

EIGHT MILE TIMBER SALE PROJECT ENVIRONMENTAL ASSESSMENT (EA)

COVER SHEET

Proposed Action: The Montana Department of Natural Resources and Conservation proposes forest management activities on forested State Trust Lands. The planned activities would include the sale and harvest of up to approximately 300-500 MBF thousand board feet of wood products from state land located 7 miles northeast of Florence, Montana in Section 36 of Township 11North, Range 19 West on 480 acres. The proposed action plan could begin implementation as early as the fall of 2010.

Type of Document: Environmental Assessment

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Special Note: Comments received in response to this project will be available for public inspection and will be released in their entirety if requested pursuant to the Montana Constitution.

HOW TO READ THIS EA (ENVIRONMENTAL ASSESSMENT)

To read this EA more effectively, carefully study this page. Following State regulations, we have designed and written this document (1) **to provide** the Project Decision Maker with sufficient information to make an informed, reasoned decision concerning the proposed Eight Mile timber sale and (2) **to inform** members of the affected and interested public of this project's effects to the environment.

The EA consists of the following chapters:

- 1 Purpose and Need for Action
- 2 Alternatives, Including the Proposed Action
- 3 Existing Environment
- 4 Environmental Effects
- 5 Eight Mile Timber Sale Findings
- 6 References

Chapters 1 and 2 together serve as a summary overview of the Eight Mile Timber Sale Project. These two chapters have been written so that non-technical readers can understand the potential environmental, technical, economic, and social consequences of **taking** and of **not taking** action.

Chapter 1 introduces the Eight Mile Timber Sale. It provides a very brief description of the proposed Eight Mile Timber Sale and then explains three key things about the project:

- (1) the relevant environmental issues,
- (2) the decisions that the Project Decision Maker must make concerning this project, and
- (3) the relevant laws, regulations, and consultations with which the DNRC must comply.

Chapter 2 provides detailed descriptions of Alternative A: No Entry (No Action) and the (Action) Alternative B.

Chapter 3 briefly describes the past and current conditions of the relevant resources (*issues*) in the project area that would be meaningfully affected, establishing a part of the baseline used for the comparison of the predicted effects of the alternatives.

Chapter 4 presents the detailed, analytic predictions of the consequences of implementing Alternative A: No Harvest (No Action), and (Action) Alternative B. These predictions include the direct, indirect, and cumulative effects of implementing the alternatives.

Chapter 5 findings of the Eight Mile Timber Sale project.

Chapter 6 lists preparers, references, and abbreviations used.

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CHAPTER 1: PURPOSE & NEED

1.1 DESCRIPTION OF PROPOSED ACTION

The Department of Natural Resources and Conservation (DNRC), Hamilton Unit, proposes to harvest timber on state lands to generate revenue for the Montana Common Schools Trust. The project area is located approximately 7 miles northeast of Florence, Montana, and involves an area within sections 36, in T11N, R19W. The total gross sale area is approximately 480 acres (see vicinity map, Figure 1). If a harvest alternative is selected approximately .3 to .5 million board feet (MMBF) would be harvested from approximately 161 acres with various even and uneven-aged silvicultural treatments. Harvesting could begin as early as the fall of year 2010 with all associated activities being complete by December 2012.

To accomplish this project and provide better access for future management of these parcels, approximately 2,700' of permanent road would be constructed on the section and 1,900' of temporary road' would be constructed and reclaimed after use. When completed the Eight Mile section would have approximately 3.35 miles of existing road with a yearlong closure to motorized vehicles.

1.2 NEED FOR ACTION

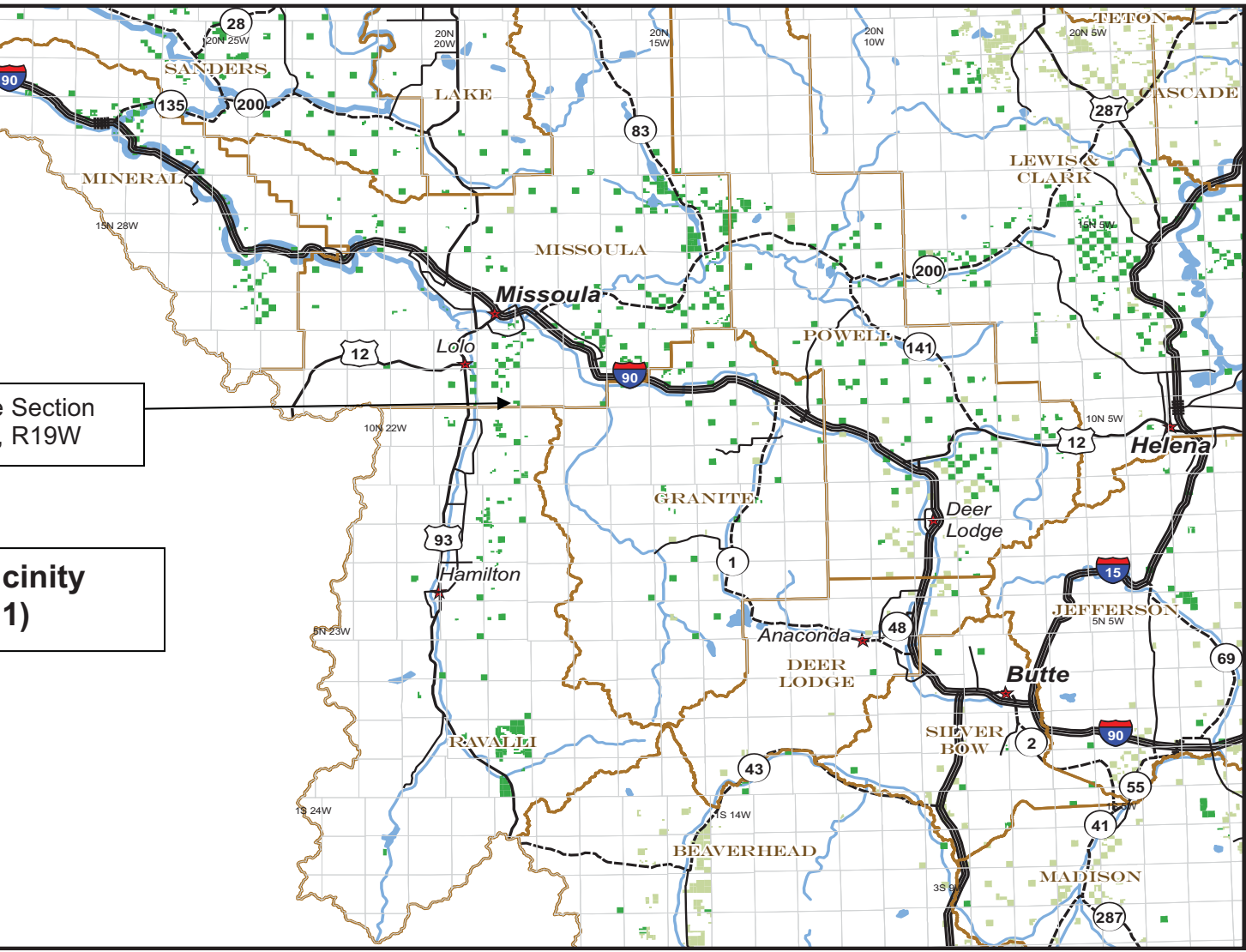
The lands involved in the proposed project are held by the State of Montana for the support of specific beneficiary institutions, such as public schools, State colleges and universities, and other specific State institutions, such as the school for the deaf and blind (Enabling Act of February 22 1889: 1972 Montana Constitution Article X, Section 11). The Board of Land Commissioners (Land Board) and DNRC are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for these beneficiary institutions, Section 77-1-202, Montana Code Annotated (MCA).

On June 17, 1996, the Land Board approved the State Forest Land Management Plan (SFLMP). The SFLMP provides the philosophy adopted by DNRC through programmatic review (DNRC, 1996). The DNRC will manage the lands in this project according to this philosophy, which states:

Our premise is that the best way to produce long-term income for the trust is to manage intensively for healthy and biological 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 be our primary tool for achieving biodiversity objectives.

On March 13, 2003, the DNRC adopted Administrative Rules for Forest Management (Rules) (Administrative Rules of Montana [ARM] 36.11.401 through 450, DNRC 2003). The Rules provide DNRC personnel with consistent policy, direction, and guidance for the management of forested trust lands. Together, the SFLMP and Rules define the programmatic framework for this project.

The DNRC intends to manage these parcels for healthy and biologically diverse forests by managing toward more natural and historic stand structures and by reintroducing fire, where feasible, which is a natural process that these forest types evolved with and has been basically absent for the past century. The proposed harvests are designed, in part, to reflect the historical roles that fire played in the cover types that are represented. The proposed management regime for these parcels is to develop age class structures that would maximize long-term return to the school trust. The DNRC would plan to reenter these parcels as needed to harvest forest products and manage the stands for this long-term return. Intermediate entries such as thinning, salvages, and maintenance projects may also be needed to fulfill these goals.



Section
R19W

City
1)

	Rivers		Lakes
	City		DNRC managed for timber
	County		DNRC other
			Township/Range

21 February 2007
Montana DNRC
Technical Services Section/dr



1.3 OBJECTIVES OF THE EIGHT MILE TIMBER SALE PROJECT

In order to meet the goals of the management philosophy adopted through programmatic review, the DNRC has set the following specific project objectives:

1. Maximize revenue over the long-term for the School Trust accounts from the timber resources and provide a sufficient amount of sawlog volume to contribute to the DNRC's sustained yield as mandated by State Statute 77-5-222, MCA.
2. Manage the identified parcel intensively for healthy and biologically diverse forests to provide long-term income for the Trust.
3. Improve timber stand growth and vigor.

1.4 COOPERATING AGENCIES AND ENTITIES WITH JURISDICTION AND REQUIRED PERMITS

- The Montana Streamside Management Zone (SMZ) Law administered by the Department of Natural Resources and Conservation (DNRC) would be adhered to when operations occur near streams.
- Open Burning regulations under the Montana DEQ would be followed for all burning and hazard reduction work.
- Temporary Road Use Permits would be obtained from private land owners.
- The Clean Water Act and Environmental Protection Agency Water Quality Planning and Management Regulations require the determination of allowable pollutant levels in 303(d) listed streams through the development of Total Maximum Daily Load (TMDL) limits. Eighmile Creek is not on the 303(d) list. Only streams partially supporting aquatic life and cold water fisheries are listed.

1.5 OTHER RELEVANT ENVIRONMENTAL REVIEWS IN THE AREA

In order to address direct, indirect, and cumulative effects on resources, the analysis incorporates past, present, and future actions within a determined analysis area. The locations and sizes of the analysis areas vary by resource (watershed, soils, etc.) and species (grizzly bear, big game, etc.) and are further described by resource in Chapters 3 and 4. Effects from past projects are incorporated into DNRC databases over time and become part of the existing condition that is used in each analysis. Ongoing and proposed projects are considered for each resource based on the appropriate analysis area.

The following environmental reviews were located within analysis boundaries for the project.

- Department of Natural Resources & Conservation, Hamilton Unit Office, 1985; Environmental Analysis for the 8 Mile Timber Sale.
- Department of Natural Resources & Conservation, Hamilton Unit Office; July 2007; Environmental Analysis for the Eight Mile Timber Permit Fire Salvage.
- Department of Natural Resources & Conservation, Hamilton Unit Office, 2010; Environmental Analysis for the Mclain Creek Thinning Timber Permit.

1.6 DECISIONS TO BE MADE

The Decision Maker will determine the following from this EA and will document their decision in the Finding found at the end of the document.

- Should the project be implemented or should an EIS be prepared?
- Do the alternatives presented in the EA meet the purpose of the project?
- Which alternative should be implemented?
- Are the proposed mitigations adequate and feasible?
- Does the selected alternative have a significant effect on the human environment?

These decisions would become DNRC's recommendations to the Land Board. The Land Board will make the final decisions regarding implementation of actions.

1.7 SCOPE OF THE ENVIRONMENTAL ANALYSIS

This section defines and explains the scope (boundaries/limits) of the Eight Mile Timber Sale Project. It briefly describes the history of the planning process, identifies the resource issues studied in detail, and identifies the issues eliminated from detailed study.

1.7.1 Public Scoping Process

The initial stage of an Environmental Assessment (EA) is the public scoping process, which is used to inform the public that a State agency is proposing an action and gather comments on the possible impacts of the project. The scope of this was determined by the professional judgment of resource specialists in DNRC, other State agencies, comments from the public, and other interested parties.

The Eight Mile timber sale was initially scoped for public comments May 1st of 2006 through distribution of a letter to individuals, adjacent landowners, organizations, industries, and agencies. Notices were also posted in local post offices, newspapers, and at entrances to the section. The mailing list of parties receiving initial scoping notices for this project is located in the project file at the Hamilton Unit Office. Public scoping comments as well as internal DNRC issues and concerns were summarized and can be found below. The original comments are also located in the project file at the Hamilton Unit Office.

1.7.2 Issues Studied in Detail

The Eight Mile ID team carefully considered comments received from DNRC resource specialists, the public, and other agencies. Through the scoping process, concerns were raised about the project's potential impacts on the environment. These comments and concerns were considered by DNRC in the development of project alternatives (see CHAPTER 2). The Project File contains additional details of scoping and issue identification. For the purposes of this environmental analysis, issues will be considered actual or perceived effects, risks, or hazards as a result of the proposed alternatives.

Issues were grouped by general resource area (Vegetation, Soils, Hydrology, etc.) and are listed below. Italicized comments clarify where an issue may be addressed under several resource areas. See Chapters 3 and 4 for more detailed descriptions and on relative importance of these issues and concerns.

The following issues were identified for detailed study:

Vegetation

- If the proposed action does not take place, timber stand health could continue to decline with increased severity and spread of mistletoe, increased risk of insect and disease outbreaks, and increased competition stress from overstocking.
- If the proposed action does not take place, risk of high intensity stand replacing fires would continue to increase.
- Slash from timber harvest activities could increase fire hazard and could make the site look displeasing. The visual component of this issue will be addressed as part of the aesthetics analysis.

The following issue statements were developed from internal and public scoping regarding the effects of proposed timber harvest and road systems to water resources, fisheries and soils.

Soil Resources/Geology

- The proposed forest management activities may adversely affect geologic or soil resources through excavation, displacement or compaction depending on the area and degree of impacts.

Noxious Weeds

- The proposed project could increase the spread of noxious weeds within the section.

Cumulative Watershed Effects

- The proposed timber harvest may cause or contribute to cumulative watershed impacts as a result of increased water yields.

Fisheries

- The proposed forest management actions may have effects to fisheries and fish habitat features principally from sedimentation.

Wildlife

- There is concern that the proposed action would interfere with grizzly bear use of the area due to increased road densities and project-related activities.
- There is concern that the proposed action would increase gray wolf vulnerability within the project area due to increased road densities and reduced cover.
- There is concern that the proposed action would reduce the amount of suitable pileated woodpecker habitat within the project area.
- There is concern that the proposed action would negatively impact flammulated owl habitat within the project area.
- There is concern that the proposed action would negatively impact Townsend's big-eared bats due to motorized activity along the haul route.
- There is concern that the proposed action would reduce elk and white-tailed deer winter range within the project area.
- The proposed activities could affect threatened and endangered species (i.e., bald eagles, gray wolves, grizzly bears, Canada lynx).
- The proposed activities could affect sensitive species.

Aesthetics

The proposed project could change the aesthetics in the area.

1.7.3 Issues Eliminated from Detailed Study

The following issues were eliminated from further study because they were beyond the scope of this project or because this project would not be likely to impact them. This Environmental Assessment contains no further or minimal information on these eliminated issues.

Canada Lynx

Based on the most recent Stand Level Inventory data (10 December 2009), the project area does not contain lynx habitat, and it has not been classified as lynx critical habitat by the U.S. Fish and Wildlife Service. As a result, there would likely be minimal risk of direct, indirect, or cumulative effects to lynx as a result of the proposed action and this species will not be analyzed further.

Bald Eagle

The nearest bald eagle nest is located approximately 5 miles west of the project area. Due to the distance, the proposed action would not be located within the territory's home range area (Montana Bald Eagle Working Group 1994). Because of the distance involved, there would likely be minimal risk of direct, indirect, or cumulative effects to bald eagles as a result of the proposed action.

Black-backed woodpecker

The project area is located within the 2006 Woodchuck fire which burned approximately 1,035 acres, primarily on industrial private forest lands (Plum Creek Timber Lands) with smaller amounts on Non-industrial private, State and USDA Forest Service ownerships. Timber affected by the fire was salvage-logged on industrial private forest lands and within the project area. Due to the lack of nearby burned habitat, there would likely be low risk of direct, indirect, and cumulative effects to black-backed woodpeckers as a result of the proposed action.

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

Sensitive Plants

A search of the Montana Natural Heritage Program was conducted and no sensitive plants were identified in the analysis area. In field reconnaissance, DNRC personnel have identified no sensitive plants. Since no sensitive plants have been identified on the project area, no direct, indirect, or cumulative effects are expected to occur.

Old Growth

There was a concern that timber harvest activities may adversely impact old growth stands. The project area was inventoried for the presence of old growth as defined under ARM 36.11.403 (48) and 36.11.418. These definitions refer to stands that meet or exceed the minimum number, size, and age of large trees. (Green et al.,2000). No stands meeting this definition were found to be present. Because no old growth stands are proposed for harvest, there are no expected direct, indirect, or cumulative effects to old growth.

Cultural Resources

A concern was raised that proposed activities might affect cultural or archeological sites within the project area. The State Historic Preservation Officer was consulted in an effort to determine whether or not cultural resources exist in the project area. The remnants An old cabin site exists within the project area and will not be disturbed by this project.

CHAPTER 2: ALTERNATIVES

2.1 INTRODUCTION

Chapter 2 describes the alternatives developed and considered for the Eight Mile Timber Sale Project. This chapter will introduce a no action alternative and an action alternative. It contains summaries and comparisons of each alternative.

2.2 DEVELOPMENT OF ALTERNATIVES

The initial scoping and intent of this project was to treat three parcels of state ownership to achieve the objectives of generating income for the school trust and maintaining long term forest health and productivity. This proposal included the removal of between 2.3 and 4.0 MMBF on 300 to 550 acres.

It was decided that because of public and resource concerns, identified through scoping and analysis review, sections 16 and 22 T11N R19W would be dropped from harvest consideration. Section 36 in the Woodchuck/Eight mile drainage would remain and be developed as an action and no action alternative. The action alternative will consider management activities on approximately 161 acres and allow the construction of approximately 3,275' of new road and up to 2,000' of temporary road.

It was concluded that the action alternatives found a balance between resource concerns and project objectives that would be acceptable to the interdisciplinary team and the decision maker.

2.3 ALTERNATIVE DESCRIPTIONS

This section describes the elements and mitigation measures of the action alternative, and also includes a description of No Action Alternative A. If an action alternative is chosen, actions designed to protect resources during harvesting, road construction, or site preparation activities would be incorporated into a timber sale contract as contract specifications and stipulations. These specifications and stipulations would be applied to an action alternative and are a form of mitigation. Mitigation measures that were designed to reduce impacts on a particular resource are discussed in section 2.3.3 of this chapter and in Chapters 3 and 4 under the particular resource.

2.3.1 No Action Alternative

No Action Alternative A is used as a baseline for comparing the effects that the action alternatives would have on the environment. It is also considered a reasonable alternative for selection.

Timber harvesting as proposed would not occur and roads would not be built. Future harvest of wood products or might occur to an unknown degree, depending on project proposals and environmental analyses.

Recreational uses of the area, both general and special would continue. Fuels mitigation and weed control efforts would continue as funding and priorities allow.

Effects of Mountain Pine Beetle (*Dendroctonus ponderosae* Hopkins) would continue for several years possibly to epidemic levels.

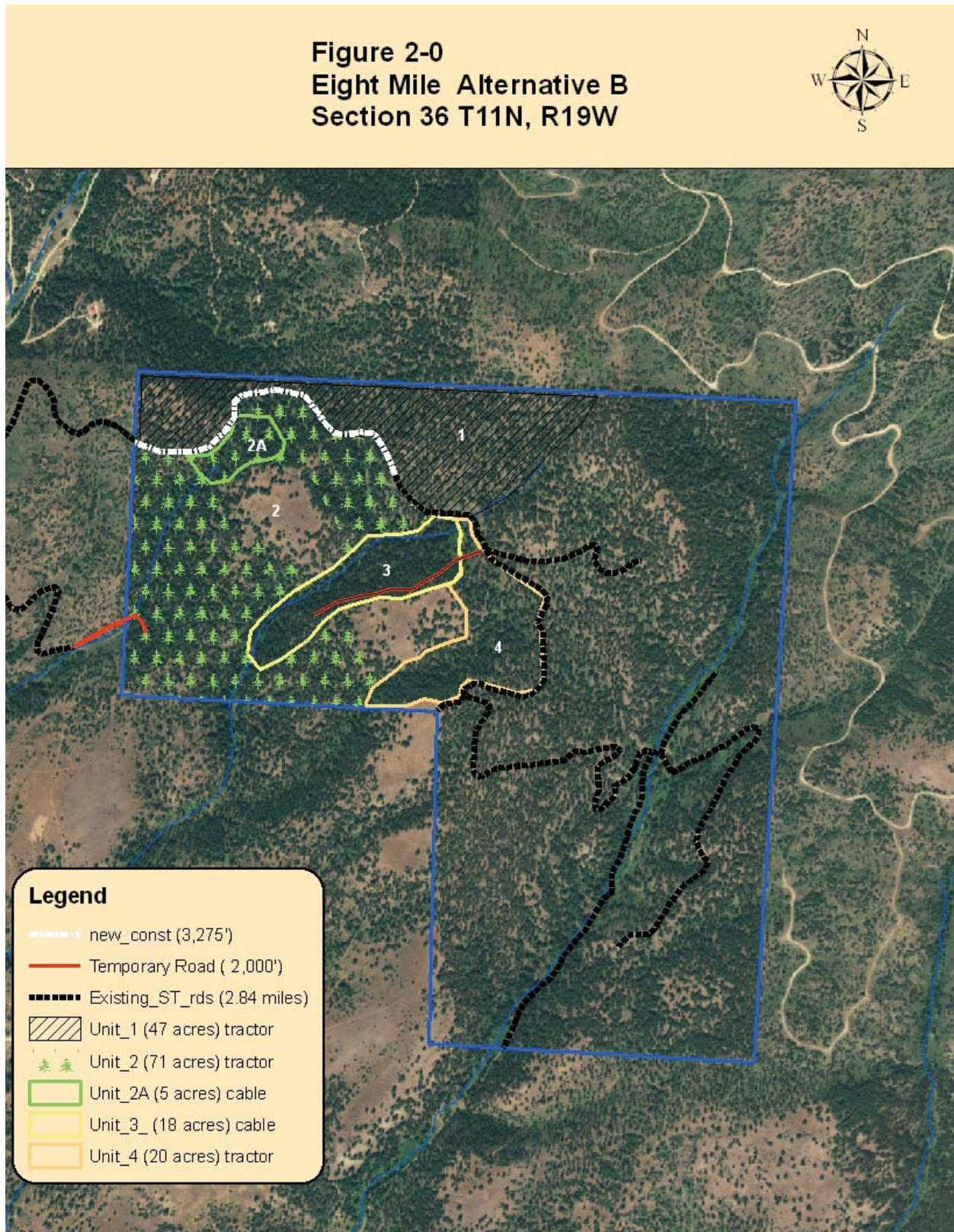
2.3.2 Components Common to Action Alternative

The action alternative is designed to improve individual tree growth & vigor and overall timber stand productivity within the Eight Mile project area, as a necessary means for providing revenue generating opportunities in the future. This alternative is based on the trust mandate, principles of the State Forest Land Management Plan and the Administrative Rules, as well as other laws and/or rules applicable to timber harvesting activities.

The action alternative would harvest timber from 161 acres in the Eight Mile section (Section 36, T11N, R19W) 480 acres as displayed in Figure 2.0. Silvicultural treatments would include commercial thinning, using individual tree selection. The roadwork would include 3,275' of permanent new construction to

provide for long term access and management. Approximately 1,400 feet of optional temporary road could be constructed within the project area. In addition 600' of temporary road would be constructed and re-contoured on the adjacent private land in section 35. The permanent new road would be closed year long for motorized vehicles other than administrative and grazing lessee use.

Figure 2-0 Eight Mile – Action Alternative



2.3.3 Mitigation Measures Common to Action Alternatives

The following mitigations would be included as part of either action alternative:

Vegetation

- Grass seed new and disturbed roads and landings; spot spray new weed infestations
- Washing logging equipment prior to use.
- Slash placement in skid trails
- Treating existing weed populations along or within roads with herbicide spray.

Watershed and Soils

- Upgrade roads to incorporate Forestry Best Management Practices (BMPs) for adequate road drainage and maintain concurrent with hauling operations. If cutslope or fillslope slumps occur, they will be stabilized within the course of the harvest project to control erosion.
- Promptly seed disturbed soil on reconstruction sites and disturbed soils with site adapted grasses to reduce weed encroachment and stabilize roads from erosion.
- Mark and maintain Streamside Management Zone (SMZ) consistent with applicable rules and regulations.
- Implement BMP's in all forest harvest operations and limit timber harvest activities to time when ground is frozen or soil moisture is below 20%
- Season of use- Limit equipment operations to periods when soils are relatively dry, (less than 20%), frozen or snow covered to minimize soil compaction and rutting, and maintain drainage features.
- Skid Trail Planning- The logger and sale administrator will agree to a general skidding plan prior to equipment operations. Skid trail planning would identify which main trails to use, and what additional trails are needed. Trails that do not comply with BMP's (i.e. draw bottom trails) would not be used and may be closed with additional drainage installed where needed or grass seeded to stabilize the site and control erosion.
- Retain 5 to 15 tons of large woody debris and a majority of fine litter where biomass is low and as feasible during harvest operations. On harvest units where whole tree harvesting is used, implement one of the following mitigations for nutrient cycling; 1) use in woods processing equipment that leaves slash on site or 2) for ground skid units, return skid a proportion of slash and evenly distribute within the harvest area, or 3) cut off a proportion of tops where biomass is low so that tops are dispersed as skidding progresses. Slash would be retained on segments of skidding corridors if bare soils are an erosion concern.

Weed Management

To reduce current noxious weed infestations and limit the spread of weeds the following integrated weed management mitigation measures of prevention and control would be implemented:

- 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 forest officer prior to moving on site.
- Revegetate all newly disturbed soils on road cuts and fills promptly with site-adapted grasses (including native species) to reduce weed encroachment and stabilize roads from erosion. For grass seeding to be effective it is important to complete seeding concurrent with road construction.
- Weed treatment measures include herbicide and/or biological applications along portions of project roads and accessible sites with a priority on spot outbreaks of noxious weeds and as designated by the forest officer. Any restricted use herbicide treatments would be implemented by a certified applicator according to herbicide label directions in accordance with applicable laws and rules.
- DNRC would monitor the project area for two years. If new infestations of noxious weeds were noted, a weed management plan would be developed, implemented and coordinated with the lessee's efforts.

Wildlife

- Maintain a minimum of 2 snags and 2 snag recruitment trees over 21 inches dbh per acre, on

average, for all harvest units. If unavailable, retain the next largest size class. Additional snag resources could be retained within the harvest units.

- Retain 5-15 tons CWD post harvest.
- Prohibit contractors from carrying firearms on restricted roads.
- Close roads following use.

2.3.4 Action Alternative

Action Alternative would apply silvicultural treatments to a total of 161 acres, harvesting approximately 3,500 tons (~ .49 million board feet) of timber. Commercial thinning harvests would be used to treat the 161 acres. Excess logging slash created on the site would be pile burn when environmental conditions and State Smoke Monitoring regulations allowed.

Action Alternative would include approximately 3275' of new road construction to provide for permanent legal access for this parcel. Approximately 2,000' of temporary road would be obliterated after use. All roads would continue to be closed year long to motorized use using existing gate closures.

2.4 SUMMARY COMPARISON OF ALTERNATIVES

Each alternative is unique in terms of activities, achievement of project objectives, and effects that would occur. This section presents key characteristics of the alternatives, using tables to display differences and make comparisons. The following table provides a brief comparison of on-the-ground activities that would occur if Alternative A, B, or C were implemented.

Table 2-1: Summary Comparison of Project Activities for Each Alternative

Alternative	MMBF Harvest	Acres Treated	Acres by Harvest Method	Road Management
No Action Alternative	0 MMBF	0	Commercial Thinning 0 acres	Miles new road: 0 Miles of road abandonment: 0
Action Alternative	~.49 MMBF	~161	Commercial Thinning: 161 acres	New road: ~3,275' Temporary road to be obliterated after use 2,000'

Table 2-2 displays a comparison of how each alternative would meet the project objectives identified in Chapter 1. Those are:

1. Maximize revenue over the long-term for the School Trust accounts from the timber resources and provide a sufficient amount of sawlog volume to contribute to the DNRC's sustained yield as mandated by State Statute 77-5-222, MCA.
2. Manage the identified parcel intensively for healthy and biologically diverse forests to provide long-term income for the Trust.
3. Improve timber stand growth and vigor.

Table 2-2: Summary Comparison of Achievement of Project Objectives

Objective	Indicators	No Action Alternative	Action Alternative :
Generate revenue for the School (CS) grants and contribute to sustained yield.	Stumpage receipts (dollars)	\$0	\$35,447
	Forest Improvement Fee	\$0	\$15,419
	Grazing revenue (dollars)	0	0
	Sawlog volume (MMBF)	0	~.49 MMBF
Manage intensively for healthy and biologically diverse forests to provide long-term income for the trust.	Acres proposed to regenerate	0	0
Improve timber stand growth and vigor.	Acres treated to improve health and vigor	0	161

The revenue information in Table 2-2 is an estimate. Costs, revenues, and estimates of return are estimates intended for relative comparison of alternatives. They are not intended to be used as absolute estimates of return. The estimated stumpage is based on comparable sales analysis. This method compares recent sales to find a marked value for stumpage. The estimated volume, based on stand inventory data, was multiplied by the estimated stumpage to predict revenue values. The action alternative was estimated to sell for \$10.00 per ton plus an additional \$4.35 per ton for Forest Improvement fees(FI). This value was based on comparable timber sales and permits on the Hamilton Unit from the last two years.

The table (2-3) summarizes the environmental effects of each alternative. Additional details of environmental effects can be found in Chapter 4.

Table 2-3: Summary Comparison of Predicted Environmental Effects

Resource Issue	No Action Alternative A	Action Alternative :
Timber stand health	Poor	Improved on 161 acres
Risk of stand replacement fires	Gradual increase in risk	Short term increase and long term decrease on 161 acres
Water quality	No change	Minimal impact
Soils	No change	Low to moderate impact
Fisheries	No change	No measurable impact
Weeds	No change	Increased risk
Grizzly Bear	No change	Minimal
Gray Wolves	No change	Minimal
Canada Lynx	No change	No impact
Pileated Woodpecker	No change	Potential impact
Black Backed Woodpecker	No change	Low impact
Flammulated Owl	No change	Potential positive impact
Fisher	No change	Low potential impact
Ungulates (Deer and Elk)	No change	Low to moderate impact
Aesthetics	No change	Minimal visibility of roads with selective harvest.

*"No change" means that compared to the existing conditions baseline (Chapter 3), the No Action alternative would create no additional impact to the resource.

CHAPTER 3: EXISTING ENVIRONMENT

INTRODUCTION

This chapter identifies and describes those resources that may be affected by the proposed action, and is organized by general resource categories and their associated issues introduced in Chapter 1. It does not describe any effects of the alternatives, as those will be covered in Chapter 4. The descriptions of the existing environment found in this chapter can be used, as a baseline for the comparisons in Chapter 4.

3.0 GENERAL DESCRIPTION OF THE AREA

The proposed Eight Mile Timber Sale is located in the Sapphire Mountains approximately 7 miles east of Florence, Montana. Elevations in the project area vary between 4,300 and 5,080 feet. This parcel is a tributary to Eight Mile, and Woodchuck creeks and seasonally drains into the Bitterroot River. The trust lands involved in the proposed project are forested and non-forested. Adjacent landowners are, Plum Creek Timber Company, Nature Conservancy and several smaller private property owners.

3.1 EXISTING ROADS

Eightmile Section

This section is moderately roaded. All roads within the section are closed to motorized use, 2.84 miles of road currently exist on this section (see Figure 2-0 in Chapter 2). Legal access gained to this section is through a permanent easement through section 35.

3.2 EXISTING CONDITIONS OF VEGETATION

The vegetation section describes present conditions or components of the forest in order to address the potential effects of proposed alternatives in Chapter 4. Issues expressed during initial scoping by the public and internally are:

- If the proposed action does not take place, timber stand health could continue to decline with, increased risk of insect and disease outbreaks, and increased competition stress from overstocking.
- If the proposed action does not take place, risk of high intensity stand replacing fires would continue to increase.
- Slash from timber harvest activities could increase fire hazard and could make the site look displeasing.
- Additional road building and commercial logging will have cumulative impacts that will threaten the biological diversity of the local ecosystem through loss of habitat; introduction of weeds.
- Past fire activity in the Eight Mile drainage make it difficult to provide for big game hiding cover during hunting season.

Analysis Area

For the vegetative related resources the cumulative effects analysis area includes all state ownership in the Eight Mile section and includes all those lands within one mile of the section to include private lands.

3.3 GENERAL FOREST STRUCTURE AND HISTORIC STAND CONDITIONS

The forested areas are comprised of primarily ponderosa pine and Douglas-fir. The forested habitat types present are (Psme /Syal/Caru), Douglas-fir/snowberry, Basal area stocking is good in the Syal and Caru phase (Pfister et.al., 1977). The north aspects are primarily heavily stocked and are dominated by Douglas-fir with interspersions of ponderosa pine and are generally one-storied but are sometimes two and three-storied. The south aspects are generally more open and dominated by ponderosa pine with some Douglas-fir in the more moist sites. These stands are generally two and three-storied with a prevalence of young trees in most locations. Regeneration and sapling size trees are common in the two and three-storied stands on both parcels.

In many locations typical understory vegetation historically consisted of ninebark, grouse whortleberry, huckleberries, etc. and a variety of herbaceous species e.g., pinegrass, arnica, aster, etc. (Pfister et al., 1977; Fischer and Clayton, 1983). Fire suppression has allowed the stands to develop a more closed canopy condition and the spread of noxious weeds has caused a decline in many of these understory species. Ponderosa pine types in the project area are experiencing encroachment by Douglas-fir. This is likely due to the lack of frequent fires, which historically kept the south and west aspects clear of all but some scattered individual Douglas-fir (Gruell et al., 1982). Occasional grasslands are found interspersed within forested areas on drier sites where soils are shallow and make it difficult for regeneration to become established.

The trust lands involved in the proposed sale area total approximately 480 acres of forested ground. General stand vigor ranges from poor to good with the majority of the area being in the moderate to fair range. Douglas-fir mistletoe infects many of the trees on the north aspects and is causing very poor health, decreased growth rates, and some mortality of infected trees. Mountain pine beetle are present with epidemic levels likely across the parcel.

At the broad scale, assessments prepared for the 1997 Interior Columbia River Basin (ICRB) Draft EIS are useful in examining how DNRC's ownership fits into the larger ecosystem. The information in the ICRB Draft EIS shows the general trend across the analysis area is a decrease of ponderosa pine, western larch, and western white pine across their ranges. The primary trend is from shade intolerant to more shade tolerant species (true firs, spruces, and western red cedar) with the shade intolerant species (ponderosa pine, lodgepole pine, and western larch) out competed and replaced by shade tolerant species. Fire regimes have changed from predominantly mixed and non-lethal severity to a large predominance of lethal severity fires. Acres of old forests of both multistory and single story structure have decreased.

The ICRB EIS grouped forests into three broad categories:

- Dry - includes ponderosa pine, dry Douglas-fir, and dry grand fir forests.
- Moist – includes cedar/hemlock, moist Douglas-fir, grand fir, and wet spruce/fir forests.
- Cold – includes the higher elevation forests not falling into 1 of the other 2 categories.

All three forest groups have experienced large increases in dominance by shade-tolerant species due to timber harvesting, fire suppression, insects, and diseases. All three groups are more likely to experience stand replacing fires than they did historically due to a large buildup of fuels and changes in stand structure and composition. The majority of the stands in the proposed project area would fall in the Dry forest category.

3.3.1 Existing Condition of Stand Health

Generally, the overall stand health across the section is good to moderate due to past management activities that occurred within the east ½ of the section. Stand health on the proposed harvest area of the section is moderate to poor. Much of the Douglas-fir is suppressed with some trees infected with mistletoe while many of the other stands dominated by ponderosa pine are overstocked and experiencing mortality by insect damage.

The two most significant factors affecting forest health and vigor on this parcel is the extremely high levels of Mountain Pine beetle and the overstocking above the optimal levels in both even and uneven-aged stands.

The near exclusion of fire in the 20th century has likely affected many of the currently overstocked stands in the proposed project area. The ponderosa pine stands would have been expected to receive frequent low intensity fires that would burn many of the understory Douglas-fir and pine and maintain these stands at lower stocking levels than exist today which would have resulted in a more healthy and vigorous stand. The Douglas-fir stands would have been expected to receive less frequent but moderate intensity fires that also would have had beneficial thinning effects that would improve forest health. These fires would have also been expected to keep the mistletoe at much lower levels as mistletoe is very susceptible to fire and tend to cleanse the stands of this disease.

Past harvest activities: In 1980 State personnel conducted a stand level inventory; the timber consisted primarily of 70 year old ponderosa pine and Douglas-fir with a smaller component of mature Douglas-fir.

Then in 1974 a small permit of 19MBF was sold and in 1988, 508 thousand board feet (MBF) of saw timber was commercially thinned over approximately 200 acres on the east half of the section to control an outbreak of Mountain Pine Beetle (*Dendroctonus ponderosae*). In July of 2006 the Woodchuck fire burned 1,035 acres in the Upper Woodchuck drainage and approximately 30 acres of stand replacement fire burned in the NE portion of the section. In 2007 twenty acres were salvaged logged and 556 tons of dead and sawlogs were removed.

Figure 3-0: Eightmile (SLI)Stand Map



Current Stand Descriptions

Stands 15&17: 40-49% Ponderosa Pine, 50-59% Douglas Fir;Habitat type Psme/Syal/Caru; Age 100 years; Net Volume, 300 MBF; Stand Health, moderate.

Stand 13; 70-79% Ponderosa Pine, 20-29% Douglas Fir; Habitat type Psme/Syal/Caru; Age 100 years; Net volume, 150 MBF; Stand health is good to average.

Stands 12&12A; Douglas Fir;Habitat type Psme/Syal/Caru; Age 100 years; Net Volume 866 MBF; Stand health is good to average; Active bark beetles.

Stand 11; 60-69% ponderosa pine, 40 – 49% Douglas Fir; Habitat type Psme/Phma/Caru; Age 100 years; Net Volume 124 MBF; Stand health is good to average; Active bark beetles.

Stand 10: 80-89% Ponderosa Pine, 10-19% Douglas Fir; Habitat type Psme/Caru; Age 100 years; Net volume,61 MBF; Stand health average to poor; Active bark beetles

Stand 8: 70-79% Ponderosa Pine, 20-29% Douglas Fir;Habitat type Psme/Phma/Caru; Age 100 years; Net Volume,150 MBF; Stand Health good to moderate.

3.3.2 Existing Fire Hazard and History

The most predominant historic fire frequencies in the project area occur on the warm, dry Douglas-fir and warm, dry Ponderosa Pine habitat types, which had a mean fire interval of around 5-25 years in presettlement stands. Fire was an important agent in controlling density and species composition. Low to moderate severity fires converted dense stands of pole-sized or larger trees to a more open condition, and subsequent light burning maintained stands in a park-like state. Frequent low or moderate fires favored larch and ponderosa pine over Douglas-fir in stands where these species occurred. Severe fires probably occurred on dense, fuel-heavy sites and resulted in stand replacement. Stand replacement fires favored lodgepole pine on sites where this species was present (Fischer and Bradley, 1987). In the ponderosa pine dominated stands the fire frequency is expected to be on the shorter end of the range between fires and was typically a lower intensity event except in areas where fuels had built up or extreme weather conditions occurred.

Currently, the risk of a stand replacing fire or a fire that would burn more intensely than expected under natural conditions historically on the section is moderate to high. With the near exclusion of fire in the 20th century, stand dynamics, succession, and fuel loadings have all changed. With increased fuel

accumulations on the forest floor, stand densities, and amounts of ladder fuels (especially Douglas-fir in the understory) in these stands, fires burning today are much more likely to be more intense. These more intense fires tend to replace entire stands that would not have typically been replaced historically often times with negative effects of soil damage, species composition changes, difficulty regenerating the site, and sometimes very unnatural conditions for entire drainages from those of historic conditions.

Should a fire start in the north facing Douglas-fir stands on the section, the risk of a stand replacing fire would be quite high due to the large increase in the coverage and abundance of mistletoe. Mistletoe brooms are highly flammable and act as ladder fuels, which would help a fire reach and carry through the crowns of the trees. Additionally, these stands are primarily on steep slopes, a factor that also helps to increase fire intensity. In the east, south, and west facing ponderosa pine stands the risk of a stand replacing fire has certainly increased to moderate to high due to the increase in stocking levels and ladder fuels. The large amounts of advanced regeneration provide fire with an avenue to reach the crowns of the otherwise fire adapted ponderosa pine and could cause substantial losses should the crown ignite.

Stand dynamics, succession, and fuel loadings have all changed over the past 100 years to create a situation that puts these forest stands at a much higher risk of high intensity and sometimes stand replacing fires. Past harvesting of trees has helped decrease fuel loadings and stand densities, but in many cases has removed the larger trees that are in most cases more fire resistant. In these locations, the risk of high intensity fires is still low to moderate due to decreased stocking levels, reduced amounts of mistletoe, and ladder fuels. However, should a fire get started, many of the larger trees that are more fire resistant have been removed in which case a higher rate of death of the overstory trees could be expected than under historic conditions with the same intensity of fire.

3.4 EXISTING CONDITIONS-GEOLOGY AND SOILS

The proposed forest harvest and tree thinning would occur on moderate to steep slopes on DNRC partial section 36, T11N, R19W that is part of the Sapphire Mountains on east side of the Bitterroot Valley. The proposed harvest areas are located on varied soils formed mainly in residual and colluvial soils derived from belt sedimentary rocks (limestone and argillites), and localized clay rich tertiary age valley fill deposits on the footslopes and lower mountain sideslopes. Bedrock outcrops are few and occur on the convex ridgelines and in the NE corner of the DNRC parcel along the short steep headlands of White Cloud Creek. Shallow rock occurs near the ridgelines and upper slopes, but should be common excavation or rippable on the proposed road location and do not limit the proposed road construction. No unstable or unique geologic features were noted in the harvest areas. There are potential mineral prospects and there is an old mine in the adjacent section to the south.

Forested soils within the project parcel are Trapps (108) gravelly loams on 8-30 % slopes and Repp (89) very gravelly loams on 30-60% slopes (refer to table S-1). Trapps gravelly loams occur on convex slopes and are deep and well drained. Trapps soils have moderate risk of erosion, displacement or compaction associated with equipment operations. These soils are well suited to ground based equipment operations with few limitations.

Repp very gravelly loams are moderate to deep soils derived from limestone/argillite bedrock. Repp soils have a silt loam surface about 8 inches thick and are well drained. Repp soils have a moderate risk of erosion or compaction associated with equipment operations on slopes less than 45%. Slopes over 45% have an increased (high) risk of displacement and erosion of surface soils by ground based skidding. This limitation can be overcome by limiting excessive soil disturbance by using excaliner, cable skidding or forwarder operations on steeper simple terrain. These soils have a long season of use. There are several short steep draws that would be avoided or protected with equipment restrictions. The existing forest access roads to the DNRC project parcels cross segments of clay rich soils that will limit access during spring thaw and wet periods, but quickly dry out and tend to be droughty with a long season of use.

A recent fire salvage harvest of about 25 acres occurred in the NW corner of the DNRC section following a fire in 2006. The fire was a mosaic burn and only affected about 30 acres in the upper NW corner. The fire permit area would not be reentered and effects of the salvage permit operations are minimal. Previous selective harvest have had minimal effects estimated at less

than 5% of area in the proposed units. A harvest and commercial thinning in the early 80' left minimal ground effects and past harvest areas are well regenerated to conifer species. On all sites reviewed, there are moderate levels of existing downed coarse woody debris across the proposed harvest areas, similar to historic conditions established by Graham et al. (1994).

Table S1 Eightmile Project- Soils Descriptions and Interpretations

Map #	Soil Map Unit Name	Parent Material	Drainage	Erosion	Displace	Compaction	Notes
108	Trapps gravelly loam, 8 to 30 percent slopes - Forest	Deep colluvium & alluvium limestone	Well drained, Droughty	Low-Mod	Moderate	Moderate when wet	Mod depth soils with fractured rock at shallow depth
89	Repp very gravelly loam 30-60% slopes- Forest	Deep Silt loam/Silty clay loam Valley sideslopes	Well drained	High on slopes >45%	Mod-high on slopes >45%		Mod depth soils, Limit ground skid to slopes less than 45%
131	Winkler, very gravelly loams, 30 to 60 % slopes	Shallow-mod deep residuum & colluvium	Mod to high on slopes >45%	Mod			Access road Mod depth soils with fractured rock at shallow depth
9	Argixerolls-Haploxerolls complex, 15 to 30 percent slopes	alluvium, Rangeland & Open forest	Silt loam/ stony loam	Well drained droughty	Mod	Low	Range Sites

3.5 WATER RESOURCES EXISTING CONDITION

3.5.1 Water Resources-Analysis Area & Methods

The primary concerns relating to water resources within the analysis area are potential impacts to water quality from sediment sources outside the stream channels as well as inside the channels. In order to address these issues the following parameters are analyzed for each alternative:

- ~Miles of new road construction and road improvements
- ~Potential for sediment delivery to streams
- ~Potential for water yield increase impacts to stream channel stability

A watershed analysis and field survey was completed by a DNRC hydrologist for the proposed sale area to determine direct, indirect and cumulative effects to water quality. The water quality evaluation included a review of existing inventories for soils and water resources (NRIS 2009), reference to previous DNRC projects, and comparisons of aerial photos combined with GIS analysis to estimate the area of past timber harvest and vegetative recovery. Field reviews were completed for the proposed harvest units, all existing and proposed access roads, and associated streams that may be affected. The observations, information and data were integrated into the watershed analysis and design of project mitigations.

The analysis of sediment delivery is limited to the harvest units and roads used for hauling and will focus on the streams described. This includes in-channel and upland sources of sediment that could result from this project. In-channel areas include stream channels adjacent to roads and directly downstream of harvest areas. Upland sources include harvest units and roads that may contribute sediment delivery as a result of this project. Past management activities in the proposed project areas that affect sediment delivery include; timber harvest, mining, grazing, irrigation, road construction, fire suppression and

recreation. For this project, a DNRC hydrologist evaluated streams, roads and proposed harvest units. The field review compared the current road conditions and repair needs to previous road inventories and planned road reconstruction and maintenance plans for the access roads to this project area.

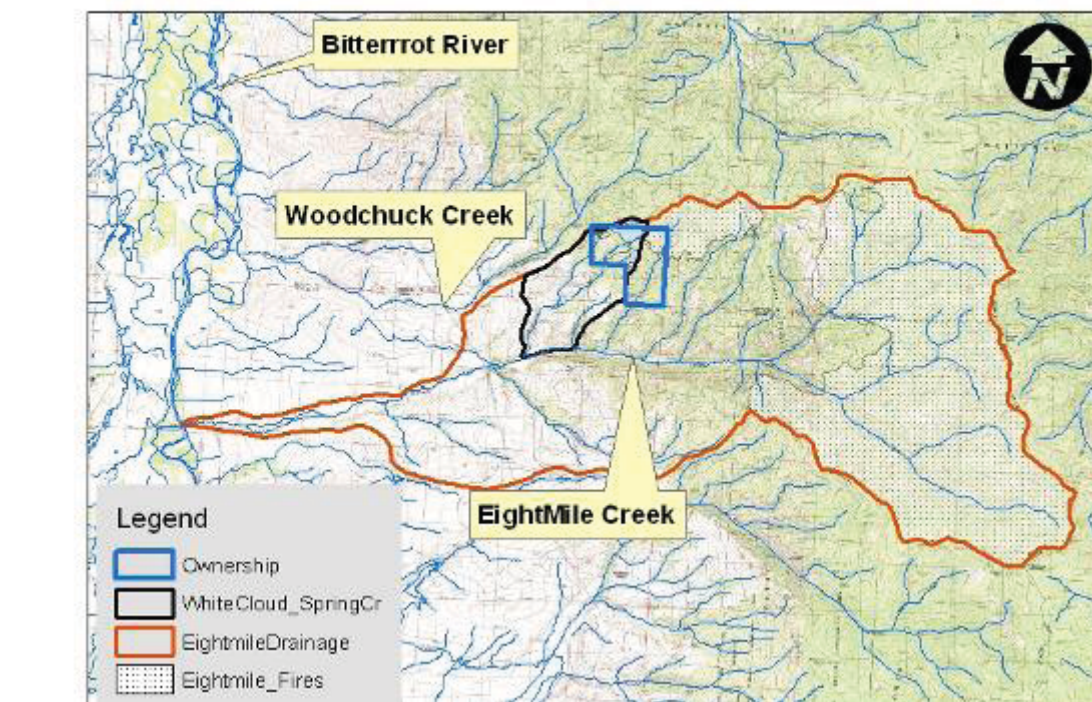
A DNRC hydrologist completed a coarse filter qualitative assessment of watershed conditions and cumulative effects as outlined in the Forest Management Rules (ARM 36.11.423) concerning watershed management. The analysis areas for watershed cumulative effects include the watersheds that wholly surround the DNRC project sections and the access roads to those parcels.

3.5.2 Affected Watersheds

The proposed harvest and thinning project area are located NE of Florence, Montana in the Eightmile Creek watershed (HUC 170102051505) that is 17,678 acres in area(refer to the project area watershed map) . The DNRC partial section is 480 acres in size and is drained by tributaries of Eightmile Creek that include White Cloud Creek (an intermittent stream) and an unnamed tributary "A" in the east half of the parcel. The proposed harvest project areas are located within the White Cloud Creek tributary of Eight Mile Creek and the haul road includes approximately 3 miles of existing road within the Woodchuck Creek drainage of the Bitterroot River watershed.

Figure 3-1 DNRC - Eight Mile Watershed Map

DNRC- Eightmile Watershed Map
Section 36, T11N, R19W



3.5.3 Water Quality & Regulations

All the watershed areas listed in this report are classified as B-1 in the Montana Surface Water Quality Standards. The water quality standards for protecting beneficial uses in B-1 classified watersheds are described in ARM 17.30.623. 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. Woodchuck Creek and Eightmile Creek are not listed as impaired on the 2008 Montana 303(d) list as an impaired waterbodies. The downslope beneficial uses in the watersheds

described include: domestic water, recreation, cold-water fisheries, agriculture, irrigation, wildlife and livestock watering.

3.5.4 Water Resources, Quality- Existing Conditions

DNRC ownership is minor in partial sections 36, T11N, R19W that is located within the midslopes of the Sapphire Mountains. Precipitation is low, with an average 19-20 inches/year with surface runoff rare and subsoil moisture low, which this is reflected in the dry forest types and associated range sites, There are no streams or water resources in the western portion of the parcel where the harvest, thinning and new road construction are proposed. The proposed harvest area is located in the dry headlands of the White Cloud Creek drainage and there are no streams in or directly below the proposed harvest units. White Cloud Creek is ephemeral and intermittent, which is a second order tributary of Eightmile drainage and does not support fish or have connected flow to Eightmile Creek.

An unnamed tributary "A" of Eightmile Creek originates from a spring in the NE corner of the DNRC parcel and flows SW towards Eightmile Creek to a point below the state line where the flow becomes intermittent and goes subsurface and does not connect with Eightmile Creek. The unnamed stream is shallow and does not support fish. The stream flows across several ownerships and has varied levels of grazing use with minor effects on the DNRC ownership. Existing roads are mainly stable and well vegetated with grasses, yet segments of the existing road on DNRC have inadequate road surface drainage and would be repaired if used for thinning operations. Past harvest units are well regenerated to mixed conifer species.

Primary sources of sediment along the existing haul route are segments of the Woodchuck road that have inadequate road drainage. The road is used year round by homeowners in the drainage. Two stream crossings on the county road are undersized and had poor surface drainage prior to crossing locations. Road maintenance is occasional. During a previous private timber harvest, Plum Creek Timber repaired segments of the road by installing road surface drain-dips. Some of the drain-dips had sediment filters, such as straw bales and slash filters placed at the drain-dip outlets to prevent sediment delivery to Woodchuck Creek.

3.5.5 Existing Cumulative Watershed Effects

Cumulative watershed effects can be characterized as impacts on water quality and quantity that result from the interaction of past, current or foreseeable future disturbances, both natural and human-caused. Past, current, and future planned activities within each analysis area have been taken into account for the cumulative effects analysis. Past management activities in the area include timber harvest, home site development, grazing, road construction, in-stream pond construction, irrigation diversions, historic mining, and fire suppression.

Tree canopy reduction by timber harvest activities, tree mortality or wildfire can affect the timing of runoff, increase peak flows and increase the total annual water yield of a particular drainage. Mixed severity fires have reduced tree canopy and lead to increased runoff in the Eightmile drainage as would be expected within historic patterns of fire. Increased water yield can increase stream channel scour and in-stream sediments that impact water quality. Within the project area in the lower elevation and drier portion of the drainage, infiltration rates exceed most precipitation rates on these soils due in part to the low precipitation, yet high intensity thunderstorms may lead to flashy flow response in the perennial stream reaches. Water yield is not a constraint for the watershed analysis areas as compared to studies (MacDonald & Stednik 2003, Romme et al. 2006) that have found no increases in stream flow in watersheds with total annual precipitation of less than 20 inches, when less than 20% of the drainage is harvested.

3.6 EXISTING CONDITIONS FISHERIES

Field reviews of the project area and streams listed above were conducted by DNRC fish biologist hydrologist, and MT FWP fish biologists were consulted. Fisheries resource issues are limited to potential fish habitat effects of increased sediment from the existing haul road from the Woodchuck drainage. No harvest operations are planned adjacent to fish bearing streams, and no new stream crossings are

proposed. There is considerable well anchored large woody debris incorporated into the streambed and banks. Thus, there would be no affect or change in current conditions of the fish habitat components, including stream shading, in-stream or recruitable large woody debris, and these components are dismissed from further analysis.

All potential sediment sources identified as part of the existing condition are discussed in the Hydrology Analysis portion of this EA. Woodchuck Creek supports native westslope cutthroat trout (FWP-R-2). Westslope cutthroat trout is considered a sensitive species by DNRC (ARM 36.11.436 MFISH 2009). There is a private in-stream pond and dam on Woodchuck Creek in the SE corner of section 34 that limits connectivity and fish have been stocked in the pond. FWP has recently surveyed Woodchuck Creek and found moderate densities of cutthroat trout in the stream above the pond.

The haul route would use part of the existing Woodchuck access road that parallels Woodchuck Creek for about 1 mile above a pond on private ownership. The existing road has year round traffic by residents and public recreation with occasional heavy truck use. The Woodchuck road is rough and has segments where the road is adjacent to the stream and there is sediment delivery due to inadequate road surface drainage. The stream continues to support fish, but chronic sediment is a concern from year round road use and inadequate drainage as discussed in the water resources section. Even with the current sediment problems fish persist in the stream. Two culverts on the existing county road appear to be undersized and could limit stream connectivity for fish during extremely high or low flow periods.

Within the proposed harvest areas there are no channels or locations on the upland slopes that contribute surface flow or sediment to White Cloud Creek or downslope to Eight-Mile Creek. White Cloud Creek is intermittent and does not support fish or aquatic species based on review by DNRC Fish Biologist. Both White Cloud Creek and an unnamed tributary "A" stream do not connect to Eightmile Creek, and there is no potential for sediment delivery to Eightmile Creek.

3.7 EXISTING CONDITIONS OF NOXIOUS WEEDS

Noxious weeds present in Eightmile project area are knapweed (*Centaurea maculosa*), thistle (*Cirsium arvense*) and houndstongue (*Cynoglossum officinale* L). Most of the noxious weed infestations are located in areas where cattle use was observed along roads. There were not a lot of noxious weeds found within the forested section.

3.8 EXISTING CONDITIONS OF WILDLIFE

3.8.1 Existing Conditions of Grizzly Bear (Federally Threatened)

Issue: There is concern that the proposed action would interfere with grizzly bear use of the area due to increased road densities and project-related activities.

Grizzly bears are listed as federally threatened under the Endangered Species Act, and 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 mi² (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.

Grizzly bears have been observed recently on the Clark Fork face of the Garnet Range (J. Jonkel, MT FWP, personal communication, 2009; M. McGrath, DNRC Wildlife Biologist, personal observation, May 2005). Additionally, a grizzly bear was observed along Rock Creek and along the Burnt Fork near Stevensville in late 2002. Grizzly bear density is low and sightings are uncommon. Grass, berries, and ungulates are plentiful and are considered primary food sources. Grizzly bear dens are not known to occur.

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 2.03 miles of open road per square mile (simple linear calculation; 519 miles of open road), and 3.03 total miles of road per square mile (774 miles of road), within the 256 square mile analysis area. Within the project area, there are no open roads, and approximately 0.67 miles of total road per square mile (simple linear calculation; project area is approximately 0.75 square miles).

3.8.2 Existing Conditions of Grey Wolf (Species of Concern)

Issue: There is concern that the proposed action would negatively increase gray wolf vulnerability within the project area due to increased road densities and reduced cover.

Wolves are currently classified as a species of concern in Montana. Cover, and road and prey densities likely have some influence on wolves. Wolf activity has been documented in the area by the Welcome Creek pack. For cumulative effects analysis, the analysis area encompasses the grizzly bear cumulative effects analysis area. Open road density within the cumulative effects analysis area is approximately 2.03 miles of open road per square mile (simple linear calculation; approximately 519 miles of open road). Currently, no known wolf den or rendezvous site is known to be located within 1 mile of the project area.

3.8.3 Existing Conditions of Pileated Woodpecker

Issue: There is concern that the proposed action would reduce the amount of suitable pileated woodpecker habitat within the project area.

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/snowberry/pinegrass phase (Stand Level Inventory database). Within the affected parcels, there are approximately 354 acres that are predominately ponderosa pine with average stand diameter \geq 15 inches dbh that would be considered suitable pileated woodpecker habitat (crown cover \geq 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 (M. McGrath, Wildlife Biologist, personal observations).

3.8.4 Existing Conditions of Flammulated owl

Issue: There is concern that the proposed action would negatively impact flammulated owl habitat within the project area.

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 484 acres of flammulated owl preferred habitat types. Flammulated owl use was

documented in 2008 on the nearby Baldy parcel (2.8 miles northwest of project area; J. Roberts, Sunriver Institute, pers. comm., 29 July 2008).

3.8.5 Existing Conditions of Townsend's big-eared bats

Issue: There is concern that the proposed action would negatively impact Townsend's big-eared bats due to motorized activity along the haul route.

Townsend's big-eared bats occur in a wide variety of habitats, yet its distribution tends to be strongly correlated with the availability of caves and old mines for roosting habitat. Population concentrations occur in areas with substantial surface exposures of cavity forming rock, and in old mining districts (Pierson et al. 1999). This species is primarily a cave dwelling species that also roosts in old mine workings. It is a relatively non-migratory bat, for which no long-distance migrations have been reported. The Townsend's big-eared bat does not generally associate with other species in its roosts, particularly at maternity and hibernating sites. For maternity sites, characteristics that are important include: roost temperature, roost dimensions, light quality, and air flow. Of these, roost temperature is most important. The maternity roost is generally spacious, with the room at least 100 ft long, and 6.5 ft high. For hibernacula, the Townsend's big-eared bat selects roosts with stable, cold temperatures and moderate airflow. Individuals roost on walls or ceilings, often near entrances. Temperatures within hibernacula typically range from 28.4° F to 55.4° F, with temperatures below 50° F preferred (Pierson et al. 1999).

There is at least one known mine that occurs near the project area and haul route (White Cloud mine, section 1 T10N R19W) that has been used by this species. A single female specimen was collected from this mine in November 1952 (Natural Heritage Program Database 2010). The White Cloud mine occurs within 400 feet of the proposed haul route. Use of this mine by Townsend's big-eared bats is likely, but the extent and specificity (i.e., occasional night roost, maternity roost, hibernacula, etc.) of which is unknown.

Ungulates

3.8.6 Existing Conditions of Elk and white-tailed deer

Issue: There is concern that the proposed action would reduce elk and white-tailed deer cover winter range within the project area.

Densely stocked thickets of conifer regeneration and overstocked mature stands provide thermal protection and hiding cover for elk and deer in winter, which can reduce energy expenditures and stress associated with cold temperatures, wind, and human-caused disturbance. Thus, removing cover that is important for wintering elk and deer 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 local herds. Within the project area, there are approximately 480 acres of winter range habitat. Within the approximately 60,013 acre cumulative effects analysis area, there is approximately 37,938 acres of winter range habitat (elk99 and white-tailed deer GIS layers from Montana Fish, Wildlife & Parks). In 2006, approximately 1,035 acres of winter range was burned by the Woodchuck fire. Much of the snow intercept cover within the analysis area was previously removed through commercial forestry. Currently, there are approximately 11,308 acres of snow intercept cover within the analysis area.

3.9 EXISTING CONDITIONS OF AESTHETICS

It is primarily the north and west facing aspects on the section that can be seen from private ownerships or heavy use areas. These areas are primarily homes west of the project area located within the Bitterroot Valley and along the Hwy93 corridor. Although the Eightmile section can be seen from Florence, it is such a distance away (approximately 7 miles) that it is a small spot on the landscape.

From the stand level (on the site), most of the section is completely timbered with very few high standard roads, which can be aesthetically pleasing to many. There has been little to no effect aesthetically from

road construction in the analysis area as they are not visible from the valley bottom. At the stand level, sight distances are shorter due to increased stocking levels and there has been an increase in physical deformity in most of the Douglas-fir from mistletoe, both from the exclusion of fire over time. Some of the higher standard roads that are maintained are quite evident on the site while many of the older roads that are not maintained are revegetating and becoming less evident.

CHAPTER 4: ENVIRONMENTAL EFFECTS

INTRODUCTION

Chapter 4 describes the environmental effects of each alternative on the resources described in Chapter 3. Cumulative effects from current management and foreseeable future State actions are discussed in this chapter. These include other active timber sales, those in the planning stage, ongoing maintenance, and other uses of the areas being analyzed. Direct, indirect and cumulative effects on the resources being analyzed were considered. Chapter 2 describes the details of each alternative and lists proposed mitigation measures specific to all action alternatives.

4.1 PREDICTED EFFECTS ON ROADS

No Action Alternative A – Direct, Indirect, and Cumulative Effects to Roads

The No Action Alternative would cause no direct, indirect, or cumulative effects to road use.

Alternatives B –Direct, Indirect, and Cumulative Effects to Roads

All existing roads would be repaired and maintained to meet BMP standards. All new roads would be constructed to meet BMP's and promptly re-vegetated and closed after project completion.

4.2 PREDICTED EFFECTS ON VEGETATION

4.2.1 Stand Health

Direct, Indirect, and Cumulative Effects to Stand Health on the No-Action Alternative

Under this alternative, stand health would continue to decline as mistletoe continued to worsen in the Douglas-fir and Mountain Pine Beetle becomes more active as stand densities continue to increase above the currently overstocked levels. Increased tree mortality from mistletoe would be expected as the disease spreads and worsens as well as increased physical deformity and decay. Understory trees would continue to become infected and not be recruited into the overstory due to the growth inhibiting effects of the mistletoe, eventually resulting in very little overstory cover and very little chance for new growth to reach the overstory. Increased stand densities would result in a continued decline in stand vigor and growth and increased susceptibility to insects, disease, and/or fire.

4.2.2 Fire Hazard

All of the proposed treatments are designed to emulate the effects of fire or bring the stands back toward a state that would have been expected had fires not been excluded from these ecosystems.

Direct, Indirect, and Cumulative Effects of the No-Action Alternative on Fire Hazard

Under this alternative, no treatments would occur and therefore the stands would continue to increase in densities and abundance and coverage of mistletoe. The stands would remain at high fuel loadings and ladder fuels would continue to increase at levels well above those expected without the exclusion of fire. There would continue to be a high risk of a high intensity, stand replacing fire occurring across either of the parcels and therefore the fire hazard would remain high. This condition would be expected to increase over time until the fuels are modified by an ecological disturbance or by management activities.

Direct, Indirect, and Cumulative Effects of the Action Alternative on Fire Hazard

Under the Action Alternative treatments would thin the stands thereby reducing canopy coverage and the chance of a crown fire. They would also reduce ladder fuels by removing and thinning smaller trees, which would reduce the chance of fire reaching and carrying in the crowns of the stands. It would reduce standing fuel loadings by removing forest products from the site. All of these factors would contribute to smaller more controllable and lower intensity fires that would more closely resemble those that might have been expected to occur naturally before the exclusion of fire.

A majority of the tops, limbs, and unusable pieces of the trees would be left out in the forest to recycle nutrients to the soils and to provide coarse woody debris for microorganisms and small mammals as well as their benefits to the residual stand. This slash would increase fire hazard on the site for up to 2 years as it cures and decomposes. Any slash left in the harvest units would meet the State Hazard Reduction Law. So the effects of reducing standing fuels, canopies, and ladder fuels may be offset for the first two years by the effects of increased ground fuels from slash. There would also be slash piles at the landings, which would be burned within 18 months of their creation.

4.3 PREDICTED EFFECTS ON WATER QUALITY

Direct and Indirect Effects of the No-Action Alternative on Water Quality and Quantity

No direct, indirect or cumulative effects to water quality or quantity would be expected to result other than those described under Water Resource Existing Conditions. Sedimentation on the existing Woodchuck road, with inadequate surface drainage would continue to impact water quality unless mitigations or remedial actions are taken.

Direct and Indirect Effects of the Action Alternative on Water Quality and Quantity

The proposed project would thin and selectively harvest approximately 161 acres using ground based skidding and cable methods. DNRC's sale design focused on avoiding new stream crossings and limiting the extent of new roads (0.51 mile), construction costs and included temporary use roads (0.4 mile) where feasible and consistent with BMP planning. All harvest operations are designed to minimize surface disturbance and potential for erosion. No harvest would occur near streams and no new stream crossings are proposed. Under the action alternative, new road construction is planned only on dry sites plus minor temporary roads to landings, and there is no potential for stream sedimentation associated with the timber harvest areas or new roads. Following use, temporary roads will be closed, stabilized with long-term drainage features installed, and reseeded with site adapted grass to control erosion and compete with noxious weeds. The private access road from Woodchuck Creek road is gated for restricted access to limit road impacts and maintenance needs and there would be no increase in open road density.

The primary risk to water quality associated with timber management activities is potential sediment delivery from the Woodchuck road associated with hauling use of the road. Road surface drainage would be repaired or improved on the Woodchuck Road, to reduce current sediment delivery. With the proposed road use, DNRC would have sediment filters placed on the drain-dip outlets where needed to reduce sediment from the existing road during use. There is a moderate probability of low level sediment and short term impacts to water quality with the proposed haul traffic in the Woodchuck Creek, but the levels would be considerably less than the existing condition of inadequate drainage and sediment delivery. Following use, the continued and future effectiveness of the road drainage features would depend on continued road maintenance by the County.

Cumulative Watershed Effects of No-Action Alternative:

Under the no-action alternative, cumulative effects would remain the same as described in existing conditions including existing roads, and grazing effects.

Cumulative Watershed Effects of the Action Alternative:

There would be low risk of adverse cumulative impacts from the proposed actions to water quality and beneficial uses based on; the limited area of harvest operations that are on dry forest sites, minimal road construction that is away from streams, implementation of forestry BMPs and mitigation measures during timber harvest and road construction operations.

Roads are being reconstructed to meet BMP's on the haul route and new road construction would be limited to less than 1 mile, including temporary roads that are minor within this drainage. The combination of proposed mitigations including ground based harvest on moderate slopes, cable harvest on steep slopes and use of existing roads is expected to result in low risk of erosion and sediment delivery to streams and would not substantially increase sediment or impact channel form and function compared to existing conditions. Grazing effects would be the same as the no action alternative.

The proposed harvest presents a very low risk of water yield increase in the watershed, compared to no-action for the following reasons. The low to moderate precipitation zone with averages of 19-21 inches /year provides low runoff and subsoil moisture is typically at a deficit. Proposed harvest represents less than 1% in the Eightmile Creek watersheds. This level of harvest and potential change in water yield would be undetectable and immeasurable compared to the no-action alternative and natural ranges associated with disturbances of insect mortality and fire.

4.4 PREDICTED EFFECTS ON SOILS

Direct, Indirect, and Cumulative Effects of the No-Action Alternative on Soils

The No-action alternative would have little effect on soil resources.

Direct, and Indirect, Effects of the Action Alternative on Soils

The primary risks to long term soil productivity and hydrologic function are excessive impacts to soil properties caused by rutting, compaction and displacement of surface soils by equipment operation and road construction. Potential effects are a reduction in long-term soil productivity, and regeneration potential as well as impacts to coarse woody debris distribution and nutrient cycling. Most sensitive soils to operation effects are small areas of steep slopes, which will be avoided or protected with mitigation measures.

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). Mitigations include general skid trail planning, limit tractors to moderate slopes, avoiding wetlands and controlling soil disturbance to meet silvicultural goals to promote conifer regeneration. Ground based harvest operations would be limited to slopes less than 45%. Steeper slopes would be harvested by cable/line skidding where needed. A portion of old and new coarse woody debris (>3" dia.) at ~5-10 tons/acre and fine litter would be retained or return skidded on harvest units. Fine needles, litter and woody debris provide surface protection for erosion and act as a mulch to conserve soil moisture and nutrients to promote plant growth and maintain site productivity.

Based on DNRC soil monitoring on comparable sites (DNRC 2004), implementation of BMP's and the recommended mitigation measures, harvest operations present low risk of detrimental impacts to soils if impacts are restricted to ~15% of the proposed harvest areas. We expect that by protecting ~85% of a harvest area in non-detrimental soil impacts, soil properties important to soil productivity will be maintained.

Sale administrators will monitor on-going harvest and road construction activities to meet contract requirements, BMP'S for soil and water protection and silvicultural objectives. For all of these reasons the proposed thinning/harvest operations and mitigation measures are expected to maintain soil properties important to plant growth and hydrologic function and present low risk of direct and indirect impacts to soils.

4.5 PREDICTED EFFECTS ON FISHERIES

Direct and Indirect effects, of the No-Action Alternative on Fish Habitat

Expected effects to fisheries habitat were assessed qualitatively using the current condition as a baseline to compare the expected changes related to the proposed alternatives. Under the No action alternative there would be no road repairs and no change from existing conditions and sediment impacts from segments of the Woodchuck road would continue.

Direct and Indirect effects, of the Action Alternative on Fish Habitat

With the action alternative, timber harvest would be removed from upland sites. No harvest or disturbance of riparian soils or vegetation would occur near streams and no sediment effects would occur with the proposed harvest that can affect fish habitat. There would be no effects to other fish habitat components of stream shading or large woody debris.

As disclosed in the water resources analysis, effects to sediment delivery from the Woodchuck road would be reduced through BMP implementation, and improved road maintenance. Repairs to the road surface drainage on the Woodchuck road would likely result in a low levels of short term increase in sediment to Woodchuck Creek, which would quickly subside and provide a long term reduction in sedimentation and would be beneficial to fish habitat for about 1 stream mile. Continued sediment control would depend on the amount of traffic and level of future road maintenance.

No change in the existing limitations to connectivity of fish bearing streams would occur along the haul route. Based on the minor harvest, implementation of BMP's, and mitigations measures outlined, there is low risk of direct or, in-direct effects to sediment and fish habitat or aquatic life with the proposed action compared to the no-action alternative.

Cumulative Effects to Fish Habitat of the No-Action Alternative

No timber harvest or road construction is associated with this alternative. Existing sediment sources from existing roads, grazing and land uses would continue to contribute sediment to streams in the analysis areas until remedial action were implemented or natural stabilization occurs. Connectivity along Woodchuck Creek could be limited at existing stream crossings during low flow periods.

Cumulative Effects to Fish Habitat of the Action Alternative

There is low risk of additional cumulative impacts to fisheries in the project area including Eight mile Creek and Woodchuck Creek with the proposed timber harvest and road maintenance, due to the following reasons: 1) No harvest, new roads, or new stream crossings are planned adjacent to fish bearing streams, 2) road surface drainage repairs would reduce the current levels of sedimentation to Woodchuck Creek along the haul route, 3) there would be no change in connectivity from existing conditions.

4.6 MITIGATIONS FOR PROTECTION OF WATER QUALITY, SOILS & NOXIOUS WEED MANAGEMENT

- DNRC would implement all applicable BMP's, Montana Administrative Rules for Forest Management and reasonable mitigation and erosion control practices during timber harvest, road maintenance, and road construction and road use activities
- The logger and sale administrator would agree to a general skidding plan prior to equipment operations on complex terrain or draw crossings. Ground based skidding would be limited to slopes of 45% or less.
- Limit equipment operations to periods when soils are relatively dry, frozen or snow covered to minimize soil rutting, compaction and maintain drainage features. Check snow/frozen ground conditions prior to operations.
- On moderate to densely stocked stands, whole tree skidding can reduce slash hazard, but also remove a portion of nutrients from growing sites. Target woody debris levels are to retain 5-10 tons/acre well distributed on this dry site while meeting the requirements of the slash law. On sites with lower basal area, retain large woody debris as feasible since it may not be possible to retain 5 tons/acre and the emphasis will be on providing additional CWD in the future.
- Existing road segments would be maintained concurrent with harvest operations to ensure adequate road surface drainage during the period of use.
- Road use will be limited to dry or frozen ground conditions to reduce rutting and erosion. New road construction, including drainage features must be completed in the fall prior to freeze-up.

- New roads would be closed to motor vehicles upon completion of harvest activities. Slash would be placed on main skid trails to protect soils and reduce erosion potential and potential unauthorized ATV use as needed.
- Newly constructed or reconstructed road cuts, fills and disturbed soils would be grass seeded immediately after excavation.

4.7 PREDICTED EFFECTS ON WILDLIFE

Issue: 4.7.1 The proposed action would interfere with grizzly bear use of the area due to increased road densities and project-related activities.

No Action Alternative A

Direct and Indirect Effects

No change from current conditions would be expected under this alternative.

Cumulative Effects

No change from current conditions would be expected under this alternative.

Action Alternative B

Direct and Indirect Effects

The proposed action would commercially thin, through selective harvesting, approximately 161 acres, construct approximately 0.62 miles of new, closed road, approximately 0.38 miles of temporary road that would be pulled back with an excavator and slashed after use, and approximately 600 ft of temporary road construction on adjacent lands that would be obliterated after use. Within the project area, there would still be no open roads post-harvest, but total road density would increase from approximately 2.84 to approximately 3.46 miles of total road per square mile. The proposed harvest would remove approximately 40 to 45% of the current basal area on site, while retaining sufficient cover for grizzly bears post-harvest. As a result, there would likely be low risk of direct or indirect effects to grizzly bear use of the area due to the proposed action.

Cumulative Effects

Within the cumulative effects analysis area, both open and total road density would remain unchanged. Additionally, 55 to 60% of the basal area within the proposed harvest units would remain post-harvest, providing visual screening cover for bears. As a result, there would likely be low risk of cumulative effects to grizzly bear use of the area from the proposed action.

Issue: 4.7.2 There is concern that the proposed action would negatively increase gray wolf vulnerability within the project area due to increased road densities and reduced cover.

No Action Alternative A

Direct and Indirect Effects

No change from current conditions would be expected under this alternative.

Cumulative Effects

No change from current conditions would be expected under this alternative.

Action Alternative B

Direct and Indirect Effects

Similar to grizzly bears, there would be no increase in open road densities, but there would be an increase of approximately 0.62 miles of total road per square mile, to approximately 1.36 miles of total road per square mile due to road construction. Post-harvest, there would be approximately 55 to 60% of the basal area remaining within the approximately 161 acres of proposed harvest units. Thus, sufficient

cover should remain within the project area post-harvest such that gray wolf vulnerability should not be negatively impacted by the proposed action. As a result, there would likely be low to moderate risk of direct and indirect effects to gray wolf vulnerability from the proposed action.

Cumulative Effects

Within the cumulative effects analysis area, both open and total road density would remain unchanged. Additionally, 55 to 60% of the basal area within the proposed harvest units would remain post-harvest, providing visual screening cover for wolves. As a result, there would likely be low risk of cumulative effects to gray wolf vulnerability from the proposed action.

Issue: 4.7.3 There is concern that the proposed action would reduce the amount of suitable pileated woodpecker habitat within the project area.

No Action Alternative A

Direct and Indirect Effects

No change from current conditions would be expected under this alternative.

Cumulative Effects

No change from current conditions would be expected under this alternative.

Action Alternative B

Direct and Indirect Effects

The proposed action would commercially thin timber within approximately 155 acres of the project area's approximately 354 acres of pileated woodpecker habitat. The proposed harvest would remove 40 to 45% of the existing basal area, which would reduce canopy cover on the approximately 155 acres of affected pileated woodpecker habitat. As a result, the suitability of these stands for pileated woodpeckers would be reduced, and possibly marginalized. However, approximately 199 acres of pileated woodpecker habitat would not be affected by the proposed action; with the unaffected habitat occurring as a single large block on the east side of the parcel. Thus, approximately 56% of the pileated woodpecker habitat on the affected parcel would not be affected by the proposed harvest, and would occur as a single large block of habitat that could provide habitat for several pairs of pileated woodpeckers. As a result, there would likely be low to moderate risk of direct and indirect effects to several pileated woodpeckers due to reductions in habitat suitability from the proposed harvest.

Cumulative Effects

Within the analysis area, the Woodchuck fire burned approximately 1,040 acres in 2006, with those acres being salvage logged in 2007. Additionally, the lands surrounding the affected parcel are private lands and have been heavily logged in the past. As a result, approximately 90% of the remaining pileated woodpecker habitat within the analysis area occurs on the affected parcel. Because the proposed action would likely marginalize the habitat suitability on >40% of the pileated woodpecker habitat on the affected parcel, there would likely be moderate to high risk of cumulative effects to pileated woodpeckers within the analysis area.

Issue: 4.7.4 There is concern that the proposed action would negatively impact flammulated owl habitat within the project area.

No Action Alternative A

Direct, Indirect, and Cumulative Effects

No change from current conditions would be expected under this alternative.

Action Alternative B

Direct, Indirect, and Cumulative Effects

The proposed action would remove approximately 40 to 45% of the basal area within approximately 161 acres of flammulated owl habitat. Because the proposed harvest would be designed to maintain an uneven aged stand, the reduction in basal area, and subsequent reduction in canopy closure, should

improve habitat conditions for flammulated owls. Additionally, the proposed action would require implementation of ARM 36.11.411, which requires retention of at least one snag and one snag recruit per acre, in the largest size classes available. This provision may provide for current and future nesting sites for this species. As a result, there would likely be low to moderate risk of direct, indirect, and cumulative effects to this species from the proposed action.

Issue: 4.7.5 There is concern that the proposed action would reduce elk and white-tailed deer cover and winter range.

No Action Alternative A
Direct and Indirect Effects

No change from current conditions would be expected under this alternative.

Cumulative Effects

No change from current conditions would be expected under this alternative.

Action Alternative B
Direct and Indirect Effects

The proposed action would commercially thin, removing approximately 40 to 45% of the existing basal area, within approximately 106 acres (81%) of 131 acres of snow intercept cover within the project area. As a result, many of the affected acres would likely be marginal winter range habitat due to the reduction in canopy closure. Thus, there would likely be low to moderate risk of direct and indirect effects to elk and white-tailed deer cover and winter range within the project area due to the proposed action.

Cumulative Effects

The proposed action would treat approximately 1% of the available snow intercept cover within the analysis area. As a result, the affected acres would likely become marginal winter range habitat due to the reduction in canopy closure. Approximately 75% of the available forested acreage within the analysis area has been affected by previous harvesting activities to the point where it does not currently provide snow intercept cover (2009 NAIP imagery). Because of the proposed action's limited area, and corresponding 1% reduction in snow intercept cover, there would likely be minor to low risk of cumulative effects to elk and white-tailed deer cover and winter range within the analysis area.

CHAPTER 5: EIGHT MILE TIMBER SALE FINDINGS

An Environmental Analysis (EA) has been completed for the proposed Department of Natural Resources and Conservation (DNRC) Eight Mile Timber Sale. After a thorough review of the EA, project file, public correspondence, Department policies, rules, and the State Forest Land Management Plan (SFLMP), I have made the following decisions:

5.0 ALTERNATIVE SELECTED

Two alternatives are presented and were fully analyzed in the EA: the No-Action Alternative, which includes existing activities, but does not include a timber sale (EA, page 13); The Action Alternative which proposes harvesting approximately 300-500 MBF.

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

- a. In my opinion, the Alternative Alternative best meets the purpose and need for action and the specific project objectives listed in the EA on pages 6 & 8. The Action Alternative generates return to the school trust than the no action Alternative A. The environmental effects of the Action Alternative are acceptable as compared with Alternative A. No major losses in habitat, or unacceptable effects to water or soil would occur under Alternative B.
- b. The analysis of identified issues did not reveal information compelling the DNRC not to implement the Action Alternative.
- c. The proposed action includes activities to address environmental concerns expressed by DNRC staff and the public. For example, it includes improvements to the roads in the project area to meet Best Management Practices (BMPs) (EA, page 15); and improves timber stand health and productivity where harvesting is proposed (EA, pages 39 & 40).

5.1 SIGNIFICANCE OF IMPACTS

For the following reasons, I find that the proposed action would not have significant impacts on the human environment:

- a. Wildlife

Because of the proposed action's limited area, and corresponding 1% reduction in snow intercept cover, there would likely be minor to low risk of cumulative effects to elk and white-tailed deer cover and winter range within the analysis area.

Neither individual effects nor total effects to big game habitat are below accepted thresholds for this area. This alternative would retain existing snags unless they pose an unacceptable safety hazard during logging operations.

Gray wolves are becoming fairly common in the northern Bitterroot valley. Sensitive species such as the lynx and fisher have been detected or suspected to be in the general project area. Habitats would be improved for some species and reduced for others. However, none of the estimated changes are identified to be extensive, severe, or of a duration that would cause unacceptable impacts to threatened, & endangered or sensitive species. Mitigations included in the EA would further reduce impacts.

b. Economics

This alternative would provide the largest measure of reasonable and legitimate return over the long run for the Common School (C.S.) Trust Grant on this entry, at approximately (\$35,447 plus \$15,419 for Forest Improvement fees EA, page 16). In the long run, with a well-designed and maintained access/transportation route, would provide for future entries at reduced development costs and thus higher stumpage values.

c. Water Quality, Fisheries, and Soils

No increases in sediment yields are expected to result from the proposed action. The existing road segments planned for use were evaluated and determined to be low risk to water quality and cumulative watershed impacts. BMPs would be fully implemented during new road construction and harvest operations. (EA, pages 30 & 31).

No direct, indirect or cumulative impact to cold-water fish habitat is expected to result from the proposed action alternative. No harvest, new roads, or new stream crossings are planned adjacent to fish bearing streams, 2) road surface drainage repairs would reduce the current levels of sedimentation to Woodchuck Creek along the haul route, 3) there would be no change in connectivity from existing conditions. All applicable Watershed and Fisheries Rules would also be followed (EA, pages 31-32).

There is low risk of substantial impacts to long-term soil productivity associated with the proposed action. With the implementation of recommended mitigations, such as cable harvest on slopes over 45% and tractor harvest operations on dry or frozen ground. Erosion at landings would be controlled by proper location, appropriate size and standard BMP's (EA, pages 32).

d. Timber and Site Productivity

Logging would be completed within a typical time frame of two to three years. The proposed silvicultural treatments are conventional techniques that have been previously applied in other projects and have resulted in acceptable environmental changes. The increase in stand vigor, resistance to insects or diseases, establishment of new stands and retention of a good gene pool for a future seed source would not only maintain, but likely improve, options for future timber management and thus revenue. No unique features would be impacted by proposed activities.

e. Precedent Setting and Cumulative Impacts

The proposed timber sale is similar to past projects that have occurred in the area. A 500 MBF timber sale was conducted in the east ½ of this section in 1987. Since the EA does not identify future actions that are new or unusual, the proposed timber sale is not setting a precedent for a future action with significant impacts.

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

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

5.2 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 decisions.
- b. Evaluation of the potential impacts of the proposed timber sale indicates that no significant impacts would occur.
- c. Sufficient opportunities for DNRC staff and public review and comment during project development and analysis were provided. DNRC staff and public concerns were incorporated into project design and analysis of impacts.

/S/ ROBERT STORER
Program Manager
Southwestern Land Office
July 2010

CHAPTER 6: REFERENCES

6.1 LIST OF PREPARERS AND PERSONS CONSULTED

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6.3 ABBREVIATIONS AND ACRONYMS

Ac.	Acres
ARM	Administrative Rules for Montana
BMP	Best Management Practices
CFR	Code of Federal Regulations
DBH	Diameter at Breast Height
DEQ	Department of Environmental Quality
DF	Douglas-fir
DFC	Desired Future Conditions
DNRC	Department of Natural Resources and Conservation
E	East
EA	Environmental Assessment
EBT	Eastern brook trout
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FWP	Montana Fish, Wildlife, and Parks
HRA	Hazard Reduction Agreement
HW	Hardwood
ID	Interdisciplinary
IWM	Integrated Weed Management
LP	Lodgepole pine
MBF	Thousand Board Feet
MC	Mixed conifer

MCA	Montana Code Annotated
MMBF	Million Board Feet
MEPA	Montana Environmental Policy Act
N	North
NW	Northwest
PP	Ponderosa pine
R	Range
RT	Rainbow trout
S	South
SAF	Subalpine fir
SE	Southeast
Rules	State Forest Land Management Rules
SMZ	Streamside Management Zone
T	Township
TMDL	Total Maximum Daily Load
USDA	United States Department of Agriculture
USFS	United States Forest Service
W	West
WCT	Westslope cutthroat trout
WL	Western larch
WWP	Western white pine