure and basal area than available in the surrounding landscape (McGrath et al. 2003, Finn et al. 2002, Clough 2000, Squires and Reynolds 1997, Reynolds et al. 1992). Nests are typically surrounded by stem exclusion and understory reinitiation stands (with canopy closure ≥ 50%) within the 74 acres surrounding the nest; higher habitat heterogeneity than the surrounding landscape, and an avoidance of stands in the stand initiation stage of stand development typify habitat in the 205 acres surrounding goshawk nests (McGrath et al. 2003). Goshawk home ranges vary in area from 1,200 to 12,000 acres depending on forest type, prey availability, and intraspecific competition (Squires and Reynolds 1997).

The goshawk analysis area is approximately 11,224 acres, and is comprised of approximately 451 ac of DNRC, approximately 644 ac of Plum Creek Timber Company, approximately 798 ac in BIA trust, approximately 2,293 ac in private lands, and approximately 7,036 ac in Confederated Salish & Kootenai Tribal lands. Within the analysis area, approximately 3,157 acres would be available for potential nesting habitat (crown cover ≥50%, pole or mature forest), with approximately 451 of those acres occurring on the project area. Previous land management activities by Plum Creek and the Salish and Kootenai Tribes reduced the capacity of the analysis area for potential nest sites. Goshawks have been observed on the northeastern portion of the parcel repeatedly in recent years, but a nest has not been located.

4.0 Environmental Consequences

4.1 Introduction

This Chapter describes the environmental effects of each alternative on the resources described in Chapter 3 and provides a scientific and analytic basis for the comparison of alternatives found in Chapter 2. This chapter is also designed to provide the analytic process used to evaluate impacts.

4.2 Predicted Effects of Alternatives on Relevant Resources

4.2.1 Soil Resources

4.2.1.1 Alternative A: Deferred Harvest (No Action) – Direct and Indirect Effects

No immediate change from current conditions would be expected. The potential for high intensity fire associated with current heavy fuel loading could have a significant effect on soils.

4.2.1.2 Alternative B: Harvest – Direct and Indirect effects

Primary soil concerns are minimizing the detrimental soil impacts of displacement, compaction and erosion of shallow surface soils. The majority of the proposed harvest would involve cable skidding which typically has a low impact on harvest sites. For the proposed harvest, BMP's and mitigations would be implemented to minimize the area and degree of detrimental soil impacts (displacement, erosion, and compaction). Large woody debris would be maintained on the site at approximately 5-15 tons/acre, (Graham 1994) well distributed and trampled to help maintain nutrient cycling for long term soil productivity, and to encourage reforestation.

With the implementation of BMP's and recommended mitigation measures, the proposed harvest operations present a low risk of detrimental impacts to soils in excess of 15% of the proposed harvest areas based on DNRC soil monitoring on comparable sites (DNRC Collins 2004). Previous harvest effects are minimal, skid trails are few and well vegetated and no erosion was observed. Results of soil monitoring of tractor skidding on the nearby DNRC Evaro Timber Sale area (Section 36, T 15N, R20W) in 2003 found a low average of 6.8% soil impacts and 8.2% scarification from recent harvest. Soil impacts and scarification associated with the proposed action are expected to be less than those observed on the Evaro Timber Sale due to the majority of the project being cable harvest. Timber sale administrators would monitor ongoing harvest activities to meet contract requirements, BMP'S for soil and water protection and silvicultural objectives. The proposed harvest operations are expected to improve tree growth, reduce competition for limited soil moisture and nutrients and maintain soil properties important to plant growth and hydrologic function and present low risk of direct or indirect impacts to soils.

4.2.1.3 Cumulative Effects of Alternative B: Harvest to Soils

Cumulative effects to soils can occur from repeated ground skidding entries into the harvest area and additional road construction, depending on area and degree of detrimental impacts. The majority of the proposed harvest area has not been previously entered and has minimal historic effects. No eroded trails or BMP harvest departures were noted and large woody debris is well dispersed across the small area from previous harvest. The previous harvest sites would not be reentered and the proposed harvest presents low risk of cumulative effects to soil resources.

4.2.2 Water Quality

4.2.2.1 Alternative A: Deferred Harvest (No Action) – Direct and Indirect Effects

No change from current conditions would be expected. BMP work and improvements to existing stream crossing on tribal road systems would not occur in association with the proposed action.

4.2.2.2 Alternative B: Harvest – Direct and Indirect Effects

The proposed harvest and road construction are expected to result in a very low risk of water quality impacts from erosion and sediment delivery. There are no streams with connectivity to Finley Creek or other downstream water resources located within or adjacent to the proposed harvest units. Erosion control on the existing access roads would be improved at stream crossings for the period of use. The installation of additional drain-dips in the existing road system would improve surface drainage and reduce current erosion. Implementation of the erosion control measures would result in no net change or a minor improvement in water quality for the culvert sites on existing roads. DNRC would implement all applicable BMP's and reasonable mitigation and erosion control practices during timber harvest, road maintenance, road construction and road use activities to control erosion. For these reasons, there is very low risk of direct or indirect impacts to water quality or downslope beneficial uses within the watershed.

4.2.2.3 Cumulative Watershed Effects

The DNRC does not expect any measurable change in the timing of surface runoff, increase in peak flows or increase in the total annual water yield of lower Finley Creek. For the following reasons, there is very low risk of cumulative impacts to water quality or beneficial uses from increases in water yield or sediment delivery associated with the proposed action:

1. There are no streams in the section, and all spring runoff goes subsurface within a short distance on the rocky well drained soils. Thus, the proposed timber harvest and road construction would not cause off site erosion or sedimentation.

2. The topography consists of three dry draws on a large convex ridge that tends to distribute rather than concentrate surface drainage. This terrain combined

with rocky, well drained subsoils produces minimal if any surface runoff. Considering the proposed harvest prescriptions to remove diseased and overstocked trees, the potential for increase in water yield resulting from the proposed harvest is expected to be negligible compared to no-action.

3. The project area is 433 acres which represents 2% of the 20,809 acre Lower Finley Creek drainage. The moderate precipitation zone (26”/yr), and the existing and proposed levels of harvest are below the levels normally associated with detrimental increases in water yield, peak flow, or duration of peak flows (Haupt 1974, McDonald & Stednik 2003).

4.2.3 Noxious Weeds

4.2.3.1 Alternative A: Deferred Harvest (No Action)- Direct and Indirect Effects.

Little change from existing conditions would be expected. Minor gradual expansion of noxious weeds into the project area could occur. Heavy existing canopy cover from established trees and brush competes effectively with weeds.

4.2.3.2 Alternative B: Harvest – Direct and Indirect Effects

Disturbance associated with the proposed action could result in the introduction and spread of noxious weeds. The project would include an Integrated Weed Management (IWM) approach, including prevention, revegetation and subsequent weed control treatments. Canopy cover retained post-harvest would effectively compete with noxious weeds in harvest units. Herbicide treatments would likely be required to contain spotted knapweed infestations along roads and adjacent tractor skid trails.

4.2.3.3 Cumulative Effects of Alternative B: Harvest

Competition to native plant species could result from the establishment and spread of noxious weeds. A combination of prevention, revegetation, monitoring and herbicide treatment would be implemented to reduce the possible infestation and spread of weeds.

4.2.4 Forest Conditions and Forest Health

4.2.4.1 Alternative A: Deferred Harvest (No Action) – Direct and Indirect Effects

No immediate changes to forest conditions would be expected. Continued gradual decline of stand conditions and continued mortality from dwarf mistletoe would likely occur. Continued dominance by shade tolerant species would likely result. The potential for high intensity stand replacing fire would continue to increase due to heavy fuel loading and the production of ladder fuels.

4.2.4.2 Alternative B: Harvest – Direct and Indirect Effects

Implementation of the proposed action would alter stand conditions considerably. Silvicultural systems would emulate appropriate natural disturbance regimes (primarily fire) as required by ARM 36.11.408. A mixed severity fire event in this area would

likely cause high tree mortality due to the presence of heavy fuels in dwarf-mistletoe infected Douglas-fir stands. Old growth stands of western larch with low to moderate understory fuel loading would be more likely to survive mixed severity fire. Large ponderosa pine and western larch scattered throughout the project area would likely survive such an event as relic trees, commonly seen in western forests.

Post-harvest stands would vary in density and have a patchy appearance, similar to post-fire stands where fire intensity increased as it encountered heavy fuel loads. The proposed harvest would reduce canopy cover by 30-70%.

Seral ponderosa pine and western larch would become more dominant in the over-story, and canopy gaps would encourage regeneration of seral species in the under-story. The project area would be monitored post harvest to identify the need for mechanical control of shade tolerant species or artificial regeneration. Encouraging mixed species stands through planting and selective thinning would discourage the spread of dwarf mistletoe. Growth rates and tree vigor would improve in stands where commercial thinning prescriptions were applied.

4.2.5 ORV Access

4.2.5.1 Alternative A: Deferred Harvest (No Action) - Direct and Indirect Effects

Unauthorized two track roads from adjacent property currently provide vehicle access to gentle slopes in the southwest corner of the project area. No control measures would be implemented in association with the project under the no action alternative.

4.2.5.2 Alternative B: Harvest – Direct and Indirect Effects

Off road vehicle operation in the project area could provide a vector for noxious weeds and a fire ignition source. Disturbance created by motorized vehicle use could reduce the value of habitat for threatened, endangered, sensitive and big game wildlife species. Control measures to prevent unauthorized use of ORV's would include appropriate road closures and signage. Monitoring of these measures would continue post harvest to ensure the effectiveness of access restrictions.

4.2.6 Aesthetics

4.2.6.1 Alternative A: Deferred Harvest (No Action) – Direct and Indirect Effects

The project area currently has the closed canopy appearance of unmanaged forests when viewed from a distance. The visible landscape occupied by the project area is relatively small compared to extensively managed stands visible on adjacent lands. This appearance would not be expected to change immediately under the No Action alternative. The potential for mortality as a result of natural disturbance is high due to poor stand health, high mortality and heavy fuel loading. At some point in the future it is expected that the aesthetic appeal of the closed canopy appearance would be altered by natural disturbance. Limited recreation that occurs in the project area would not likely be effected in the absence of management.

4.2.6.2 Alternative B: Harvest – Direct and Indirect Effects

Proposed new road construction would likely reduce the visible appeal of the project area by exposing bare soil and creating unnatural patterns on the landscape. Proposed new roads were located to favor areas where canopy coverage would break up these patterns as much as possible. Revegetation efforts associated with weed control would further reduce the visibility of new roads.

The appearance of the project area from a distance would likely be very similar to management patterns on adjacent property (see Figure 3.1). 40-70% of the canopy would be removed in sanitation harvest units, giving the project area a patchy appearance. Openings of 1 acre or more may result, though snags, green recruits and large healthy seral species would be retained. Units would largely remain green due to shade tolerant understory regeneration. Commercial thinning and ITS units would retain a forested appearance, though more open than pre-harvest. The short term effect on aesthetics is likely to be negative due to the appearance of fresh slash, stumps and skid trails. Natural revegetation and slash decomposition would reduce the effects within 2-4 years. Retaining the majority of large trees throughout the project area would also reduce impacts to visible appearance.

4.2.6.3 Cumulative Effects of Alternative B: Harvest

Very little recreation currently occurs in the project area due to the lack of access. New roads would probably increase the opportunity for non-motorized recreation. Active logging and immediate post-harvest conditions would temporarily reduce the aesthetic value of the project area while improving recreation opportunities.

In the long term, the proposed action may improve the appearance of the project area by reducing the amount of growth abnormalities and clumps of dead trees resulting from dwarf mistletoe. The project area would likely appear very similar to management patterns on adjacent lands. Retention of large western larch and Ponderosa pine, particularly in contiguous stands, would further improve the aesthetics where a dense understory and heavy fuel loading greatly limited visibility.

4.2.7 Economics and Project Revenue

4.2.7.1 Alternative A: Deferred Harvest (No Action) – Direct and Indirect Effects.

Harvesting would not take place. No new revenue would be generated for the support of the Common Schools Trust or for the DNRC Forest Improvement Account. No personal income would be generated through the work of logging or road building contractors or local sawmills.

4.2.7.2 Alternative B: Harvest – Direct and Indirect Effects

Approximately $260,000 in net revenue (est. at $130/mbf) would be generated in support of the Common Schools Trust from the sale of approximately 2 million board feet (2.0 MMBF) of sawtimber. Project development costs for 2.7 miles of new road construction, existing road improvements and materials are estimated at $58,000.

Responsibility for development costs associated with the project would be assigned to the purchaser and administered by the DNRC Forest Officer.

The amount of Forest Improvement (FI) revenue generated by the project is estimated at $62,620. The current FI fee rate collected on projects administered by the DNRC Southwest Land Office is $31.31/MBF. FI funds would be applied to projects in the project area and on other School Trust Lands. FI expenditures associated with this project may include weed spraying, brush control, tree planting and pre-commercial thinning and may require an investment of up to $40,000 in the next decade.

4.2.7.3 Cumulative Effects of Alternative B: Harvest

If implemented, the proposed project would provide work and income for road building and logging contractors and their employees. The forest products would likely be processed in local mills, supporting mill employees and contributing to local, state and federal tax revenues. Similar benefits from the retail sale of forest products would be realized.

4.2.8 Dust and Truck Traffic

4.2.8.1 Alternative A: Deferred Harvest (No Action) – Direct and Indirect Effects

No change from current conditions would be expected. No dust or increased traffic would occur as a result of the proposed action.

4.2.8.2 Alternative B: Harvest – Direct and Indirect Effects

Commercial trucks could temporarily produce a significant amount of noise and dust on unpaved roads as a result of the proposed action. There are few residences along unpaved portions of the proposed haul route that would be affected by noise and road dust. Dust abatement on portions of the haul route adjacent to inhabited residences may be required as a contract stipulation.

Operation of commercial trucks for transporting equipment and logs could create a temporary traffic hazard as a result of the proposed action. Posted truck speed limits and warning signs would reduce the potential hazard. Most of the proposed haul route consists of forest roads that experience very low use. A small portion of the haul route includes a straight paved secondary road with long sight distance. As a result, there would be low risk of direct or indirect effects of the proposed action.

4.2.8.3 Cumulative Effects of Alternative B: Harvest

Due to the temporary nature of truck operation associated with the proposed action, there would be low risk of cumulative effects.

4.2.9 Old Growth

4.2.9.1 Alternative A: Deferred Harvest (No Action) – Direct and Indirect Effects

No immediate change to current conditions would be expected. The amount of old growth, particularly western larch and ponderosa pine, is expected to gradually decline in the absence of natural disturbance due to mortality and the lack of recruitment of these species in the understory. The potential for stand replacing fire is high due to fuel loading and ladder fuels. Under these circumstances it is expected that a significant amount of old growth would be lost.

4.2.9.2 Alternative B: Harvest – Direct and Indirect Effects

The proposed action would reduce the amount of old growth in the project area from 122 acres to 94 acres. 32 acres of old growth would be deferred from the proposed harvest as wildlife habitat mitigation. Of the 90 acres of old growth that is treated, 28 acres would be removed from old-growth status as a result of harvesting in areas with heavy mistletoe infection, while 62 acres would, after harvesting, continue to meet or exceed minimum criteria identified by Green et al. (1992) to be defined as old growth.

4.2.9.3 Cumulative Effects of Alternative B: Harvest

Within the DNRC Kalispell Unit, approximately 2624 acres of forested Trust Lands are identified as old growth (SLI, 2008). The project area contains 122 acres (5 %) of the old growth on the Kalispell Unit. 28 acres of old growth removal proposed in Alternative A: Harvest would reduce the amount of old growth on the Kalispell Unit by 1%.

4.2.10 Endangered Species

4.2.10.1 Grizzly Bears

4.2.10.1.1 Alternative A: Deferred Harvest (No Action) – Direct and Indirect Effects

No change from current conditions would be expected under the No Action alternative.

4.2.10.1.2 Alternative B: Harvest – Direct and Indirect Effects

The proposed action would harvest timber on approximately 300 acres and construct approximately 3 miles of new road, most of which would be closed by locked gates following the proposed action. As a result, there would be no net increase in open road density, and an increase in total road density from 0.96 to 5.76 total miles of road per square mile in the project area (project area is approximately 0.625 square miles; simple linear calculation). The proposed timber harvest would remove mistletoe infested trees, and also reduce stand stocking. Visual screening cover would likely be minimally affected due to the presence of advanced regeneration and/or shrub development, and topographic relief in various places throughout the project area. As a

result, there would likely be low risk of direct and indirect effects to grizzly bears from the proposed action.

4.2.10.1.3 Cumulative Effects of Alternative B: Harvest

Previous timber harvests have occurred on nearby lands managed by the Salish and Kootenai Tribes and Plum Creek in recent years on the west side of the analysis area. Providing that recommended road closures are implemented, there would not be an increase in open road density within the cumulative effects analysis area. The proposed harvest would reduce visual screening cover within the approximately 93 acres proposed for cable harvesting. However, topography and vegetation retained in the SMZ and tractor units would likely break up sight distances into the cable units from afar. Thus, it would be likely that there would be low risk of cumulative effects to grizzly bears from the proposed action.

4.2.10.2 Canada Lynx

4.2.10.2.1 Alternative A: Deferred Harvest (No Action) – Direct and Indirect Effects

No change from current conditions would be expected under the no action alternative.

4.2.10.2.2 Alternative B: Harvest – Direct and Indirect Effects

The proposed timber harvest would not enter approximately 40 acres of mapped other lynx habitat, approximately 21 acres of mapped mature foraging habitat, and approximately 8 acres of mapped denning habitat. Additionally, approximately 5 acres of denning habitat with a good distribution of large downed logs and root wads interspersed with advanced regeneration would have an equipment restriction zone surrounding it to conserve the potential denning structures. Lynx habitat within the proposed harvest units, particularly the tractor units, would likely not be completely converted to temporary non-lynx habitat. In areas of heavy mistletoe infestation, lynx habitat would likely be converted to temporary non-lynx habitat. However, in other areas, affected mature foraging and denning habitat may be converted to other lynx habitat, if post-harvest crown cover (in sapling/pole/sawtimber categories) is ≥40%. As a result, there would likely be a reduction in currently suitable lynx habitat due to the proposed timber harvest. However, potentially important denning areas would be conserved; other lynx habitat types would likely be converted to the other lynx habitat category; and a northwest-to-southeast corridor consisting of several types of lynx habitat would likely be retained, depending upon the severity of the mistletoe infestation in the parcel's northwest corner. Thus, there would likely be a low to moderate risk of direct or indirect effects to lynx as a result of the proposed action.

4.2.10.2.3 Cumulative Effects of Alternative B: Harvest

While the abundance of mature foraging habitat, and suitable other lynx habitat has been reduced on Tribal and Plum Creek lands west of Highway 93 in recent years, such habitats are abundant within the analysis area east of Hwy 93. Additionally, many of the recent reductions in mature foraging and other lynx habitat will likely become

young foraging habitat within 10 years, as vegetation responds to the vegetative change. As previously discussed, the proposed timber harvest would retain approximately 40 acres of mapped other lynx habitat, approximately 21 acres of mapped mature foraging habitat, and approximately 8 acres of mapped denning habitat. There may be short-term (10 to 15 years) constrictions in travel corridors as a result, but as the surrounding forestland revegetates, young foraging habitat would likely provide suitable travel corridors. As a result, there would likely be low risk of cumulative effects to lynx as a result of the propose action.

4.2.11 Sensitive Species

4.2.11.1 Pileated Woodpecker

4.2.11.1.1 Alternative A: Deferred Harvest (No Action) Direct and Indirect Effects

No change from current conditions would be expected under the no action alternative.

4.2.11.1.2 Alternative B: Harvest – Direct and Indirect Effects

The proposed action would harvest timber in approximately 108 acres of the 158 acres of pileated woodpecker habitat within the parcel. However, the proposed harvest would specifically retain approximately 43 acres of pileated woodpecker habitat that would normally be entered during this proposed harvest. While the proposed harvest would reduce the suitability of approximately 108 acres of pileated habitat, higher value (e.g., higher canopy closure, greater sign of use, etc.) pileated woodpecker habitat would be retained, and said habitat would be managed in a larger, contiguous block (in accordance with ARM 36.11.439 (1)). As a result, there may be low to moderate risk of direct and indirect effects to $\geq$1 pairs of pileated woodpeckers, however, suitable habitat would be retained as a mitigative measure.

4.2.11.1.3 Cumulative Effects of Alternative B: Harvest

The proposed action would further reduce the amount of suitable pileated woodpecker habitat in the analysis area by approximately 108 acres, in a landscape where such habitat has previously been reduced on adjacent Tribal and industrial lands. However, the proposed action would also retain approximately 50 acres of suitable pileated woodpecker habitat, and approximately 37 acres of potential habitat, that are connected to other pileated habitat on adjacent lands. Such action would likely maintain connectivity of pileated woodpecker habitat within the analysis area. As a result, there would likely be low to moderate risk of cumulative effects to pileated woodpeckers within the analysis area due to the temporary (approximately 40-60 years) reduction of 108 acres of such habitat.

4.2.11.2 Fisher

4.2.11.2.1 Alternative A: Deferred Harvest (No Action) Direct and Indirect Effects

No change from current conditions would be expected under the no action alternative.

4.2.11.2.2 Alternative B: Harvest – Direct and Indirect Effects

The proposed action would harvest timber within approximately 156 acres of the approximately 276 acres of fisher preferred habitat types in the project area. While fishers in the Rocky Mountains appear to prefer late-successional forests and use riparian areas more than their availability in the landscape (Powell and Zielinski 1994), only one minor intermittent riparian area occurs in the project area. While the proposed action would reduce the suitability of the affected stands for fishers, the affected habitat likely has minor value for fishers due to the quality of the affected riparian area. As a result, the proposed action would likely have low risk of direct or indirect effects to fishers.

4.2.11.2.3 Cumulative Effects of Alternative B: Harvest

Within the analysis area, 489 acres of the approximately 1,752 acres of fisher preferred habitat types are currently affected by 10 ac to 60 ac ranchettes, which would likely influence use of the area by fishers. These ranchettes are clustered into a block lower in the tributary area; an area that may have greater habitat value for fishers. With this block of ranchettes, the current block of fisher preferred habitat types is likely most effective for fishers in a cross-slope pattern from Tribal lands in the northwest, through the affected parcel, to tribal lands in the southeast portion of the analysis area. The proposed action would harvest approximately 156 acres of fisher preferred habitat types in the middle of this block, retaining an approximately equal amount of habitat northwest and southeast of the proposed harvest units. As a result, the current block of effective fisher preferred habitat types would likely be bisected, with a temporary (approximately 40 – 60 years) quarter-mile gap in habitat between them. However, because the analysis area currently has limited habitat value for fishers due to the block of ranchettes and prior habitat reduction, the proposed action would likely have low risk of cumulative effects to fishers.

4.2.11.3 Flammulated Owls

4.2.11.3.1 Alternative A: Deferred Harvest (No Action) Direct and Indirect Effects

No change from current conditions would be expected under the no action alternative.

4.2.11.3.2 Alternative B: Harvest – Direct, Indirect and Cumulative Effects

The proposed action would harvest timber in approximately 84 acres of the 150 acres of flammulated owl preferred habitat types within the project area. Consequently, with the proposed opening of the forest in these units, and the abundance of pileated woodpeckers in the area, the proposed action would likely benefit flammulated owls. Because this species prefers moderate canopy closure (30 to 50%), and typically utilizes old woodpecker cavities for their nest sites, the proposed action's reduction of canopy closure within the harvest units, and creation of small clearings, would likely create usable flammulated owl habitat in 10 to 20 years post-harvest. As a result, the proposed action would likely have positive direct and indirect effects for flammulated owls, and cumulative effects would likely be minimal

4.2.12 Big Game

4.2.12.1 Elk

4.2.12.1.1 Alterative A: Deferred Harvest (No Action) – Direct and Indirect Effects

No change from current conditions would be expected under the no action alternative.

4.2.12.1.2 Alternative B: Harvest – Direct and Indirect Effects

The proposed action would not affect elk security cover, but would reduce snow intercept cover within elk winter range within the project area from approximately 306 acres to approximately 126 acres through timber harvesting. In general, snow intercept cover within the project area would be reduced from approximately 451 acres to approximately 139 acres. As a result of the proposed harvest, additional forage would likely be produced for 15 to 20 years due to reduced canopy cover, which would benefit elk summer habitat. However, there would likely be low to moderate risk of direct and indirect effects to elk within the project area due to the reduction in snow intercept cover within winter range by approximately 180 acres.

4.2.12.1.3 Cumulative Effects of Alternative B: Harvest

Within the 65,310 acre analysis area, there are approximately 12 patches of snow intercept cover, ranging in size from approximately 118 acres to 10,188 acres (total approximately 27,492 acres), and largely coinciding with elk winter range habitat. The project area is the central portion of an approximately 1,343 acre patch of snow intercept cover. This same patch includes portions of the ranchettes discussed under cumulative effects for fishers. As a result, human presence on the ranchettes may influence elk use of this patch in the winter. The proposed action would reduce the amount of snow intercept cover within this patch from approximately 1,343 acres to approximately 1,031 acres. Elk could still travel in the proposed harvest units along the ridge in the southwest portion of the project area to get to snow intercept cover and avoid humans on the ranchettes north and east of the parcel, but at a higher energetic cost due to deeper snow in the proposed harvest units post-harvest. As a result, the proposed harvest would likely reduce the quality of this portion of the winter range for elk. However, the proposed timber harvest would also stimulate new forage production on approximately 312 acres of elk summer range for approximately 15 to 20 years post-harvest. The proposed action would likely have low risk of cumulative effects to elk winter range due to the established presence of people in the subdivision adjacent to the project area.

4.2.13 Other Species

4.2.13.1 Northern Goshawk

4.2.13.1.1 Alternative A: Deferred Harvest (No Action) – Direct and Indirect Effects

No change from current conditions would be expected under the no action alternative.

4.2.13.1.2 Alternative B: Harvest – Direct and Indirect Effects

Currently, there are approximately 451 acres of potential goshawk nesting habitat within the project area, and the proposed action would likely directly reduce the suitability of approximately 312 acres for nesting by goshawks through timber harvesting. Indirectly, the proposed harvest would likely provide the majority of the affected parcel with a low probability for nesting by goshawks (McGrath et al. 2003) due to an abundance of stand initiation stands within the parcel post-harvest. McGrath et al. (2003) noted that goshawk territories typically had reduced amounts of stand initiation habitat between 1,000 and 1,700 feet from their nests. The proposed action, through sanitation harvests to reduce the amount and severity of mistletoe infestations, would essentially create stand initiation forest structure in the proposed harvest units. The remaining potential goshawk nesting habitat that would likely remain post-harvest would be along the edges of the NW of the NE ¼ of the project area. With a pair of goshawks known to frequent the project area, there would likely be a moderate risk of direct and indirect effects to this pair from the proposed action. It may be possible that the pair could locate a successful nest in the aforementioned unharvested area.

4.2.13.1.3 Cumulative Effects of Alternative B: Harvest

Given the discussion under direct and indirect effects, the affected parcel is part of a larger (approximately 1,343 acres) block of potential nesting habitat. As such, goshawks could re-locate a nest site elsewhere within this larger block of potential nesting habitat, and utilize the proposed harvest units as foraging habitat in the future. However, this larger block of habitat is the largest block of potential nesting habitat within the analysis area, and the proposed harvest would affect potential goshawk nesting habitat on more than just the proposed 312 acres to be harvested, due to resulting stand structures and habitat fragmentation. As a result, the proposed action may have a low to moderate risk of cumulative effects to a pair of northern goshawks.

5.0 List of Individuals and Groups Associated with the Project

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