CHAPTER 2 - ALTERNATIVES

I. INTRODUCTION

This chapter describes and compares the alternatives considered by the Forest Service for the *Red Whale Project*. It includes a discussion of how alternatives were developed, a description and map of each alternative considered in detail, features common to all alternatives, and a comparison of these alternatives focusing on the significant issues and monitoring. Chapter 2 is intended to present the alternatives in comparative form, defining the issues and providing a clear basis of choice among options for the decision maker and the public (40 CFR 1502.14).

Some of the information used to compare alternatives at the end of Chapter 2 is summarized from Chapter 3, "Affected Environment and Environmental Consequences." Chapter 3 contains the detailed scientific basis for establishing baselines and measuring the potential environmental consequences of each of the alternatives. For a full understanding of the effects of the alternatives, consult Chapter 3.

II. ALTERNATIVE DEVELOPMENT PROCESS

Public Involvement

The Flathead National Forest has undertaken collaborative efforts beginning in 2001 with various state and Federal agencies (e.g. Montana Department of Natural Resources and Conservation, National Park Service) as well as other partners to implement the National Fire Plan. Collaborative meetings between the Flathead National Forest and the Fire Mitigation Committee of the North Fork Improvement Association began in April of 2004. The North Fork Improvement Association (now the North Fork Landowner's Association) is a citizen group comprised of landowners and residents of the North Fork Valley. The focus of these meetings was how to best collaborate on reducing risk to communities, including the North Fork, through fire prevention, staffing, preparedness, fuels treatments/wildland urban interface projects and grant opportunities. These partners helped to review criteria (e.g. fuel loads, fire starts, and crown cover) that have been used to determine priority setting for various fuels reduction projects on the Flathead National Forest. The Red Whale Project analysis area was identified as one of the priority fuels reduction projects on the Glacier View Ranger District based on this criteria.

Forest Service representatives meet bi-annually (winter and summer) with the North Fork Landowner's Association as other North Fork residents or people who have other interests in the North Fork during meetings known as interlocal meetings. These meetings provide opportunities for land managing and other government agencies to discuss ongoing/upcoming activities, issues, and concerns with North Fork residents. Fuels projects have been a continuing topic at these meetings for several years now. The Red Whale Project was first discussed as a potential

project during the winter 2005/2006 meeting. Following this interlocal meeting, additional meetings occurred with Fire Mitigation Committee members as well as local landowners about concerns regarding fuels on both private and public lands.

In the spring of 2006, the Red Whale Project was listed in the Flathead National Forest's Schedule of Proposed Actions (SOPA) to allow the public to become aware of our impending plans to analyze the Red Whale area for activities that were eventually further detailed later in the proposed action. The Red Whale Project has appeared quarterly in the SOPA since the spring 2006 issue. This SOPA list is displayed nationally and locally on the internet sites located at the Forest Service's Washington Office and the Flathead National Forest.

In the latter part of June 2006, a letter was sent to over 400 landowners, government agencies, and groups or individuals potentially interested in or affected by the project. This letter provided details of the proposed action (displayed as Alternative 2 in this EA) and an offer to meet with the public on the ground during a field trip. This field trip was held on July 17, 2006 with about 13 people attending; most of whom were local landowners. Besides this field trip, we received comments/feedback on the proposed action from about 21 people either through letters, phone calls, or emails. Additionally, individual meetings with landowners took place on the ground or within the office.

Issue Development Process

The ID team reviewed all comments received in response to scoping to identify significant issues, determine appropriate analysis procedures, and identify alternatives to the proposed action. Some comments were beyond the scope of this project; others were addressed by the Forest Plan or other regulatory framework, were beyond the geographical influence of this project, or did not pertain to this specific proposal. Comments and concerns that fell into these categories were not considered relevant to this project-specific assessment, and therefore were not addressed.

The remaining comments and concerns were further examined to determine how they could best be addressed in the EA. A few comments were best addressed by developing alternatives to the proposed action. These concerns became the significant issues that are described below. Others were best addressed by disclosing the effects of implementing the proposed action and its alternatives. Some comments were best addressed by developing design features common to all action alternatives. The project file, section E, contains further information regarding alternative development.

Issues Used for Alternative Development

The following issues were identified from the scoping comments and have been used to develop alternatives to the proposed action. The issue statement is followed by "issues indicators," which provide a means to measure the effects of each alternative.

1. Grizzly bear security is not adequately addressed in the proposed action because Amendment 19 objectives are not fully being met.

The proposed action (Alternative 2) makes improvements to grizzly bear security with its wheeled motorized access management strategy. However, some feel that the proposed reductions in motorized access do not go far enough in improving security for bears.

This issue is addressed through the development of an alternative that includes more motorized travel restrictions than identified in the proposed action. This new alternative, Alternative 3, achieves Amendment 19 objectives in the Red Meadow Moose and Hay Creek grizzly bear subunits.

Issue Indicators:

- Amendment 19 component parameters (security core, total motorized access density, and open motorized access density) met or exceeded across the 2 grizzly bear subunits.

2. Lynx habitat should not be impacted by the fuels reduction treatments.

Some of the proposed fuels reduction treatment units are considered suitable lynx habitat. There are concerns that some of the proposed treatments will reduce lynx foraging habitat potential.

This issue is addressed through the development of Alternative 3, which does not include any fuels treatments in lynx foraging habitat.

Issue Indicators:

- Acres of suitable lynx habitat treated and changed into unsuitable habitat.

3. Thinning could break up hiding cover and travel corridors for wildlife species.

The mechanical fuels treatments are located on National Forest System (NFS) lands adjacent to private or Montana Department of Natural Resources and Conservation (DNRC) properties. There are some concerns the NFS lands may be the only undeveloped areas within this wildland-urban interface and these areas may be providing some of the more suitable hiding cover and/or travel corridors for wildlife between the interior NFS lands and Glacier National Park.

This issue is addressed through the development of Alternative 3, which made adjustments to the proposed action to provide vegetation screening/hiding cover within units along open roads. Changes to unit sizes were also made to accommodate known wildlife movement areas and reduce potential habitat fragmentation.

Issue Indicators:

- Number of units adjacent to open roads and screening cover provided.

4. There is a need to enlarge treatment areas and improve connectivity of treated areas to be more effective in severe burning conditions.

There were some that felt that the effectiveness of the fuels treatments would be improved if the thinned areas were enlarged, particularly on the south and west sides of private properties.

This issue is addressed through the development of Alternative 4, which has expanded treatments than what was proposed in Alternative 2.

Issue Indicators:

- Acres of fuels reduction within the wildland urban interface.

Analysis Issues

Issues associated with the resources listed below were identified during the scoping period or are required to be addressed by law, regulation or policy. These issues are analyzed by disclosing, comparing and contrasting the environmental and social effects of the proposed action and its alternatives. The results of the effects analysis on these resources are described in detail in Chapter 3.

- Forest Vegetation (forest conditions, old growth, insect and disease risk, snags and downed wood)
- Fire and Fuels
- Threatened, Endangered, and Sensitive (TES) Plants
- Invasive Plant Species – Noxious Weeds
- Wildlife (including TES species)
- Hydrology
- Fisheries
- Soils
- Forest Heritage Resources
- Recreation
- Special Designations
- Scenic Resources
- Air Quality
- Economic

III. ALTERNATIVES CONSIDERED IN DETAIL

The EA considered the proposed action (Alternative 2) and three alternatives in detail. Alternative 1 is the *no action* alternative, under which the project area would have no fuels treatments, prescribed burning or access management changes (including access to State lands) at this time and would remain subject to natural or ongoing changes only. The other action alternatives represent different ways to satisfy the purpose and need than that of the proposed action by responding with different emphases to the significant issues discussed earlier in this Chapter. Maps of all alternatives considered in detail are provided.

Alternative 1 (No Action)

The emphasis of this alternative is to represent the existing condition against which the other alternatives are compared. Alternative 1 proposes no fuels reduction, prescribed burning or access management changes within the *Red Whale Project* area at this time. It does include those

activities listed as ongoing and foreseeable actions in Chapter 3. It does not preclude activities in other areas at this time, or preclude activities in the *Red Whale Project* area at some time in the future. CEQ regulations (40 CFR 1502.14d) require that a "no action" alternative be analyzed in every Environmental Assessment (EA) or Environmental Impact Statement (EIS).

Under this alternative, management activities would be limited to ongoing and foreseeable actions listed in Chapter 3 of this EA.

Map 2-1 displays the existing road management status in the project area.

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Map 2-1. Alternative 1 Access Management.

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Alternative 2 (Proposed Action)

Fuel Reduction Treatments

Stand Groups and Mechanical Forest Treatments

The units proposed for mechanical fuels treatment have been strategically located within the project area to focus on lands closest to private property while minimizing resource impacts. Approximately 2,078 acres of National Forest System lands would have fuels reduced on 41 distinct areas (refer to Map 2-2). All proposed activity areas have suitable terrain (slopes <35%) for the use of mechanized equipment (such as feller bunchers, rubber tired skidders, excavators, log processors, chippers/masticators, etc.) to remove trees, slash and other excess woody material. Some work may also be carried out by hand particularly in the sapling thinning areas, although mechanized equipment may be used in these areas as well.

Private contractors and Forest Service crews would be used to accomplish thinning, tree removal, prescribed burning, and/or slash disposal work. Small sawlogs, posts, poles, pulp and firewood are all potential commercial materials that may be removed from some of the mechanized fuel reduction units (approximately 3.7 total mmbf volume is estimated – includes both sawlog and non-sawlog).

Current forest conditions within the proposed mechanical treatment units fall into one of five forest stand groups which are described below. Because of differing forest stand conditions, different treatments or prescriptions are proposed for each of these groups:

Stand Group 1. This group is comprised of stands dominated by mature 70-90 year old lodgepole pine. These are generally single story stands that originated after large fires that occurred between 1910 and 1926. The lodgepole stands are typically densely stocked with small diameter trees. There are usually few understory trees in these closed canopy stands, but in some stands there are heavy concentrations of downfall.

> Fuel Treatments – In some of the units, a thinning would occur, leaving about 70-130 trees per acre (spacing between trees averaging 18 to 25 feet). In other units more open conditions would be created, leaving between 15 and 30 trees per acre in small irregular shaped patches within all or portions of the lodgepole stand (patch seedtree treatment). Long-lived, fire resistant larch and Douglas-fir would be planted in the openings. These are more shade intolerant species and need the more open conditions to grow well. In all units, all larch and Douglas-fir trees would be left (unless in very poor condition), as well as most hardwood trees. Some of these trees may need to be felled for operational reasons. Most of the understory trees (mainly scattered spruce and subalpine fir) would be removed, though some may be left to provide species and forest structure diversity.

Stand Group 2. This group is composed of mixed species, single age stands usually consisting primarily of western larch and lodgepole pine, with minor amounts of Douglas-fir, spruce, and subalpine fir. Similar to Group 1, these stands are a result of fires that occurred between 1910 and 1926 and are 70-90 years old. They are well stocked with tree sizes ranging from 6”-12” in

diameter. There are varying densities of understory trees, sparse to dense, mostly shade tolerant species such as spruce and subalpine fir. Downed wood amounts tend to be moderate to light.

Fuel Treatments **–** In these units a thinning treatment would occur, selecting the larger, healthier trees for leave and favoring larch, Douglas-fir and lodgepole pine in that order. Most understory trees would be removed, except where left at low densities to provide some species and structural diversity. Trees would be left at an average spacing of 18-25 feet (about 70-130 trees per acre), but spacing would vary in order to allow selection of the best trees. Hardwood trees would be left (unless felled for operational reasons).

Stand Group 3**.** This group is composed of mixed species and multi-aged stands with western larch, spruce, lodgepole pine, Douglas-fir, and subalpine fir all present in various amounts. Trees in the main forest canopy range from about 70 to over 120 years old. The understory is moderately to densely stocked with spruce, subalpine fir, and Douglas-fir in some stands.

Fuel Treatments **–** A light understory thin would occur in these units, removing trees in the lower canopy layers, particularly those that extend into the crowns of the overstory. Scattered overstory trees may be removed if in particularly poor condition, but most of the overstory would be retained. Estimated leave tree density would range from 110 to 140 trees per acre.

Stand Group 4. This group includes areas that have been harvested in the past 50 years and currently consist of saplings and small trees (less than 7" diameter), ranging from about 20 to 50 years old. They are predominately western larch and lodgepole pine, though some stands have spruce, Douglas-fir, and subalpine fir. Trees are generally healthy with good crowns, especially those that have had some thinning in the past. High tree densities in some stands are impeding growth. Downed wood amounts tend to be very light.

Fuel Treatments **–** A thinning would occur**,** favoring the healthiest trees of best form for leave, and western larch and Douglas-fir over lodgepole pine and other species. The spacing of leave trees would be variable depending upon stand age and tree size, but would range from about 15 to 25 feet.

Stand Group 5. This group includes stands that originated from the Red Bench Fire in 1988. They consist of very densely stocked 17 year old sapling stands, <15 feet tall, dominated by lodgepole pine or western larch. The exceedingly high tree densities have severely impacted tree growth and crown development in most of these stands. Downed wood amounts are variable, with some areas having heavy concentrations of small diameter trees – the trees that were killed in the 1988 fire and have now fallen.

Fuel Treatments – A thinning would occur, favoring western larch as a leave tree where present, but lodgepole pine would be the primary species left in many stands due to its dominance. Spacing of individual or small clumps of trees would vary from about 6 to15 feet, with the trees in better condition selected for leave where possible. Treatment units T4, Y1, Y2, and Y3 are each shown on the map as one large area; however thinning would only take place on 30% of the total area in these four units. The areas thinned

would be of irregular shape, size and leave tree densities, designed with both fuel reduction and lynx habitat objectives in mind.

The following table lists each proposed unit with their acres, the actual estimated treated acreage, their stand group, specific treatment type, and required season of fuels activities.

Table 2-1. Mechanical Fuel Treatments for Alternative 2.

Unit	Total Acres	Estimated Treatment acres	Stand Group	Treatment Type[1]	Season Requirements[2]
A	5	5	3	Light understory thin	None specified
B	40	16	1	Patch Seedtree	None specified
C	21	17	1	Patch Seedtree	None specified
D	108	108	1	Thin small/med tree	None specified
E	38	38	2	Thin small/med tree	None specified
F	61	61	2	Thin small/med tree	Use of access road limited to denning season (winter) only; unit could be treated during the non-denning season if access is thru private land or done thru other means besides this road.
G	196	196	4	Thin sapl/small tree	None specified
H	78	78	2	Thin small/med tree	None specified
I	87	87	3	Light understory thin	None specified
J	164	164	4	Thin sapling	75 Acres in grizzly security core - treat only during denning season.
K	59	59	4	Thin sapl/small tree	None specified
L	169	169	2	Thin small/med tree	None specified
M	123	123	2	Thin small/med tree	1. Schnaus Cabin - No operations from July 1 to September 1 in the portion of the unit east of the North Fork Road. Other time periods - limit operations to weekdays and between 8 am and 8 pm. 2. Bald Eagle Nest near a portion of the unit – No operations from February 1 to August 1
N	44	44	2	Thin small/med tree	None specified
O	45	45	4	Thin sapl/small tree	None specified

Unit	Total Acres	Estimated Treatment acres	Stand Group	Treatment Type[1]	Season Requirements[2]
P	82	82	2	Thin small/med tree	None specified
Q	53	37	1	Patch Seedtree	None specified
R	40	28	1	Patch Seedtree	None specified
S1	12	12	5	Thin sapling	None specified
S2	7	7	5	Thin sapling	None specified
S3	40	40	5	Thin sapling	None specified
S4	46	46	5	Thin sapling	None specified
T1	10	10	5	Thin sapling	None specified
T2	17	17	5	Thin sapling	None specified
T3	10	10	5	Thin sapling	None specified
T4	283	85	5	Thin sapling 30%	None specified
U	9	9	5	Thin sapling	None specified
V	11	11	5	Thin sapling	None specified
W	14	14	5	Thin sapling	None specified
X	34	34	5	Thin sapling	None specified
Y1	53	16	5	Thin sapling 30%	None specified
Y2	26	26	5	Thin sapling	None specified
Y3	58	17	5	Thin sapling 30%	None specified
Z	14	14	5	Thin sapling	None specified
BB	110	110	4	Thin sapl/small tree	Winter treat only due to soil concerns
CC	42	42	1	Thin small/med tree	None specified
DD	98	98	2	Thin small/med tree	None specified
EE	36	36	3	Thin small/med tree	None specified
FF	6	6	1	Patch Seedtree	None specified
GG	41	41	2	Thin sapl/small tree	None specified
HH	39	20	1	Patch Seedtree	None specified
Total	**2429**	**2078**			

[1] **Definitions: Sapl/small tree** = Stands of trees mostly <=8" dbh (diameter at breast height, 4.5 feet from the ground), and trees from 30-70 years old. **Small/med tree** = Stands of trees mostly <=12" dbh, 70-90 years old. **Sapling** = Stands of trees mostly <25 feet tall, <=5" dbh, and 17 to 30 years old.
[2] In order to minimize effects to grizzly bear during the spring period, fuel reduction treatments such as logging would not occur from April 1 through June 30. However, there are some exceptions and these are detailed further in the Design Criteria section in this chapter (refer to Duration of Activities – includes season requirements).

Slash and Down Wood Debris Treatments

Within all treatment units, downed wood, including existing fuels and those created by the tree cutting activities, would be removed to a relatively low level (about 10-12 tons per acre – generally made up at of the largest material available) to reduce potential surface fire intensity. Most larger diameter (>12") downed wood would be left, if available, to provide for long term

soil productivity and wildlife needs. Removal of slash and concentrations of downed wood would occur either by excavator piling and burning, chipping/mastication, or physical removal from the site. Preferred methods would depend on a variety of factors, including amount of slash or downed wood, soil conditions, visual sensitivity, ease of access, etc. Burning of piles would be dependant on weather and fuel conditions identified in a prescribed fire burn plan. These weather and fuel conditions are pre-determined to allow for slash consumption and to reduce the risk of an escaped fire.

Conifer Regeneration Treatments

Most of the units would be thinned, leaving at least 70 trees per acre, and regeneration of a new stand of conifers is not an objective. However, it is an objective in the patch seedtree units. Planting of conifers would occur in the openings created in the patch seedtree harvests and in some of the more open areas created in the sapling thinning units within Stand Group 5 (the very dense stands regenerated after the 1988 Red Bench fire). Alternative 2 would plant a total of about 216 acres, which includes 124 acres of patch seedtree openings and 92 acres of thinned areas. Western larch and Douglas-fir would be the main species planted.

Access Needs

Most units would be accessed using existing county or National Forest System (NFS) roads. However, some of the NFS roads to be used are currently closed to motorized use yearlong to provide grizzly bear and other wildlife security. Some units would also require construction of short temporary roads. If temporary roads or closed NFS roads are used to access units, mitigation for the temporary loss of grizzly bear security would occur. This mitigation may include treating the unit only during the bear denning period (i.e. winter) or temporarily closing other open roads in the project area while the temporary road or closed road is being used. The details of this mitigation are as follows:

> If fuels treatments do not occur in the winter season within units B and D, a portion of the Hornet Creek Road would be closed to wheeled motorized use while “closed” roads are re-opened temporarily to access these units for treatments. It is estimated that it may take about 2 months to treat these units. The gated closure on the Hornet Creek road would be located about 2 miles from the Hornet Lookout trailhead.
>
> If fuels treatments do not occur in the winter season within units S1, S2, S3, and S4, a portion of the Moose Creek Road (from about the junction of Road 5234 to the end of the Moose Creek Road – approximately 1.2 miles) would be closed to wheeled motorized use while “closed” roads are re-opened temporarily to access these units for treatment. It is estimated it may take about 4 months to treat these units. Since these units involve sapling thinning, it is likely that treatments would not take place during the winter unless there are low snow accumulations.
>
> If fuels treatments do not occur in the winter season within units Y1, Y2, Y3, HH, and BB, the closure of wheeled motorized access on the Hay Creek, Coal Ridge and Moran Creek trails would by implemented (see Table 2-4) before treatment occurs within these units.

Some of these units involve sapling thinning and thus it is likely that treatments would not take place during the winter.

The following table displays those units requiring use of currently closed or temporary roads on NFS lands:

Table 2-2. Closed/Temporary Roads Needed for Alternative 2.

Unit	Access Needs	Miles	Grizzly Bear Subunit
B	Access via currently NFS closed and temporary road (old template exists)	1.7	Lower Whale
D	Access via new NFS temporary road	0.3	Lower Whale
S1, S2, S3, S4, T1, T2, T3, T4	Access via currently NFS closed road	2.9	Red Meadow Moose and Hay Creek
Y1, Y2, Y3	Access via currently NFS closed road	0.5	Hay Creek
HH	Access via currently NFS closed road	0.3	Hay Creek
BB	Access via currently NFS closed road	0.3	Hay Creek
TOTAL		**6.0**	

All temporary roads would be rehabilitated after use. Snow roads (constructed on top of snow pack or frozen ground) may be used in some mechanized units if they are treated in the winter.

There are some units where access from private lands and/or use of private roads is the only feasible option for treatment of the units. These include all or portions of units Q, P, R, EE, and FF. If these units are included in the decision, permission from landowners would be necessary and would be pursued during the implementation phase. Other units have the option of access through private lands, but it is not necessary in order to treat the unit. Access through private lands may also be sought for these units during the implementation phase.

There are segments of the existing road system which need improvements in the road surface/stream drainage systems to meet current Montana State Best Management Practices and INFISH standards. The work activities could include some additional cross-drains culverts, drive thru dips, flappers, filter windrows, sediment traps etc. In Alternative 2, approximately 14 miles of haul route roads (roads used to haul potential commercial products) would receive road drainage improvement work (refer to section T, project file for a spreadsheet which identifies road numbers proposed for improvement work).

Wildlife Habitat and Security

Habitat Improvement-Prescribed Burning

Eight different areas, encompassing approximately 1364 acres, have been proposed for prescribed burning (refer to Map 2-2). The main criteria used to identify these sites were their location on southerly slopes, at elevations generally below 6000 feet. Referred to as Stand Group 6, the units are currently a mix of open, semi-open and dense forest patches, where Douglas-fir dominates but lodgepole pine, western larch, subalpine fir and spruce occur in localized areas.

Map 2-2. Alternative 2 South Half Fuels Reduction and Prescribed Burning.

Map 2-2. Alternative 2 North Half Fuels Reduction and Prescribed Burning.

Whitebark pine occurs at the highest elevations. Forests are mostly young (<100 years old), but some areas contain an older tree component.

Prescribed burning areas are located within Moose, Red Meadow, Hay and Moran Creeks. The burns would be designed to be low to moderate intensity, and only about 1/3 to 1/2 (approximately 450-680 acres) of the total acres are expected to be directly affected by fire. The objective of the burn is to create a more diverse mix of forested and shrub/forb dominated areas intended to improve early spring range/habitat for wildlife species such as grizzly and black bear, elk, deer, and moose.

Although forage resources may be somewhat depleted for the first season post-burn, the land's response to fire is typically to produce an abundant variety of early successional vegetation such as grasses, forbs, and shrubs. When burns occur on southerly slopes, these sites become especially important to wildlife in the spring because they tend to be the first areas to become snow-free and the exposed 'greened-up' forage provides vital nutrition to ungulates that have been living primarily on low value shrub twigs and stems all winter. For bears, having nutrient-rich vegetation available as forage is important after den emergence.

Prescribed fire plans ("burn plans") would include plans for ignition, holding, escaped fire contingency, mop-up, and patrol. This is to ensure that each burn meets the objectives prescribed for that particular area. The plan is designed to use the prescribed weather, personnel, and equipment that are needed to control the burn within the identified boundaries. Prescribed burns would generally be ignited using helicopters, and would occur when suitable burn and air quality conditions exist.

Ignition of the prescribed burning units within the Moose Creek drainage would be spaced out over at least 2 seasons in order to reduce potential water run-off by allowing some vegetation growth to become re-established before burning was once again initiated. Ignition would not occur in riparian habitat conservation areas in any of the burning areas.

Security Improvement

Another component of Alternative 2 is to improve security for grizzly bears by changing travel status on some of the roads and trails within two of the three grizzly bear subunits contained within the project area (Hay Creek and Red Meadow Moose).[1] These grizzly bear subunits approximate the size of the home range for an adult female grizzly bear. The current Forest Plan (Amendment 19) includes management direction for maintaining or improving security for grizzly bears via three parameters: open motorized access density, total motorized access density, and security core. In grizzly bear subunits where at least 75% of the area includes national forest system lands, the objective is to limit high density open motorized access density (greater than 1 mile per square mile) to no more than 19%; limit high density total motorized access density

[1] The Lower Whale grizzly bear subunit is the third subunit contained within the project area. Access management was recently addressed in this subunit within the 2004 decision on the Robert-Wedge Post-Fire Project. This project amended Amendment 19 objectives to the following: OMAD = 37%; Security Core = 47%. The objective for TMAD did not need amending because the Lower Whale subunit meets or exceeds this particular objective once all previous decisions in the area are completed.

(greater than 2 miles per square mile) to no more than 19%; and to provide at least 68% of a subunit as security core (e.g. at least 2500 acre blocks).

In both the Hay Creek and Red Meadow Moose grizzly bear subunits the total motorized access density parameter is currently below 19% and as such no proposals are being made to further reduce this percentage in this alternative or the other alternatives discussed further in this chapter. The following table includes current and proposed changes to open motorized access and security core that would result under Alternative 2.

Table 2-3. Amendment 19 Objectives and Alternative 2.

Access Standards	Current Condition	Alternative 2
Hay Creek Grizzly Bear Subunit		
Open Motorized Access Density (OMAD)	39%	24%
Total Motorized Access Density (TMAD)	13%	13%
Security Core	41%	55%
Red Meadow Moose Grizzly Bear Subunit		
Open Motorized Access Density (OMAD)	25%	25%
Total Motorized Access Density (TMAD)	17%	17%
Security Core	52%	68%

Map 2-3. Alternative 2 Access Management.

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To achieve the changes in OMAD and security core as displayed in Table 2-3, the table below lists those roads or trails where the travel status would be modified (refer also to Map 2-3).

Table 2-4. Access Management Activities Proposed in Alternative 2.

Road #	Miles	Existing Travel Status	Proposed Travel Status
1681 (Benchmark)	7.4	Closed yearlong - gate	Closed year-long to wheeled motorized - berm
376 (Hay Creek)	4.0	Open yearlong	Open seasonally to wheeled motorized vehicles from 7/1 to 11/30
1680 (Hay Creek spur)	0.3	Open yearlong	Open seasonally to wheeled motorized vehicles from 7/1 to 11/30
5221 (Hay Creek spur)	0.3	Open yearlong	Open seasonally to wheeled motorized vehicles from 7/1 to 11/30
5241 (Moran Creek)	0.5	Open yearlong	Closed year-long to wheeled motorized - berm
TOTAL	**12.5**		
Trail #	**Miles**	**Existing Travel Status**	**Proposed Travel Status**
3 (Hay Creek)	5.6	Open to ATV and motorcycles yearlong	Closed year-long to wheeled motorized yearlong
14 (Coal Ridge)	12.3	Open to motorcycles from 7/1 to 8/31	Closed year-long to wheeled motorized year-long
2 (Moran)	2.9	Open to motorcycles from 7/1 to 8/31	Closed year-long to wheeled motorized year-long
239 (Coal Cr/Coal Ridge)	2.8	Open to ATV and motorcycles yearlong	Closed yearlong to wheeled motorized year-long
TOTAL	**23.6**		

In summary, approximately 4.6 miles of yearlong open roads would be seasonally closed to wheeled motorized vehicles; the main road involved is the Hay Creek Road. This road (and its adjacent spurs) would become available to wheeled motorized vehicles from July 1 to November 30. Adequate vehicle turnaround areas would be made at the closure area.

Additionally, about 24 miles of trail would be closed to wheeled motorized vehicles (i.e. motorcycles or ATVs).

Proposed new berms on roads which also serve as snowmobile routes (e.g. Benchmark Road) would be made negotiable for snowmobiles.

State Access

This portion of the proposed action addresses long term Montana Department of Natural Resources and Conservation (DNRC) access needs to Section 16 within Township 35N, Range 21W. This is a state owned parcel located approximately 1.5 miles northwest of Polebridge along the North Fork of the Flathead River. The proposal would involve constructing about 0.3 miles of new road across Flathead National Forest lands (refer to Map 2-3). This would provide DNRC

access from the North Fork Road, across the National Forest to the DNRC parcel. An easement would then be granted to the State for this road. This road would be gated yearlong.

Alternative 3

Fuel Reduction Treatments

Stand Groups and Mechanical Forest Treatments

The current forest conditions and mechanical treatments described under Alternative 2 for each stand group are the same as those that would occur in Alternative 3. The type of equipment used to treat fuels would also be the same as Alternative 2. However, there would be fewer acres affected in Alternative 3. This alternative is designed to respond to issues related to lynx and other wildlife species, so some of the units in Alternative 2 were either eliminated or reduced in size for Alternative 3. For example, many units had their boundaries altered to improve hiding cover for wildlife. Leaving a narrow strip of untreated forest within units adjacent to open roads was a part of this strategy. Also, any units that function as lynx foraging habitat were eliminated; these were mainly units of sapling size trees or stands with a dense understory tree layer. Those few sapling units that are still included in this alternative are not considered lynx foraging habitat, either because they are older saplings with the base of tree crowns above snow depth, are less densely stocked, or are western larch forest types.

In summary, about 927 acres of National Forest System lands would have fuels reduced within 21 areas in Alternative 3 (refer to Map 2-4). Private contractors and Forest Service crews would be used to accomplish thinning, tree removal, prescribed burning, and/or slash disposal work. Small sawlogs, posts, poles, pulp and firewood are all potential commercial materials that may be removed from some of the mechanized fuel reduction units (approximately 1.9 total mmbf volume is estimated; includes both sawlog and non-sawlog).

Table 2-5 lists each proposed unit with acres affected, their stand group, specific treatment type, and required season of fuels activities. Refer also to the descriptions of stand groups and treatment types under Alternative 2.

Table 2-5. Mechanical Fuel Treatments for Alternative 3.

Unit	Total acres	Estimated Treatment acres	Stand Group	Treatment Type[1]	Season Requirements[2]
B	40	16	1	Patch Seedtree	None specified
C	5	5	1	Patch Seedtree	None specified
D	70	70	1	Thin small/med tree	None specified
E	30	30	2	Thin small/med tree	None specified
F	25	25	2	Thin small/med tree	Use of access road limited to denning season (winter) only; unit could be treated during the non-denning season if accessed thru private land or other means besides this road.
G	196	196	4	Thin sapl/small tree	None specified
H	33	33	2	Thin small/med tree	None specified
I	8	8	3	Thin small/med tree	None specified
J	48	48	4	Thin sapling	19 acres in grizzly security core - treat only during denning season.
L	91	91	2	Thin small/med tree	None specified
M	25	25	2	Thin small/med tree	1. Schnaus Cabin; no operations July 1 to Sept.1 in part of the unit east of the North Fork Road. Otherwise, limit operations to weekdays between 8 am and 8 pm. 2. Bald Eagle Nest near a portion of the unit; no operations Feb.1 to Aug.1
P	34	34	2	Thin small/med tree	None specified
Q	53	37	1	Thin small/med tree	None specified
R	40	28	1	Patch Seedtree	None specified
S4	46	46	5	Thin sapling	None specified
BB	110	110	4	Thin sapl/small tree	Winter treat only; soil concerns
CC	42	42	1	Thin small/med tree	None specified
EE	36	36	3	Thin small/med tree	None specified.
FF	6	6	1	Patch Seedtree	None specified
GG	21	21	2	Thin sapl/small tree	None specified
HH	30	20	1	Patch Seedtree	None specified
Total	**989**	**927**			

[1] **Definitions: Sapl/small tree** = Stands of trees mostly <=8" dbh (diameter at breast height, 4.5 feet from the ground), and trees from 30-70 years old. **Small/med tree** = Stands of trees mostly <=12" dbh, 70-90 years old. **Sapling** = Stands of trees mostly <25 feet tall, <=5" dbh, and 17 to 30 years old.

[2] In order to minimize effects to grizzly bear during the spring period, fuel reduction treatments such as logging would not occur from April 1 through June 30. However, there are some exceptions and these are detailed further in the Design Criteria section in this chapter (refer to Duration of Activities – includes season requirements).

Slash and Down Wood Debris Treatments

Slash treatments would be the same as those described for Alternative 2.

Conifer Regeneration Treatments

Alternative 3 would plant a total of about 87 acres, mostly within the openings created in the patch seedtree harvests (75 acres) and the remainder within some of the more open areas created within the sapling thinning units in Stand Group 5. Western larch and Douglas-fir would be the main species planted.

Map 2-4. Alternative 3 South Half Fuels Reduction and Prescribed Burning.

Map 2-4. Alternative 3 North Half Fuels Reduction and Prescribed Burning.

Access Needs

Access needs as described for Alternative 2 are very similar to those identified for Alternative 3. The differences in the mitigation measures are as follows:

If fuels treatments do not occur in the winter season within units B and D, a portion of the Hornet Creek Road would be closed to wheeled motorized use while "closed" roads are re-opened temporarily to access these units. The gated closure on the Hornet Creek road would be located about 2 miles from the Hornet Lookout trailhead. During the estimated 1 month it may take to treat these units, this portion of the Hornet Road would be closed to wheeled motorized use.

If fuels treatments do not occur in the winter season within unit S4, a portion of the Moose Creek Road (from about the junction with Road 5234 to the end of the Moose Creek Road – about 1.2 miles) would be closed to wheeled motorized use while "closed" roads are re-opened temporarily. During the estimated 2 months it may take to treat this unit, this portion of the Moose Creek Road would be closed to wheeled motorized use. Since this unit involve sapling thinning, it is likely that treatments would not take place during the winter unless there are low snow accumulations.

If fuels treatments do not occur in the winter season within units HH and BB the proposed closure with a berm on Moran Creek Road and the Hay Creek Road would be implemented (see Table 2-8 below) before treatment occurs within these units.

The following table displays those units requiring the use of currently closed or temporary roads on NFS lands:

Table 2-6. Closed/Temporary Roads Needed for Alternative 3.

Unit	Access Needs	Miles	Grizzly Bear Subunit
B	Access via currently NFS closed and temporary road (old template exists)	1.7	Lower Whale
D	Access via new NFS temporary road	0.3	Lower Whale
S4	Access via currently NFS closed	0.4	Red Meadow Moose
HH	Access via currently NFS closed road	0.4	Hay Creek
BB	Access via currently NFS closed road	0.8	Hay Creek
TOTAL		**3.6**	

All temporary roads would be rehabilitated after use. Snow roads (constructed on top of snow pack or frozen ground) may be used in some mechanized units if they are treated in the winter season.

There are some units where access from private lands and/or use of private roads is the only feasible option for treatment of the units. These include all or portions of units Q, P, R, EE, and FF. If these units are included in the decision, permission from landowners would be necessary and would be pursued during the implementation phase. Still other units have the option of

access through private lands, but it would not be necessary in order to treat the unit. Access through private lands may also be sought for these units during the implementation phase.

There are segments of the existing road system which need improvements in the road surface/stream drainage systems to meet current Montana State Best Management Practices and INFISH standards. The work activities could include some additional cross-drains culverts, drive thru dips, flappers, filter windrows, sediment traps, etc. In Alternative 3, approximately 10 miles of haul route roads (roads used to haul potential commercial products) would receive road drainage improvement work (refer to section T, project file for a spreadsheet which identifies road numbers proposed for improvement work).

Wildlife Habitat and Security

Habitat Improvement-Prescribed Burning

Six different areas, encompassing approximately 1192 acres, have been proposed for prescribed burning (refer to Map 2-4). Two of the burn areas from Alternative 2 were dropped in this alternative because of concerns that the burning may affect possible old growth forest. The burns would be designed to be low to moderate intensity, and only about 1/3 to 1/2 (approximately 400-600 acres) of the total area is expected to be directly affected by fire. Prescribed burning areas are located within Moose, Red Meadow, Hay and Moran Creeks. The remaining discussion for this habitat improvement activity is the same as described under Alternative 2.

Security Improvement

Like Alternative 2, a component of Alternative 3 is to improve security for grizzly bears by changing travel status on some of the roads and trails within two of the three grizzly bear subunits contained within the project area (Hay Creek and Red Meadow Moose).

The travel management strategy designed for this alternative is to meet or exceed the 19% open motorized access density, 19% total motorized access density, and security core parameters identified in the current Forest Plan (refer to the security improvement discussion under Alternative 2 for further details of these parameters).

As mentioned in Alternative 2, total motorized access density for both Hay Creek and Red Meadow Moose grizzly bear subunits is below 19% and as such no proposals are being made to further reduce this percentage. The following table includes current and proposed changes to open motorized access and security core that would result under Alternative 3.

Table 2-7. Amendment 19 Objectives and Alternative 3.

Access Standards	Current Condition	Alternative 3
Hay Creek Grizzly Bear Subunit		
Open Motorized Access Density (OMAD)	39%	13% [1]
Total Motorized Access Density (TMAD)	13%	13%
Security Core	41%	68% [1]
Red Meadow Moose Grizzly Bear Subunit		
Open Motorized Access Density (OMAD)	25%	19% [2]
Total Motorized Access Density (TMAD)	17%	17%
Security Core	52%	72% [2]

[1] In order to meet the 68% security core objective in the Hay Creek grizzly bear subunit, OMAD needed to drop below 19% because of the juxtaposition of roads in the subunit.

[2] In order to meet the 19% OMAD in the Red Meadow Moose grizzly bear subunit, security core needed to be higher than 68% because of the juxtaposition of roads in the subunit.

To achieve the changes in OMAD and security core as displayed above, Table 2-8 lists those roads or trails where the travel status would be modified (refer also to Map 2-5).

Table 2-8. Access Management Activities Proposed in Alternative 3.

Road #	Miles	Existing Travel Status	Proposed Travel Status
115 (Red Meadow)	4.0	Open seasonally	Closed yearlong to wheeled motorized - gate
10892 (Red Meadow spur)	0.1	Open seasonally	Closed yearlong to wheeled motorized - gate
10893 (Red Meadow spur)	0.1	Open seasonally	Closed yearlong to wheeled motorized - gate
1681 (Benchmark)	12.6	Closed yearlong - gate	Closed yearlong to wheeled motorized - berm
376 (Hay Creek)	4.0	Open yearlong	Closed yearlong to wheeled motorized - berm
1680 (Hay Creek spur)	0.3	Open yearlong	Closed yearlong to wheeled motorized - berm
5221 (Hay Creek spur)	0.3	Open yearlong	Closed yearlong to wheeled motorized - berm
5241 (Moran Creek)	4.0	Open yearlong	Closed yearlong to wheeled motorized - berm
TOTAL	**25.4**		
Trail #	**Miles**	**Existing Travel Status**	**Proposed Travel Status**
3 (Hay Creek)	5.6	Open to ATV and motorcycles yearlong	Closed to wheeled motorized yearlong
14 (Coal Ridge)	12.3	Open to motorcycles from 7/1 to 8/31	Closed to wheeled motorized yearlong
2 (Moran)	2.9	Open to motorcycles from 7/1 to 8/31	Closed to wheeled motorized yearlong
239 (Coal Cr/Coal Ridge)	2.8	Open to ATV and motorcycles yearlong	Closed to wheeled motorized yearlong
40 (Cyclone Lookout)	1.5	Open to motorcycles yearlong	Closed to wheeled motorized yearlong
TOTAL	**25.1**		

In summary, approximately 12.8 miles of currently open (seasonal and yearlong open) roads would be closed to wheeled motorized vehicles yearlong. The three main roads affected would be the Hay Creek Road, Moran Creek Road, and Red Meadow Creek Road. Adequate vehicle turnaround areas would be made at these closure areas.

On the Hay Creek Road, the berm closure would occur near the existing gravel pit which is located about midway along the road. On the Red Meadow Creek Road, the gated closure would occur near the upper sections of the road (access to the trailhead for the Link Lakes area would still be accessible from the Whitefish Range side) and would prevent the current allowable wheeled motorized vehicle access from the Whitefish Range east to the North Fork Road.

Additionally, about 24 miles of trail would be closed to wheeled motorized vehicles (i.e. motorcycles or ATVs).

Proposed new berms on roads which also serve as snowmobile routes (e.g. Benchmark Road, Hay Creek Road, and Moran Road) would be made negotiable for snowmobiles.

State Access

The state road access discussion in Alternative 2 is the same for Alternative 3.

Map 2-5. Alternative 3 Access Management.

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Alternative 4

Fuel Reduction Treatments

Stand Groups and Mechanical Forest Treatments

The current forest conditions and mechanical treatments described under Alternative 2 for each stand group are the same as those that would occur in Alternative 4. The type of equipment used to treat fuels would also be the same as Alternative 4. This alternative responds to issues regarding a need to enlarge treatment areas and improve connectivity of treated areas to be more effective in severe burning conditions. Alternative 4 proposes the most mechanical and prescribed fire fuels reduction of the three action alternatives. This alternative is similar to alternative 2 except it has additional units to increase the amount and effectiveness of mechanical fuels reduction in the project area. It also includes one additional prescribed burn unit than is in Alternative 2, which is in the wildland urban interface.

In summary, about 3583 acres of National Forest System lands would have fuels reduced within 58 areas (refer to Map 2-6). Private contractors and Forest Service crews would be used to accomplish thinning, tree removal, prescribed burning, and/or slash disposal work. Small sawlogs, posts, poles, pulp and firewood are all potential commercial materials that may be removed from some of the mechanized fuel reduction units (approximately 4.9 total mmbf volume is estimated estimated – includes both sawlog and non-sawlog).

The following table lists each proposed unit with acres affected, their stand group, specific treatment type, and required season of fuels activities. Refer also to the descriptions of stand groups and treatment types under Alternative 2.

Table 2-9. Mechanical Fuel Treatments for Alternative 4.

Unit	Total acres	Estimated Treatment acres	Stand Group	Treatment Type[1]	Season Requirements[2]
A	5	5	3	Light understory thin	None specified
B	40	16	1	Patch Seedtree	None specified
C	21	17	1	Patch Seedtree	None specified
D	108	108	1	Thin small/med tree	None specified
E	38	38	2	Thin small/med tree	None specified
F	61	61	2	Thin small/med tree	Use of access road limited to denning season (winter) only; unit maybe treated during the non-denning season if accessed thru private land, or by means other than this road.
G	196	196	4	Thin sapl/small tree	None specified
H	78	78	2	Thin small/med tree	None specified

Unit	Total acres	Estimated Treatment acres	Stand Group	Treatment Type[1]	Season Requirements[2]
I	87	87	3	Light understory thin	None specified
J	164	164	4	Thin sapling	75 acres in grizzly security core - treat only during denning season.
K	59	59	4	Thin sapl/small tree	None specified
L	169	169	2	Thin small/med tree	None specified
M	123	123	2	Thin small/med tree	1. Schnaus Cabin - No operations from July 1 to Sept. 1 in portion of the unit east of the North Fork Road. Otherwise, limit operations to weekdays between 8 am and 8 pm. 2. Bald Eagle Nest near a portion of the unit – No operations from Feb.1 to Aug.1
N	44	44	2	Thin small/med tree	None specified
O	45	45	4	Thin sapl/small tree	None specified
P	82	82	2	Thin small/med tree	None specified
Q	53	37	1	Patch Seedtree	None specified
R	40	28	1	Patch Seedtree	None specified
S1	12	12	5	Thin sapling	None specified
S2	7	7	5	Thin sapling	None specified
S3	40	40	5	Thin sapling	None specified
S4	46	46	5	Thin sapling	None specified
T1	10	10	5	Thin sapling	None specified
T2	17	17	5	Thin sapling	None specified
T3	10	10	5	Thin sapling	None specified
T4	283	85	5	Thin sapling 30%	None specified
U	9	9	5	Thin sapling	None specified
V	11	11	5	Thin sapling	None specified
W	14	14	5	Thin sapling	None specified
X	34	34	5	Thin sapling	None specified
Y1	53	16	5	Thin sapling 30%	None specified
Y2	26	26	5	Thin sapling	None specified
Y3	58	17	5	Thin sapling 30%	None specified
Z	14	14	5	Thin sapling	None specified
BB	110	110	4	Thin sapl/small tree	Winter treat only due to soil concerns
CC	42	42	1	Thin small/med tree	None specified
DD	98	98	2	Thin small/med tree	None specified

Unit	Total acres	Estimated Treatment acres	Stand Group	Treatment Type[1]	Season Requirements[2]
EE	36	36	3	Thin small/med tree	None specified
FF	6	6	1	Patch Seedtree	None specified
GG	41	41	2	Thin sapl/small tree	None specified
HH	39	20	1	Patch Seedtree	None specified
4A	69	49	1	Patch Seedtree	None specified
4B	102	102	2	Thin small/med tree	61 acres in grizzly security core - treat only during denning season.
4C	76	76	4	Thin sapling	None specified
4D	119	119	4	Thin sapling	None specified
4E	80	80	4	Thin sapling	80 acres in grizzly security core - treat only during denning season.
4F	48	48	4	Thin sapling	None specified
4G	13	13	5	Thin sapling	None specified
4H	40	40	5	Thin sapling	None specified
4I	289	289	5	Thin sapling	None specified.
4J	152	152	5	Thin sapling	None specified
4K	20	20	5	Thin sapling	None specified
4L	48	48	5	Thin sapling	None specified.
4M	78	78	2	Thin small/med tree	None specified
4N	153	153	2	Thin small/med tree	None specified
4P	134	134	2	Thin sapl/small tree	None specified
4Q	100	100	2	Thin small/med tree	None specified
4R	4	4	2	Thin small/med tree	None specified
Total	**3954**	**3583**			

[1] **Definitions: Sapl/small tree** = Stands of trees mostly <=8" dbh (diameter at breast height, 4.5 feet from the ground), and trees from 30-70 years old. **Small/med tree** = Stands of trees mostly <=12" dbh, 70-90 years old. **Sapling** = Stands of trees mostly <25 feet tall, <=5" dbh, and 17 to 30 years old.

[2] In order to minimize effects to grizzly bear during the spring period, fuel reduction treatments such as logging would not occur from April 1 through June 30. However, there are some exceptions and these are detailed further in the Design Criteria section in this chapter (refer to Duration of Activities – includes season requirements).

Slash and Down Wood Debris Treatments

Slash treatments would be the same as those described for Alternative 2.

Conifer Regeneration Treatments

Alternative 4 would plant a total of about 406 acres, with 173 acres of this within the openings created in the patch seedtree units, and 233 acres within the more open areas created within the sapling thinning units in Stand Group 5. Western larch and Douglas-fir would be the main species planted.

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Map 2-6. Alternative 4 South Half Fuels Reduction and Prescribed Burning.

Map 2-6. Alternative 4 North Half Fuels Reduction and Prescribed Burning.

Access Needs

Access needs as described for Alternative 2 are very similar to those identified for Alternative 4. The differences in the mitigation measures are as follows:

If fuels treatments do not occur in the winter season within units B and D, a portion of the Hornet Creek Road would be closed to wheeled motorized use while "closed" roads are re-opened temporarily to access these units for treatment. Treatment is estimated to take about 2 months. The gated closure on the Hornet Creek road would be located about 2 miles from the Hornet Lookout trailhead.

If fuels treatments do not occur in the winter season within units S1, S2, S3, S4, 4G, 4H, 4I, and 4J, a portion of the Moose Creek Road (from about the junction with Road 5234 to the end of the Moose Creek Road – about 1.2 miles) would be closed to wheeled motorized use while "closed" roads are re-opened temporarily to treat these units. During the estimated 4 years it may take to treat these units, this portion of the Moose Creek Road would be closed to wheeled motorized use. Since these units involve sapling thinning, it is likely that treatments would not take place during the winter unless there are low snow accumulations.

If fuels treatments do not occur in the winter season within units T1, T2, T3, T4, 4K, 4L, Y1, Y2, Y3, HH, and BB the proposed closure with a berm on Moran Creek Road would be implemented (see Table 2-12 below) before treatment occurs within these units. Some of these units involve sapling thinning and thus it is likely that treatments would not take place during the winter.

The following table displays those units requiring the use of currently closed or temporary roads on NFS lands:

Table 2-10. Closed/Temporary Roads Needed for Alternative 4.

Unit	Access Needs	Miles	Subunit
B	Access via currently NFS closed and temporary road (old template exists)	1.7	Lower Whale
D	Access via new NFS temporary road	0.3	Lower Whale
S1, S2, S3, S4, 4G, 4H, 4I, 4J	Access via currently NFS closed road	2.2	Red Meadow Moose
T1, T2, T3, T4	Access via currently NFS closed road	Same as above	Hay Creek
4K, 4L	Access via currently NFS closed road	Same as above	Hay Creek
Y1, Y2, Y3	Access via currently NFS closed road	0.5	Hay Creek
HH	Access via currently NFS closed road	0.3	Hay Creek
BB	Access via currently NFS closed road	0.3	Hay Creek
TOTAL		**5.3**	

All temporary roads would be rehabilitated after use. Snow roads (constructed on top of snow pack or frozen ground) may be used in some mechanized units if they are treated in the winter season.

There are some units where access from private lands and/or use of private roads is the only feasible option for treatment of the units. These include all or portions of units Q, P, R, EE, FF, and 4R. If these units are included in the decision, permission from landowners would be necessary and would be pursued during the implementation phase. Still other units have the option of access through private lands, but it would not be necessary in order to treat the unit. Access through private lands may also be sought for these units during the implementation phase.

There are segments of the existing road system which need improvements in the road surface/stream drainage systems to meet current Montana State Best Management Practices and INFISH standards. The work activities could include some additional cross-drains culverts, drive thru dips, flappers, filter windrows, sediment traps, etc. In Alternative 3, approximately 17 miles of haul route roads (roads used to haul potential commercial products) would receive road drainage improvement work (refer to section T, project file for a spreadsheet which identifies road numbers proposed for improvement work).

Wildlife Habitat and Security

Habitat Improvement-Prescribed Burning

Nine different areas, encompassing approximately 1431 acres, have been proposed for prescribed burning (refer to Map 2-6). They include all those units within Alternative 2, plus an additional prescribed burn unit in the lower end of Hay Creek. This burn unit was added to this alternative to not only improve wildlife habitat but also to reduce more fuels in combination with the mechanical treatments in the wildland-urban interface. It is anticipated that this unit would likely be ignited by hand. The burns would be designed to be low to moderate intensity, and it is expected about one-third to a half of the total acres (475-700 acres) may actually be directly affected by fire. Prescribed burning areas are located within Moose, Red Meadow, Hay, and Moran Creeks. The remaining discussion for this habitat improvement activity is the same as described under Alternative 2.

Security Improvement

Like Alternative 2, a component of Alternative 4 is to improve security for grizzly bears by changing travel status on some of the roads and trails within two of the three grizzly bear subunits contained within the project area (Hay Creek and Red Meadow Moose).

The travel management strategy designed for this alternative is similar to Alternative 2; however, instead of proposing to close wheeled motorized travel on most of the trails within the project area it leaves one of the trails open (i.e. Hay Creek Trail) and closes off a road to wheeled motorized vehicles (i.e. Moran Creek Road).

Map 2-7. Alternative 4 Access Management.

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As mentioned in Alternative 2, total motorized access density for both Hay Creek and Red Meadow Moose grizzly bear subunits is below 19% and as such no proposals are being made to further reduce this percentage. The following table includes current and proposed changes to open motorized access and security core that would result under Alternative 4.

Table 2-11. Amendment 19 Objectives and Alternative 4.

Access Standards	Current Condition	Alternative 4
Hay Creek Grizzly Bear Subunit		
Open Motorized Access Density (OMAD)	39%	26%
Total Motorized Access Density (TMAD)	13%	13%
Security Core	41%	53%
Red Meadow Moose Grizzly Bear Subunit		
Open Motorized Access Density (OMAD)	25%	25%
Total Motorized Access Density (TMAD)	17%	17%
Security Core	52%	68%

To achieve the changes in OMAD and security core as displayed above, Table 2-8 lists those roads or trails where the travel status would be modified (also refer to Map 2-7):

Table 2-12. Access Management Activities Proposed in Alternative 4.

Road #	Miles	Existing Travel Status	Proposed Travel Status
1680 (Hay Creek spur)	0.3	Open yearlong	Open seasonally to wheeled motorized vehicles from 7/1 to 11/30
376 (Hay Creek)	4.0	Open yearlong	Open seasonally to wheeled motorized vehicles from 7/1 to 11/30
5221 (Hay Creek spur)	0.3	Open yearlong	Open seasonally to wheeled motorized vehicles from 7/1 to 11/30
5241 (Moran Creek)	4.0	Open yearlong	Closed yearlong to wheeled motorized - berm
1681 (Benchmark)	7.4	Closed yearlong - gate	Closed yearlong to wheeled motorized - berm
Total Road	**16**		
Trail #	**Miles**	**Existing Travel Status**	**Proposed Travel Status**
3 (Hay Creek)	5.6	Open to ATV and motorcycles yearlong	Open to ATV and motorcycles from 7/1 to 11/30
14 (Coal Ridge)	12.3	Open to motorcycles from 7/1 to 8/31	Closed to wheeled motorized yearlong
2 (Moran)	2.9	Open to motorcycles from 7/1 to 8/31	Closed to wheeled motorized yearlong
239 (Coal Cr/Coal Ridge)	2.8	Open to ATV and motorcycles yearlong	Closed to wheeled motorized yearlong
Total Trail	**23.6**		

As a summary, approximately 4.6 miles of yearlong open roads would be seasonally closed to wheeled motorized vehicles; the main road involved is the Hay Creek Road. This road (and its spurs) would become available to wheeled motorized vehicles from July 1 to November 30. As mentioned prior to this table, the Moran Creek Road, currently a yearlong open road, would also be bermed. Adequate vehicle turnaround areas would be made at these closure areas.

Additionally, about 18 miles of trail would be closed yearlong to wheeled motorized vehicles (i.e. motorcycles or ATVs). Hay Creek Trail #3 would still be available to ATVs and motorcycles but only on a seasonal basis. The restriction would follow the same restriction being proposed on the Hay Creek Road #376

Proposed new berms on roads which also serve as snowmobile routes (e.g. Benchmark Road and Moran Creek Road) would be made negotiable for snowmobiles.

State Access

The state road access discussion in Alternative 2 is the same for Alternative 4.

IV. DESIGN CRITERIA (FEATURES COMMON TO ALL ACTION ALTERNATIVES)

Many concerns expressed in the scoping period are best addressed through development of design features that are common to all action alternatives (Alternatives 2 through 4) and that specifically avoid or reduce potential environmental impacts. These design features are an integral part of each action alternative, and therefore are considered requirements should an action alternative be selected. They are listed here to avoid repeating them in each alternative description.

Appendix A to this EA includes a complete list of the project-specific best management practices (BMP) applicable to all or a specific unit. Any unit specific or treatment specific BMP will be linked to the applicable implementation area.

Duration of Activities (Includes Season Requirements)

Prescribed burning may begin as early as the fall of 2007. Mechanized fuel reduction treatments could possibly begin in the summer of 2008. Other project activities (such as BMPs, culvert removals, and road management actions) may also begin in the summer of 2008.

The specific timing of the burns would be based on prescription parameters for weather and fuel moistures determined in a prescribed fire burn plan. Suitable burning conditions typically occur in the spring, summer or fall seasons; however it may be several years before the right conditions occur. Burning parameters would be designed to allow fire to accomplish the resource objectives of reducing the encroaching conifer trees, removing dead and dying surface fuels, and rejuvenating shrub/grass/forb dominated openings. It is anticipated most burning would likely be

ignited by helicopter and could take several days to complete. Some units may also be ignited by hand.

The mechanized fuels reduction treatments with a commercial component may require up to 3 years for completion. Treatments with a non-commercial component (i.e. sapling thinning) may require up to 4 seasons to complete.

Most project activities would not be allowed to occur from April 1 through June 30, to minimize effects to grizzly bears during the spring use period. Exceptions to this include prescribed burning of units 1-9, planting and noxious weed spraying activities. Road treatments (BMPs and culvert removals/replacements), burning of slash or landing piles, and thinning of saplings may occur during the spring period if they are located along open roads.

Tables 2-1, 2-5 and 2-9 under the alternative descriptions earlier in this chapter include a column which describes additional seasonal restrictions by unit. Most units do not have any restrictions on treatment activities other than the April 1 to June 30 spring season; however, there are few that require certain seasons of operations due to soils, grizzly bear security core, a known eagle nest near Unit M, or rental cabin reasons at Schnaus Cabin. Additionally, another seasonal requirement not displayed in the table includes the following:

> If Hay Creek Road or Moran Creek Road is plowed to provide winter access to mechanical fuels treatment units, then use of the road by contractors would be restricted on weekends and federal holidays from December 1 to March 31. As a result, snowmobile use would only be permitted on those roads during the weekends during that same time period. If other designated snowmobile routes are used for fuels treatments during the winter, snowmobiling may be prohibited during logging activities.

Stream channel work associated with culvert removal and upsizing would be performed between July 15 and August 30 to minimize impact on fish spawning.

Soil Productivity

All mechanized units that remove commercial products would be logged using designated skid trails. Equipment would occasionally leave the trails to access trees or accomplish other activities.

Logging may occur in either winter or summer (subject to applicable timing restrictions required for other resources, such as grizzly bear) with the exception of Unit BB. In all seasons, skid trails must be spaced on average 75 to 100 feet apart. The goal is to occupy less than 15 percent of the treatment area, which includes soil disturbance from skid trails, temporary roads and landings associated with either past activities or proposed activities.

All existing roads and skid trails would be reused to the extent feasible unless doing so would adversely affect soil, water or other resources. If roads or trails cannot be reused, their extent must be considered when laying out additional skid trails.

To the extent possible, logging in summer would occur when the soils are drier than field capacity as determined by the hand feel method, which is described in the soils section (O) of the project file.

Logging in winter must occur when there is enough settled snow and/or frozen ground to protect the soil from detrimental disturbance. If equipment does not mix soil into the snow or cause muddy water to bleed into the snow then conditions are right for winter logging.

All mechanical fuel reduction would be accomplished with excavators, chippers or other equipment that is light on the ground. All equipment would, to the extent feasible, remain on skid trails.

Fuel reduction/slash disposal would occur after the material to be piled has sat for one wet season in B, C, Q, R, FF, HH and 4A unless the material is chipped or underburned. These units are proposed for patch seed tree treatment and would have a high amount of material removed.

Sale administrators will monitor soil moisture conditions prior to allowing equipment to begin operations in summer and monitor snow and temperature conditions prior to winter logging. This monitoring must be documented in the Timber Sale Daily Report.

All prescribed burning units would be ignited when burning conditions would maintain soil erosion and nutrient levels within the range of historic burns.

All treatment areas currently have less than 15% detrimental soil disturbance. If monitoring after project implementation indicates that detrimental soil disturbances for a given treatment unit exceed or equal 15 percent, then all or a portion of the following actions will be used to begin the restoration of soil quality. Restoration would occur on sites with a high amount of detrimentally disturbed ground such as designated skid trails and landings.

- Scarify heavily used skid trails and landings with the teeth on an excavator bucket to a depth of 2 to 4 inches.

- Plant Montana-certified weed free native grasses on the scarified soils as recommended by the Forest Botanist.

- Plant native shrubs/trees where needed to augment natural vegetation and scarification.
- The site condition will be used to determine which of the above mitigations would be used. These mitigations do not result in instant restoration of detrimentally disturbed soils; rather they begin the restoration process.

All temporary roads constructed for this project that utilize existing road templates will be reclaimed by removing any installed culverts or temporary bridges, by placing large woody material on the template (where that material is available), and by seeding exposed soils with the native plant mix as specified by the Forest Botanist. In addition, all newly constructed temporary roads will be reclaimed after use, as soon as logistically practicable. The reclaiming of new

temporary roads will include re-contouring the entire road template to natural ground contour, and to the extent feasible, placing the top soil back on the soil surface.

Access/Road

Public access would remain restricted on closed roads on NFS lands during administrative use. Erosion control work (drain dips, etc) and road maintenance work, such as road grading, would also occur as needed.

Skid trails/temporary roads within treatment units that are at risk of off-highway vehicle (OHV) use would be closed in a manner that discourages future OHV use (e.g. slash and down-woody material scattered on trail surfaces or recontoured, if necessary). Project implementation personnel would consult with District recreation specialists to identify at-risk units and aid in development of mitigation measures. Adequate signing, barriers, and monitoring would be a part of this effort. Any reports of illegal OHV use within the project area would be investigated by Forest Service law enforcement personnel, and appropriate actions taken to prevent such use.

To protect the safety of the public using the area, contractors would be required to post signs warning the public of activities and traffic associated with the treatments.

Grading may be needed in order to maintain road drainage during project activities. Dust abatement using non-petroleum based products on open roads and blading would occur as needed on the main haul routes.

Old Growth

The intention of the Red Whale project is to avoid treatment in old growth forest, as this forest type is limited in the area due to past fire history and harvest activities. The analysis conducted in this EA indicates that old growth forest is likely to exist within a portion of Unit J and within prescribed burn Units 4 and 5. These areas would not be treated and would be excluded in the decision.

Snags, Downed Woody Material, Hardwood Tree Species

All large, old (>=18” dbh, >150 years) Douglas-fir and western larch trees, live or dead, would be left standing within the treatment units, unless they create a safety hazard. If felled for safety reasons these trees would be left on site. A maximum of 12 tons per acre of existing downed woody debris would be left on the site. All larger (>12” diameter), soft (partially rotted) downed wood would be left on site as well, unless removal is necessary for operational reasons or to reduce fuels to an acceptable level. Hardwood trees would not be targeted for removal and left intact to the extent possible, considering operational feasibility.

Noxious Weeds

Specific actions related to noxious weed concerns include the following:

- All off road logging and construction equipment use associated with this project and temporary road construction would be power scrubbed or steam cleaned on the undercarriage and chassis before transport to the project area. This cleaning shall remove all soil, plant parts, seeds, vegetative matter, or other debris that could contain or hold seeds. All subsequent move-ins of equipment to the project area shall be treated in the same manner as the initial move in. "Off-road equipment" includes all logging and construction machinery, except for log trucks, chip vans, service vehicles, water trucks, pickup trucks, cars, and similar vehicles.
- Landings, temporary roads, and roadsides with soil disturbance would be seeded with a Montana-certified weed-free grass ground cover as soon as practical after disturbance, to provide for site protection until native species are established (seed mix would be specified by the Forest Botanist).

If noxious weeds are found on NFS roads used for hauling of commercial products, spraying of these weeds would occur along the road prisms generally at least 2 times – once before hauling and once after hauling. Although the intent is to spray pre- and post-hauling, there may be some exceptions to this due to timing of logging and appropriate season of weed application (spraying typically occurs during the spring or fall usually between June and early July or during September).

Other roads that would be bermed that are unassociated with unit treatment activities, (i.e. not used for hauling) would be surveyed and evaluated for possible weed treatments before roads are bermed. Treatment of these roads would be evaluated and prioritized with the strategy outlined in the Flathead National Forest Noxious and Invasive Weed Control Decision Notice (May 2001).

Visuals

If piling and burning of slash is the chosen method of disposal of fuels, additional efforts would be made to dispose of any piles clearly visible from homes and open roads. If pile remnants still occur after the first treatment and continue to have visual impacts, further efforts would be made to dispose of this material. These efforts could include re-piling and then burning, or chipping/shredding, or by hauling the material away. Generally, slash/woody debris would be disposed of within two years following treatment.

Air Quality

All prescribed burning would be in compliance with the Smoke Management Plan prepared by the Montana Air Quality Bureau and administered by the Montana State Airshed Group (Forest Plan, page II-64) through a Memorandum of Agreement. The Environmental Protection Agency (EPA) has approved these plans as meeting the requirements of the Clean Air Act as amended in

1987. Burning plans would be developed where prescribed burning is the method selected for slash hazard reduction.

Water, Riparian Areas and Fish

No mechanical equipment used in the fuel treatments would operate within riparian areas and no tree removal would occur within a minimum of 50 feet of any stream channel or edge of a wetland. All treatments would be in compliance with Montana Stream Management Zone (SMZ) laws and Inland Native Fish Strategy (INFISH) direction. This includes retaining INFISH buffers along stream channels as follows:

Fish-Bearing Streams	300 ft
Permanently Flowing, Non-Fish Bearing Streams	150 ft
Seasonally Flowing or Intermittent Streams	50 ft
Seasonally Flowing or Intermittent Streams (Priority Watersheds: Whale & Red Meadow)	100 ft
Ponds, Lakes, or Wetlands > 1 Acre	150 ft
Ponds, Lakes, or Wetlands < 1 Acre	100 ft
Landslide Prone Areas	100 ft

No fire ignition for prescribed burns would occur within INFISH buffers to minimize vegetation loss and sediment delivery to streams.

All timber sale contracts would require dust abatement measures and log haul restriction during spring break up to minimize the delivery of sediment to streams.

Best Management Practices would be employed during all applicable project activities. These would include the stabilization of all reconstructed stream channels with straw mats, the planting of native grasses and shrubs, and other measures as necessary. Refer to Appendix A for a detailed discussion of BMPs and Soil and Water Conservation Guidelines.

Culverts would be removed or upsized on several bermed roads within the project area to improve aquatic conditions. Stream channel work associated with culvert removal and upsizing would be performed between July 15 and August 30 to minimize impact on fish spawning. Mitigation measures as described in the Road Maintenance Likely to Adversely Affect Biological Assessment for Bull Trout would be followed. Table 2-13 displays the culverts to be removed or up-sized in Alternatives 2, 3 and 4.

Table 2-13. Culvert Removal or Up-sizing by Alternative.

	Alternative 2 and 4		Alternative 3	
Road #	**Culverts Up-sized**	**Culverts Removed**	**Culverts Up-sized**	**Culverts Removed**
9839	0	7 [1]	0	7 [1]
1675		1		1
5241	1		1	

	Alternative 2 and 4		Alternative 3	
1671	2		2	
1662		5		5
1677	2		2	
1681	3		3	12
Total	**8**	**13**	**8**	**25**

[1] At six stream crossings

Wildlife and Threatened, Endangered and Sensitive Species

If a den, nest site, or other important habitat feature for any sensitive, threatened, or endangered species is discovered within or in close proximity to any treatment unit, project activities would be suspended until the district wildlife biologist approves a resumption of activities.

Documentation of a discussion between the contractor/purchaser and a Forest Service representative (e.g. Sale Administrator) regarding the requirements/responsibilities relative to the Northern Continental Divide Ecosystem Food Storage Order shall be provided to the District Wildlife Biologist.

Any sightings or sign of grizzly bear use of the project area would be documented and a copy of this documentation would be provided to the District Wildlife biologist.

If unknown populations of sensitive plants were found during project implementation, they would be evaluated and protected as necessary to retain population viability.

Hunting, transporting of hunters, and transporting of game would be prohibited by timber, road building, or other contract workers while working on or off roads closed to motorized vehicle use by the general public.

Personal use firewood gathering would not be allowed by contractors or other workers on newly constructed roads or any other roads not open to motorized use by the general public.

All newly constructed (temporary) roads would be closed by sign or gate to public motorized use during and after road building and other activities. All existing roads currently closed to public motorized use would remain closed during implementation of all proposed activities.

Heritage

If previously unknown heritage resources are encountered during implementation of the project, activities at the site would be halted and the forest archaeologist would be notified immediately. Activities would not resume until adequate protective measures are developed and specified in the field.

Fuel reduction treatments would occur around the known heritage sites in Unit BB. This would include thinning of the dense tree cover around the historic structures to protect them against

possible loss in a future fire. Treatment would avoid direct disturbance of the structures, which may involve directional felling or hand thinning/removal of trees that are very close to the structures.

Monitoring

All areas scheduled for treatment would be monitored before treatment, during implementation, and after treatment to assess the effectiveness of resource design features, ensure implementation activities are conducted according to specifications, and determine whether treatment objectives were met. Additional specific monitoring associated with project activities includes the following:

- In all treated areas and other disturbed ground (such as constructed temporary roads and log landings) and along all system roads used to transport forest products, annual surveys would be conducted for three years following sale activities to identify any invasion of noxious weeds. Should weeds be discovered, the site would be evaluated for treatments and prioritized with the strategy outlined in the Flathead National Forest Noxious and Invasive Weed Control Decision Notice (May 2001).
- Monitor off-road vehicle use and the effectiveness of measures that are implemented to discourage motorized use within the treatment areas at high risk to OHV use.
- Evaluate post-treatment forest conditions (tree density, species, soil condition, down woody debris, etc.) within 3 years following treatments in all units.
- Monitor establishment and survival of conifer or shrub seedlings in areas where planting occurs or natural regeneration is expected.
- Monitor quality of forage vegetation in wildlife habitat improvement units.
- Winter monitoring of snowshoe hare response to thinning design in unit T4 would occur.
- Culvert removal sites would be monitored the second season following removal to insure the prescribed erosion control has been effective and no addition work (e.g grass seeding) is necessary.
- Units BB, H, K, L, O, CC, DD and GG would be monitored to see if the proposed activities met the soil quality standards. These units are the most likely to be close to the exceeding the soil quality standards. In addition, if the monitoring indicates soil quality standards are exceeded, then additional units would be inspected. If the proposed activities cause 15 percent or more detrimental soil disturbance, then restoration activities would occur to move the units back towards improved condition (see design criteria).

V. ALTERNATIVES CONSIDERED BUT NOT GIVEN DETAILED STUDY

During the review of internal and public issues and development of alternatives, the interdisciplinary team considered one additional alternative, which was subsequently eliminated from detailed study. This alternative is briefly presented here, along with the rationale for eliminating it from detailed study.

Alternative 5: There is a Need to Log the Prescribed Burn Units Prior to Igniting Them with Fire.

Several comments were received requesting that we consider logging of some of the larger Douglas-fir within the proposed prescribed burn units before burning. Reasons stated included the desire to utilize some of the timber and biomass that is currently dead and dying or would be killed by the burn, and thus offset some of the costs; provide better burn results by leaving slash (tree tops) distributed across the units; reduce the probability of escaped burn by pre-treating the sites; and remove some of the dead/dying trees infested with or high risk to Douglas-fir beetle, which would not only salvage current and potential mortality, but reduce Douglas-fir beetle population increase and spread.

The interdisciplinary team evaluated this issue and the possibility of implementing it, and determined that it was not reasonable or feasible to carry forward into more detailed analysis. The following discussion summarizes the factors that led to this finding.

Burn Units 1, 2, 3, 7 and 8 are dominated by relatively young trees (mostly <100 years old). Though some of them contain small concentrations of larger overstory Douglas-fir trees, it is not likely enough to support an economically viable helicopter logging operation. In addition, all of burn Units 1, 2 and 3, and nearly all of Unit 8 are within the Thompson-Seton or Coal Ridge Inventoried Roadless Area (IRA). Current Forest Service policies preclude timber harvest in IRAs unless the trees to be removed are small diameter and are needed to address one of the following purposes:

> To improve habitat for listed or proposed threatened and endangered species, or for sensitive species;
>
> To maintain or restore the desirable characteristics of ecosystem composition and structure, for example, to reduce the risk of uncharacteristic wildfire effects;
>
> The cutting, sale, or removal of timber is incidental to the implementation of a management activity and not otherwise prohibited under the land and resource management plan;
>
> The cutting, sale, or removal of timber is needed and appropriate for personal or administrative use;
>
> The harvest is in a portion of an inventoried roadless area where construction of a classified road and subsequent timber harvest have previously taken place, and the roadless area characteristics have been substantially altered by those activities.

Logging within these units does not appear to meet any of these conditions.

Units 7 and 9 are not within IRAs, however they are in Management Areas 3 and 12 respectively. Both MAs are unsuitable for timber management, with MA 3 including lands that are more suited for other amenity values, and MA 12 including riparian areas. Though timber

harvest is not excluded from these MAs, they are only allowed when the resource values associated with the designation are protected and enhanced.

Burn Units 4, 5 and 6 are probably the only units that contain adequate numbers of older, larger trees that might support a helicopter logging operation. However, the upper halves of Units 4, 5 and 6 are within an Inventoried Roadless Area – 100 acres out of the total 250 acres within these units. Because conditions for harvesting within roadless areas are not met by this project, this limits the area available for timber harvest to about 150 acres. These 150 acres are within MA 11, also known as the Trail Creek Grizzly Bear Management Area. Maintaining and enhancing grizzly bear habitat is the primary goal in this MA. Lands are classified as unsuitable for timber management, though harvest may occur to achieve desired grizzly bear habitat values. It is questionable whether removal of the quantity of larger trees necessary to feasibly helicopter log would contribute towards enhancing habitat values for the bear or other wildlife species. Large trees, both alive, dead and down, enhance forest structural diversity, and provide valuable wildlife feeding and nesting habitat, as well as contribute to long-term soil productivity.

Because of the relatively small amount of area that is thus potentially available for treatment, and the relatively few trees that would be available for removal, there would be little noticeable impact on the Douglas-fir beetle population levels with logging. There is no way to accurately identify just which trees would be injured or killed by the fire, so no way to selectively remove these particular trees. It is expected that some Douglas-fir beetle habitat would be created by the prescribed burn, though large increases in population are not anticipated (refer to analysis in the Forest Vegetation section of the environmental assessment).

V. COMPARISON OF ALTERNATIVES

Comparison of Features in the Alternatives

The following table summarizes and compares some of each of the alternative's features.

Table 2-14. Comparison of Features of the Alternatives.

Proposed Activities	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Mechanical Fuels Reduction	0	2078 acres	927 acres	3583 acres
Estimated Acres of thinning/patch seedtree with a commercial product =	0	1454	833	2074
Estimated Acres of sapling tree thinning =	0	624	94	1509
Prescribed Burning	0	1363 acres (anticipated burn on ~650 acres)	1192 acres (anticipated burn on ~560 acres)	1431 acres (anticipated burn on ~700 acres)
New Road Easement to Access State Land	0	0.3 miles	0.3 miles	0.3 miles
Year-round Trail Closures to Wheeled Motorized Vehicles	0	24 miles	25 miles	18 miles
Seasonal Trail Closures to Wheeled Motorized Vehicles	0	0 miles	0 miles	6 miles
Current Open Road Closed Seasonally to Wheeled Motorized Vehicles	0	5 miles	0 miles	5 miles
Current Open Road Closed Yearlong to Wheeled Motorized Vehicles	0	0 miles	13 miles	4 miles
Open Motorized Access by subunit				
Hay Creek	39%	24%	13%	26%
Red Meadow Moose	25%	25%	19%	25%
Total Motorized Access				
Hay Creek	13%	13%	13%	13%
Red Meadow Moose	17%	17%	17%	17%
Security Core				
Hay Creek	41%	55%	68%	53%
Red Meadow Moose	52%	68%	72%	68%

Table 2-15. Comparison of Alternatives by Significant Issues and Issue Indicators.

Issue Driving Alternative	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
1. Grizzly bear security is not adequately addressed in the proposed action because Amendment 19 standards are not being fully met (A19 standards are: Security Core (SC) = **68%**, Total Motorized Access Density (TMAD) = **19%**, and Open Motorized Access Density (OMAD) = **19%**). **Indicators:**				
% increase in SC over existing condition ▪ Hay Subunit ▪ Red Meadow Moose Subunit	No change from existing	15% 0	26% 6%	13% 0
% decrease in TMAD over existing condition ▪ Hay Subunit ▪ Red Meadow Moose Subunit	No change from existing	0 0	0 0	0 0
% decrease in OMAD over existing condition ▪ Hay Subunit ▪ Red Meadow Moose Subunit	No change from existing	14% 16%	27% 20%	12% 16%
Degree that alternative meets A19 standards				
▪ Lower Whale Subunit	No effect – meets A19 standards as amended through Robert-Wedge Post-Fire Project Record of Decision			
▪ Hay Subunit	Exceeds standards for TMAD; Does not fully meet SC or OMAD	Exceeds standards for TMAD; Does not fully meet SC or OMAD	Exceeds standards for TMAD and OMAD; Fully meets SC	Exceeds standards for TMAD; Does not fully meet SC or OMAD
▪ Red Meadow Moose Subunit	Exceeds standards for TMAD; Does not fully meet SC or OMAD	Exceeds standards for TMAD; Fully meets SC; Does not fully meet OMAD	Exceeds standards for TMAD and SC; Fully meets OMAD	Exceeds standards for TMAD; Fully meets SC; Does not fully meet OMAD

Issue Driving Alternative	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Maintenance of habitat security during project implementation	No effect	No net loss of road related habitat security with implementation of temporary road closures during project implementation.		
Potential for displacement during implementation, due to duration of activities and location	No effect	Hay Creek and Red Meadow Moose subunits: some displacement but minor effect Lower Whale subunit: potential for displacement and greater effect on bear due to prolonged implementation/cumulative activities (over the last 4 years)		
# of units that would likely be utilized by bear based on unit's distance from open roads	0	26 units out of 42 total units:	14 units out of 22 total units:	35 units out of 61 total units:
		Net gain in habitat use potential through creating more open stand conditions		
2. Lynx habitat should not be impacted by the fuels reduction treatments. **Indicators:**				
▪ **Acres of existing suitable (used for foraging or denning) and unsuitable (not used as foraging/denning) lynx habitat that would be affected by treatments**	0	1099 acres suitable treated 1329 acres unsuitable treated	No acres of suitable habitat treated	1614 acres suitable treated 2342 acres unsuitable treated
▪ **Proportion of total acres of lynx habitat (whether suitable or unsuitable) affected by treatments (numbers indicate the range among all 5 Lynx Analysis Units)**	0	0.2 to 10.5%	0.1 to 6.2%	0.3 to 12.8%

Issue Driving Alternative	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
3. Thinning could break up hiding cover and travel corridors for wildlife species. **Indicators:** ▪ **Number of units adjacent to any open roads (private and state included) and potential effects**	0	19 Second highest risk of mortality due to reduced cover along open roads.	12 Retention of un-thinned buffer strips along roads - substantially reduced risk of mortality.	24 Highest risk of mortality due to reduced cover along open roads.
4. There is a need to enlarge treatment areas and improve connectivity of treated areas to be more effective in severe burning conditions. **Indicators:** ▪ **Acres of wildland-urban interface treated**	0	2078	927	3651

Table 2-16. Comparison of Alternatives by Their Response to Resources.

Direct/Indirect Effects Indicators by Resource	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Forest Vegetation ▪ **Acres treated within each unit group (stand type):** **Group 1 (Dense mature LP) =**	0	274	224	323
Group 2 (70-90 yr mix spp) =	0	734	259	1305
Group 3 (Mix age/spp) =	0	128	44	128
Group 4 (Sapling – past harvest areas) =	0	574	354	897
Group 5 (Very Dense sapling, Red Bench stands) =	0	368	46	930
Group 6 (multi age/species, prescribed burns) =	0	650	560	700
▪ **Acres treated of moderate to high hazard to Douglas-fir beetle**	0	250 acs would be prescribed burned (Units 4, 5, 6), with resulting potential DFB increase	78 acs would be prescribed burned (Unit 6), with resulting potential DFB increase	250 acs would be prescribed burned (Units 4, 5, 6), with resulting potential DFB increase
▪ **Acres old growth forest affected**	0	186 acres possible OG affected (15 acres thinning, 171 acres prescribed burn)	No acres of old growth affected	Same as Alt 2
Fire and Fuels **Effects indicators at the 97th percentile weather inputs:** Numbers indicate the range of values among Stand Groups 1 through 6 – **Rate of spread (chains/hr)**	2.7 to 46.9	1.9 to 3.6	Same as Alt 2	Same as Alt 2
– **Flame Length (feet)**	3.2 to 39.8	1.1 to 1.5	Same as Alt 2	Same as Alt 2
– **Fire type**	Surface, passive and active crown	Surface	Same as Alt 2	Same as Alt 2
– **Torching index (MPH)**	0 to 12.3	75.1 to 307.8	Same as Alt 2	Same as Alt 2
– **Crowning index (MPH)**	11.4 to 29.2	15.7 to 58.8	Same as Alt 2	Same as Alt 2
Acres of WUI treated	0	2078	927	3651
	Does not meet purpose and need	Meets purpose & need – second most effective	Meets purpose and need – least effective	Meets purpose and need – most effective

Direct/Indirect Effects Indicators by Resource	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Noxious weeds **Level of risk of noxious weed establishment and spread**	No additional risk above current level	Some risk – second highest due to number of acres treated	Some risk – lowest of action alts	Some risk – highest of action alternatives due to acres treated
Threatened, Endangered and Sensitive Plants	No effect	No Known Occurrences within treatment units		
Wildlife **Gray Wolf (endangered):** ▪ **Effects on ungulate habitat** ▪ **Changes in habitat security**	No effect No effect	No adverse effect on wolf. Improved ungulate foraging in treatment units is beneficial to wolves (Alt 4 most acres treated; Alt 3 least acres treated) Improved wolf habitat security due to road management actions (Alt 3 provides greatest security; Alt 2 and 4 less additional security but improved over existing condition)		
Bald Eagle (endangered)	No effect	No adverse effect on Bald Eagle. No treatments within nest site area. Portion of Unit M in Primary Use Area (in all Alternatives). Timing restrictions during implementation will minimize disturbance.		
Sensitive Wildlife species: ▪ **Black-backed woodpecker – acres of primary habitat created (prescribed burning)**	No effect	Second most beneficial	Third most beneficial	Most beneficial due to highest acres of prescribed burning
▪ **Fisher – acres of low to mid elevation stream-adjacent habitat affected**	No effect	Units J, K and P affect stream-adjacent habitat. Some level of interruption to habitat connectivity, but small effect due to leaving of untreated buffers along all streams. Least effect under Alt. 3, due to reduced treatment acres. Most effect under Alt. 2 and 4.		
▪ **Northern Goshawk – acres of potential goshawk nesting habitat affected**	No effect	No detrimental effect on nesting habitat. Treatments would retain habitat potential.		
Hydrology Numbers indicate range of values across individual watersheds:				
▪ **Annual water yield increase due to proposed actions**	No effect	0 to 3.1%	0 to 1.7%	0 to 3%

Direct/Indirect Effects Indicators by Resource	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
▪ **1st year sediment yield increase**	No effect	0 to 216.4 tons	0 to 267.1 tons	0 to 219.6 tons
▪ **Nutrient yield increase**	No effect	May be slight short term increase. No effects once mixed into the waters of the North Fork Flathead River	Low to very low increase. No effects once mixed into the waters of the North Fork Flathead River	Same as Alt 2
Fisheries **Effects of hydrological changes (e.g. sediment and nutrient yield increase) on fisheries by activity:**				
▪ **Mechanized treatments, prescribed burning, road access mgmt and BMPs**	No effect	Minimal effect	Minimal effect	Minimal effect
▪ **Culvert removal, replacement**	No short term effect; potential long term impacts if culverts fail	Moderate potential to impact short term but long term beneficial effects	Greatest potential to impact fisheries in short term, but long term beneficial effects	Same as Alt 2
Soils		All alternatives meet Regional soil quality standards, through implementation of design criteria to protect soils		
▪ **Total estimated acres of cumulative detrimental soil disturbance**	0	196 to 266	99 to 138	355 to 503
▪ **Productivity**	No effect	Second highest probability to impact productivity due to acres treated	Lowest probability to impact productivity due to lowest acres treated	Highest probability to impact productivity due to highest acres treated
▪ **Erosion**	No effect	Minimal probability of erosion in all alternatives, due to site conditions and adherence to Regional soil standards and guidelines.		

Direct/Indirect Effects Indicators by Resource	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Recreation ▪ **Impacts due to temporary access mitigation measures (if these project activities do not occur during the winter)**	No impact	Impact to reservations of Hornet Lookout due to closure of portion of road leading to trailhead (about 2 miles) during implementation of Units B and D. Impact to users of Moose Creek Trail with temporary closure of portion of road (1.2 miles) during implementation of Units S and T. Most impact occurs with Alternatives 2 and 4; least impact under Alternative 3, due to reduced acres of treatment in these units.		
▪ **Developed sites**	No change	Some noise/dust at Schnaus Cabin with implementation of Unit M (included in all alternatives). Timing restrictions would minimize disturbance.		
▪ **Dispersed use, campgrounds and non-motorized trails**	No change	Seasonal restrictions on Hay Creek road would limit motorized dispersed use in this area during spring period.	Year-round road closures would substantially increase distances trail users must hike to access original trailheads, and considerably limit access options to Red Meadow Lake campground, many trailheads and dispersed sites.	Year-round road closure of Moran Creek would increase distances trail users must hike to access original trailhead (about 4 miles). Seasonal restrictions on Hay Creek road would limit motorized dispersed use during the spring period.
▪ **Motorized summer recreation - roads**	No change	Least impact – seasonal closure (spring period) on 5 miles of road currently open year-round. No additional year round closures	Greatest impact – year-round closure of 13 miles of currently open road	Second greatest impact – restricts access seasonally on 6 miles of currently year-round open road and restricts access year-round on 4 miles of currently open road.
▪ **Motorized summer recreation - trails**	No change	Second greatest impact – closure of 24 miles of currently motorized trails	Greatest impact – closure of 25 miles of currently motorized trails	Least impact – closure of 18 miles of currently motorized trails. Seasonal restriction on additional 6 miles.

Direct/Indirect Effects Indicators by Resource	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
▪ **Winter motorized use**	No change	Some increased restriction on snowmobile use of Hay Creek road due to seasonal closure - restricted to Dec. 1 thru Mar 31.	Some increased restriction on snowmobile use of Hay Creek and Moran Creek roads due to new year-round road closures. Use limited to Dec. 1 thru Mar 31.	Some increased restriction on snowmobile use of Hay Creek and Moran Creek roads due to new seasonal or year-round road closures. Use limited to Dec. 1 thru Mar 31.
Special Designations: **Inventory Roadless Area (IRA) - Acres affected in IRA**	0	857 (Rx Burn)	783 (Rx Burn)	857 (Rx Burn)
Wild & Scenic River	No change	No detrimental effect to recreational users of the river. Units in Wild & Scenic river corridor are not visible from the river.		
Economics **Estimated Volume** ▪ **Sawlog (CCF)** ▪ **Nonsaw (CCF)** ▪ **Total MBF**	 0 0 0	 5643 1663 3653	 2783 1106 1106	 7935 1663 1663
Est. total revenue (1000s of $)	0	$216,867	$102,583	$406,452
Financial efficiency ▪ **PNV (commercial timber sale only)** ▪ **PNV (all activities)**	 0 0	 -$8050 -$693,626	 -$9142 -$372,348	 $73,390 -$1,242,075
Total employment	0	97.1	48.4	150.5
Total labor income (1000s of $)	0	$2386	$1194	$3625