



# SUMMARY

## Moose Post-Fire Project FEIS Findings

### I. INTRODUCTION

In August 2001, a lightning storm started the Moose Fire near the old Forks Lookout site located on the Glacier View Ranger District, Flathead National Forest. This area is located just above Big Creek Road 316, which is about 10 miles north of Columbia Falls, Montana. By October, the fire had burned over 71,000 acres of land within the Flathead National Forest, the Coal Creek State Forest, private lands, and Glacier National Park. This included about 35,750 acres of lands administered by the Flathead National Forest within the Big Creek and Coal Creek drainages.

While the fire still burned, rehabilitation began. At the same time, a review took place by a team of resource specialists to see what new conditions the fire created on national forest system lands. The *Wildfires of 2001 Post Fire Assessment* contains reports describing their findings. It also includes recommendations for post-fire opportunities beyond the initial rehabilitation. These recommendations triggered a planning effort, resulting in the *Moose Post-Fire Project* discussed in the draft environmental impact statement, as well as numerous other rehabilitation and recovery projects (*Wildfires of 2001 Post Fire Assessment, 2001*). The project area includes all national forest system lands affected by the fire plus the unburned portion of the Big Creek drainage, for approximately 68,000 acres.

This summary describes the project proposals presented in the *Final Environmental Impact Statement (FEIS)*.

### Changes between the DEIS and FEIS

Details of all the action alternatives changed in response to further field verification, monitoring, additional information, and public comment. They include the following:

As a result of field verification, monitoring, and additional information:

- Unit boundaries and acres were refined to better reflect on-the-ground conditions (also, some units were dropped). This included verification of logging systems and access to facilitate logging (no temporary roads are needed for any units).
- Treatment prescriptions and stand conditions were clarified and refined. This potential slash treatments; soil conditions and their influence on logging systems and slash treatments; residual tree components; location of streams and leave areas; unit volumes; and treatment prescriptions along open roads where snag and downed wood habitat is accessible to firewood cutters.
- Refinement of spruce and Douglas-fir bark beetle management plans, using information from 2002 beetle population surveys. This includes further details of proposed treatments and acres, especially regarding the use of pheromone treatments and Douglas-fir trap trees.
- Elimination of proposed treatments within the 300-foot riparian habitat conservation area along Big Creek or the North Fork Flathead River in the Glacier Institute and Big Creek Campground fuel reduction units.

Public comment led to the inclusion of different larch snag retention prescriptions for seven units within Alternative 3. All larch >20" DBH would be left within these units, while all other units would continue with the original prescription of leaving all larch >18" DBH. Public comment also led to the development of another alternative considered, but was subsequently eliminated from detailed study. This alternative considered altering the post-fire mortality guidelines to retain more trees.

Public comment also disclosed an oversight on our part regarding motorized use of the Elelehum Trail 194 and Deadhorse Trail 255. This resulted in closing these trails to motorized use during the grizzly bear non-denning season (generally, from March 16 to November 14).

Copies of the FEIS are available from the Flathead National Forest Supervisor's Office (1935 3<sup>rd</sup> Avenue East, Kalispell, MT 59901), and at the Hungry Horse Ranger Station (8975 Hwy 2 East, P.O. Box 190340, Hungry Horse, MT 59919). Copies can also be requested by calling (406)-758-5200, or (406)-387-3800. In addition, copies are available for review at the Flathead County Library branches in Kalispell, Whitefish, and Columbia Falls, MT. The project planning record located at the Three Forks Zone Office in Hungry Horse, Montana includes additional information and more detailed analyses of project area resources. These records are available for public review.

## II. PURPOSE AND NEED AND THE PROPOSED ACTION

The *Moose Post-Fire Project* is proposed at this time to respond to goals and objectives of the Flathead National Forest Land and Resource Plan (Forest Plan). The proposed action for this project would begin to change current resource conditions and trends towards meeting some of the desired future conditions for resources as described in the *Moose Post-Fire Assessment* summary document and the Forest Plan. Managing within the desired range of future conditions would achieve a balance on the landscape between resource values and human needs, and allow for healthy functioning of the ecosystem in the future. These desired conditions include:

- A healthy, diverse, and productive forest
- Forests that provide wood products on a sustainable basis to help support local communities
- Areas with high values (such as wildland/rural interface, old growth, and managed stands) protected by zones where risks to these values from wildfire are low.

The Moose Fire changed much of the area within the burn, not only in looks but also in effects to wildlife, fisheries, recreation, plants, and other resources. Some changes no longer meet the desired condition for the area. These differences formed the basis for the purpose of and need for taking action (also called the "purpose and need"). From there, the project planning team developed the proposal, or proposed action, for this project.

The proposed action is the initial proposal developed early in the planning process to reach the goals in the purpose and need. It starts the scoping process, where we ask the public, other agencies, and our own specialists for input. This input brings forth issues or concerns that provide alternatives to the original proposal.

The proposed action first sent to the public for review in January 2002 was changed in the draft EIS in two ways. The first change dropped all logging units directly next to Big Creek and other streams. Many people and other government agencies expressed a high level of concern about logging in sensitive streamside areas, especially considering that Big Creek is an important bull trout fishery. Also, further field review revealed that there were fewer acres in these streamside areas at high risk to spruce beetle outbreaks than our original estimates. We now feel more confident in our ability to effectively reduce the possible growth and spread of spruce beetles in these riparian areas by using pheromones and placing beetle traps. We have also added other methods of beetle control to the proposed action that do not involve salvage of trees. These methods are described in the following paragraphs.

Second, many people were concerned about logging within inventoried roadless areas – areas first identified about 25 years ago in a nationwide review process and refined in 1985 as part of the development of the Flathead Forest Plan. These lands may possess features, such as naturalness and outstanding scenery that may qualify them for eventual inclusion into the National Wilderness Preservation System. Roadless areas were included in the initial proposal due to their potential contribution to bark beetle infestation. However, further refinement of the bark beetle risk assessment indicated that some areas within proposed roadless treatment units were, in fact, low risk for beetle infestation. In response to concerns over salvage harvest on these roadless lands, all areas within inventoried roadless areas rated as low risk to bark beetle attack were dropped, leaving about 483 acres of proposed salvage areas at moderate or high-risk to bark beetles.

## Purpose Of And Need For Action

### **1. There is a need to decrease potential mortality caused by bark beetles to remaining live Douglas-fir and spruce trees within and outside of the Moose Fire area.**

An integrated beetle management approach was developed in the proposed action to address this concern. This involves removing dead trees or trees expected to die from bark beetle outbreaks, the use of pheromones, beetle traps, trap trees, and extensive monitoring. Both Douglas-fir and spruce trees killed or weakened in the fire provide the perfect place for beetles to live or breed. During outbreaks and under the right conditions, beetles can kill thousands of trees. This project would remove the infested trees and many trees at risk of beetle infestation before beetle populations can expand and kill other trees.

Monitoring of Douglas-fir and spruce beetle populations in the fire area occurred in the summer of 2002. These surveys indicated that spruce beetle-infested trees are widespread throughout the area surveyed, with relatively high levels of infestation on the sites surveyed (approximately 381 acres). Nearly all of these areas are along streams (primarily Big Creek), and we would use beetle traps to lure and capture as many spruce beetles as possible emerging from the fire-injured trees before the beetles have a chance to spread into live trees within and outside the fire area.

Douglas-fir beetles were also found to be widespread across the area surveyed (about 3700 acres), though levels of infestation (number of trees per acre attacked and the number of beetles per tree) were relatively low. Salvage of many of these trees are proposed. In addition, trap trees or baited trees would be used in some proposed salvage units. These methods involve either dropping a few live Douglas-fir trees per acre or baiting them with an attractant chemical to render them very attractive to beetles searching for new breeding sites. These trees can draw in many times the number of beetles that might normally infest a tree. These methods help focus and manipulate the beetle populations to areas where we can then remove the trees in the salvage harvest before the larvae have a chance to mature and fly out of the tree.

Use of an anti-attractant chemical would be used in areas of unique values to protect remaining live Douglas-fir trees from attack by bark beetles. These areas include the Glacier Institute site, Big Creek campground, and portions of the Wild and Scenic River corridor.

### **2. There is a need to recover merchantable wood fiber affected by the Moose Fire in a timely manner to help support local communities and contribute to the long-term yield of forest products.**

Because of the large number of trees that died in the fire, the second part of the proposed action involves removing trees for forest products. Most of the trees proposed for removal as wood products are the same trees included in the project because of beetle concerns. These products would benefit the local economy, one of the goals in the Flathead National Forest Plan.

### **3. There is a need to reduce the hazard and severity of future fires by reducing future fuel accumulations caused by the Moose Fire on specific sites adjacent to private property or administrative sites.**

The third part of the proposed action includes reducing fuels that may feed a future fire by thinning out areas of dense burned trees in the region around the Glacier Institute (Big Creek administrative site) and next to private land just west of the North Fork Road near Coal Creek. Fire-killed trees have already started falling and will continue to come down over the next 15-20 years. They can land on each other like jackstraws. If a future fire burns through such areas, fire suppression would likely fail and buildings and homes would be threatened, along with risks to human safety. By reducing the amount of dead trees and logs in these areas and spacing out remaining live trees, a future wildfire should be less intense and should remain on the ground. This would provide a greater chance of safe fire suppression before a wildfire affects these high value resources. This also agrees with the National Fire Plan objectives to protect community values at risk and brings us closer to the desired condition for these areas.

Thinning would also occur in portions of the Big Creek campground, in both burned and unburned areas. The objective here is to create areas of widely spaced trees, reducing the chance of a fire leaving the ground and reaching into the tops of the trees. It would also allow more light to reach the ground around picnic areas and campsites.

The last part of the project proposes road access management activities (seasonal and yearlong closures, road decommissioning) to meet Forest Plan requirements designed to provide secure habitat for grizzly bears. Amendment 19 (A-19) to the Forest Plan directs the Forest Service to restrict motorized access, or in some cases to *decommission* roads. A decommissioned road no longer functions as a road, because natural debris placed in the road or planted shrubs or trees make the road no longer drivable. However, some decommissioned roads will still be open to snowmobiles.

The proposed action meets the A-19 ten-year access density objectives for the two grizzly bear subunits within the project area (Werner Creek and Lower Big Creek). Proposed roadwork would:

- Reduce the number of roads open either all year or seasonally
- Reduce the number of roads closed all year with gates, berms, or natural revegetation
- Decommission roads

### III. PUBLIC INVOLVEMENT

The public involvement process was formally started on January 6, 2002, when a legal notice was published in *The Daily Inter Lake* that provided information about the initial proposal and purpose of and need for the *Moose Post-Fire Project*. A Notice of Intent to Prepare an Environmental Impact Statement was also published in the Federal Register on January 10, 2002. Also, *The Daily Inter Lake*, *Hungry Horse News*, and *Whitefish Pilot* published news articles about the proposal. At the same time, we also mailed approximately 310 letters to the public, government agencies, and other groups or individuals possibly interested in or affected by the project. We asked them to review and comment on the project. Also, we received letters and phone calls from about 20 more people wanting information on the project and wishing to be placed on our mailing list.

People had 30 days to comment during this “scoping” process, resulting in nearly 160 letters, phone calls, and e-mails. Some comments responded directly to the project itself. For example, the *Moose Post-Fire Project* was designed to respond to needs found in the aftermath of the Moose Fire. Relevant comments included such things as how the proposal may affect water quality or grizzly bear habitat; if, where, and when tree removal should occur in dead and dying trees; and so forth.

Because projects are site-specific, comments not related to this project were deemed outside the project scope, and not included in the analysis. For example, remarks related to opening more snowmobile trails, adding more roadless or wilderness area; or asking Congress to change analysis requirements may be important to some people, but this site-specific project cannot accomplish them.

The DEIS was published and available for public comment on June 26, 2002. Before this date, a letter was sent to all parties on the project mailing list announcing the expected DEIS publication date. The letter asked the parties to choose the document and format they desired. Some people asked only for the draft EIS summary, and others asked for the entire DEIS. Format choices included a hard copy or a CD-ROM. We also posted the DEIS on the Flathead National Forest website at [www.fs.fed.us/r1/flathead](http://www.fs.fed.us/r1/flathead). An e-mail address was provided for comments. Also, copies of the DEIS were placed at Flathead County library branches at Columbia Falls, Whitefish, and Kalispell. During this same public comment period, news releases were sent to the local news media for publication and broadcasting, regarding the project. The Planning Team held an evening open house in Kalispell, Montana, hosting approximately 40 people.

Meetings with various local civic groups, government agencies, and congressional staff personnel took place following the DEIS publication.

Seven free 4-hour bus tours of the project area took place in June and July, including one tour in which specialists from the planning team hosted the tour.

Following the publication of the DEIS, the public had 45 days to comment on the document. The comment period ended August 12, 2002. This effort produced over 1400 comments in letters, e-mails, postcards, form letters, and phone calls from individuals, organizations, and agencies. Because of the large number of comments, we obtained the services of a content analysis team to evaluate the comments as they related to this project. The results of the analysis gave the planning team information pertinent to the project for which more study or further explanations were needed. Chapter 4 of the FEIS contains the summary of comments received and the planning team's response to the comments.

Ongoing communication throughout the analysis process included discussions with the U.S. Fish and Wildlife Service, Montana Fish, Wildlife and Parks, the Environmental Protection Agency, and the Montana Department of Environmental Quality. This communication will continue through project implementation.

## IV. ISSUES

Analysis of public and internal input received through the scoping process resulted in the following list of issues that were key to developing alternatives:

1. Tree salvage in inventoried roadless areas does not allow natural processes to continue to occur within these areas and may therefore alter its roadless character.
2. Tree salvage in the Wild and Scenic River corridor may affect the character of the corridor.
3. Snag and downed woody material retention should be increased over that in the proposed action to insure that these wildlife habitat and ecosystem components are provided over the landscape over time.
4. Riparian habitat conservation areas (i.e. land adjacent to streams and wetlands) as described in the Native Inland Fisheries Strategy (INFISH) may not be large enough to make up for the combined effects of the Moose Fire and proposed management activities. INFISH (1995) provides direction to protect habitat and resident native fish populations.
5. The fire may have affected wildlife security, particularly during hunting seasons.
6. The proposed salvage treatments and road management may result in ineffective use of winter range areas by elk and deer.
7. More roads may need to be decommissioned and restricted to motorized travel than what the Forest Plan specifies due to increased runoff of water from burned lands and less cover and security for grizzly bears as a result of the fire.
8. A road management strategy should be considered that provides a higher level of public access than would occur when meeting Forest Plan standards for grizzly bear habitat security.
9. Big Creek Road 316 (behind Big Mountain) should be re-opened because it provides good huckleberry picking and other recreation options.
10. Decommissioning road activities may not be compatible with snowmobiling on existing snowmobile routes.

## V. ALTERNATIVES

The FEIS has five alternatives. They are a "no action" alternative, the proposed action, and three other "action" alternatives, or alternatives that address the major issues identified during the scoping process. *Alternative 3 is considered the Forest Service "Preferred" Alternative.*

### Alternative 1 (No Action):

The "no action" alternative, required by the National Environmental Policy Act (40CFR 1502.14), or NEPA, looks at what would happen in the project area if the project did not take place. Using this alternative as a base line allows the analyst to see how other alternatives compare to it. It offers future options. Alternative 1 proposes no tree removal, no fuels reduction, no other methods to influence beetle populations, and no change to existing road access.

**Alternative 2 (Proposed Action)** - Activities include: salvage of dead and dying trees on 2428 acres, including 151 acres in inventoried roadless areas and 15 acres within the Wild and Scenic River corridor; alternative beetle control treatments (non-salvage) on about 272 acres, mostly within riparian areas; fuels treatments on approximately 208 acres along private lands and Forest Service administrative sites; wheeled motorized access restrictions on 21 miles of open road; and 57 miles of road decommissioning. All stream-aligned culverts on decommissioned roads would be removed.

**Alternative 3 (Forest Service Preferred Alternative)** was developed to clearly address the following significant issues, while responding to the purpose and need for action:

- Tree salvage in inventoried roadless areas;
- The fire may have affected wildlife security during hunting seasons;
- Provide a higher level of public motorized access than Forest Plan standards allow;
- Road 316 Big Creek should be re-opened;
- Decommissioning road activities may not be compatible with snowmobiling on existing snowmobile routes.

Activities in Alternative 3 include: salvage of 2266 acres, excluding inventoried roadless areas but including 15 acres in the Wild and Scenic River corridor (North Fork Flathead River); alternative beetle control treatments (non-salvage) on about 272 acres; fuels treatments on 208 acres; wheeled motorized access restrictions on 11 miles of open road; and 56 miles of road decommissioning. This alternative seasonally reopens a part of Big Creek Road #316 previously restricted yearlong to wheeled motorized use, and it seasonally restricts wheeled motorized use on two roads during spring hunting season. All alternatives include safe and useable snowmobile routes on proposed decommissioned roads, but this alternative best accommodates snowmobile use. This alternative would require Forest Plan site-specific amendments. The Forest Plan would be amended to change open road density and security core standards to 29% and 63%, respectively, within the Werner Creek grizzly bear subunit. In addition, the Forest Plan would be amended to allow 10 specific stream-aligned culverts to remain in place on Road 316E and its adjoining roads, the upper portions on Road 315, and Road 1692, and still be considered a decommissioned road.

**Alternative 4** was developed to clearly address the following significant issues, while responding to the purpose of and need for action:

- Tree salvage in inventoried roadless areas;
- Tree salvage in the wild and scenic river corridor
- Snag and downed wood material retention should be increased
- Riparian habitat conservation areas may not be large enough
- The fire may have affected wildlife security during hunting seasons
- Proposed salvage treatments and road strategy may result in ineffective use of winter range areas
- More roads may need to be decommissioned and restricted than what Amendment 19 specifies

Activities in Alternative 4 include: salvage on 1793 acres, excluding inventoried roadless areas and the Wild and Scenic River corridor alternative beetle control treatments (non-salvage) on 281 acres; fuels treatments on 189 acres; wheeled motorized access restrictions to 25 miles of open road; and 87 miles of road decommissioning. All stream-aligned culverts on decommissioned roads would be removed. This alternative constructs no temporary roads, seasonally closes the majority of the Big Creek drainage during spring hunting season, increases the number of snags and downed woody material, and allows no winter logging.

**Alternative 5** was developed to clearly address the following significant issues, while responding to the purpose of and need for action:

- The fire may have affected wildlife security during hunting seasons
- Big Creek Road 316 should be re-opened

All salvage, beetle control, and fuels treatments are the same as Alternative 2. This alternative would restrict wheeled motorized access yearlong on the Hallowat Road #315 and the Moose Lake Road #5207, which allows

Road #316 to be open for part of the year. Access to Moose Lake would be converted to a 9.3-mile trail, and the campground would be removed. Approximately 21 miles of open road would be restricted to wheeled motorized access and 56 miles of road would be decommissioned. All stream-aligned culverts on decommissioned roads would be removed.

During the review of internal and public issues and development of alternatives, the interdisciplinary team considered five additional alternatives, which were subsequently eliminated from detailed study. Public comment on the DEIS led to the development of another alternative considered (Alternative 10), but was subsequently eliminated from detailed study. These alternatives included:

- Alternative 6: Restoration and rehabilitation activities only – no salvage harvest – treat beetle populations through non-salvage methods only
- Alternative 7: Salvage more acres within the fire area to address resource concerns
- Alternative 8: Salvage in riparian areas
- Alternative 9: Create no openings through harvest that are greater than 40 acres
- Alternative 10: Alter the post-fire mortality guidelines to retain more trees

**Table 1** briefly summarizes the main features in each alternative and how they differ from each other. **Table 2** summarizes the differences between alternatives for road management. **Table 3** compares the difference in effects between alternatives based on the significant issues (those issues listed in section IV of this document). **Table 4** compares the difference in effects between alternatives for other concerns.

**Table 1: Comparison of Features of the Alternatives**

Features of the Alternatives	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)	Alternative 4	Alternative 5
<b>Acres of trees removed</b>	0	<b>2428 acres</b> Helicopter – 1520 (62%) Skyline – 266 (11%) Skidder – 255 (11%) Skid/winter or Heli – 387 (16%)	<b>2266 acres</b> Helicopter – 1344 (59%) Skyline – 266 (12%) Skidder – 263 (12%) Skid/winter or Heli – 393 (17%)	<b>1793 acres</b> Helicopter – 1462 (81%) Skyline – 123 (7%) Skidder – 208 (12%)	<b>2428 acres</b> Helicopter – 1520 (62%) Skyline – 266 (11%) Skidder – 255 (11%) Skid/winter or Heli – 387 (16%)
		<i>Common to All Action Alternatives:</i> All units would have many trees remaining after harvest to provide for desired forest structure, snag habitat for wildlife, shade on more exposed sites, soil erosion protection, and long-term soil productivity (see “Live and Dead tree retention” below).			
<b>Tree Planting</b>		1182 acres	1086 acres	738 acres	1182 acres
<b>Timber Volume</b>	0	15.0 mmbf	14.6 mmbf	11.9 mmbf	15.0 mmbf
<b>Acres with trees removed in inventoried roadless areas</b>	0	151 est. treated acres (across a total unit area of about 470 acres)	0	0	151 est. treated acres (across a total unit area of about 470 acres)
		<i>Common to All Action Alternatives:</i> Only Douglas-fir and spruce trees infested with bark beetles would be removed.			
<b>Acres with trees removed in Wild and Scenic River corridor</b>	0	15	15	0	15
		<i>Common to All Action Alternatives:</i> Only Douglas-fir and spruce trees infested with bark beetles would be removed.			
<b>Winter logging</b>	N/A	Yes Winter logging required on 387 acs (heli log is an option)	Yes Winter logging required on 393 acs (heli log is an option)	No winter logging allowed in order to avoid wildlife disturbance	Yes Winter logging required on 387 acs (heli log is an option)

Features of the Alternatives	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)	Alternative 4	Alternative 5
<b>Live and dead tree retention within salvage units</b>	N/A	All ponderosa pine would be left, live or dead. All larch >18" dbh, live and dead, would be left.	All ponderosa pine would be left, live or dead. In seven units (est. 359 acs), all larch >20" dbh, live and dead, would be left. In all other units, larch >18" dbh would be left.	All ponderosa pine would be left, live or dead. All larch (all sizes) live and dead, would be left. All more severely burned Douglas-fir > 18" dbh would be left (bole deeply blackened, small branches of tree crown burned up)	All ponderosa pine would be left, live or dead. All larch >18" dbh, live and dead, would be left.
<p><i>Common to All Action Alternatives:</i> Live trees most likely to survive the effects of the fire would be left within salvage areas, following the Post Fire tree mortality guidelines (Appendix B of the FEIS). Dead trees that do not make a merchantable product would remain in all salvage areas. In most units, these trees far outnumber those that would be salvaged, and include large diameter and small diameter trees. Slash treatments would minimize impacts to soils and strive to avoid excessive slash accumulations.</p>					
<b>Treatments within 200-250 feet of open roads</b>		Marking of >18" dbh larch snags, both in areas inside and outside salvage units.	In areas outside the salvage units, all 18"+ DBH larch snags would be marked. Within salvage units, only the high quality wildlife snags (defined below) would be marked. All other trees that meet removal criteria (merchantable fire-killed or dying trees) would be removed during salvage harvest. This prescription would involve 20 harvest units, affecting roughly 250 acres.	Marking of >18" dbh larch and Douglas-fir snags, both in areas inside and outside salvage units.	Marking of >18" dbh larch snags, both in areas inside and outside salvage units.
<p><i>Common to All Action Alternatives:</i> Marking of the high quality wildlife snags would occur along ALL open roads, and are defined as larch, ponderosa pine, cottonwood or Douglas-fir; typically larger diameter; usually show signs of decay, broken tops, woodpecker use, other animal use. In areas normally off limits to firewood cutting under the permit requirements, area closure signing would be done (such as streamsides and the Wild and Scenic River corridor).</p>					
<b>Temporary road miles (No construction of permanent roads)</b>	0	0	0	0	0
<b>Total acres of fuels reduction treatments (Coal Creek, Glacier Institute, Big Cr Campground)</b>	0	208 (all three sites)	208 (all three sites)	189 (eliminates Big Creek campground area)	208 (all three sites)
<b>Methods of spruce beetle control other than salvage harvest</b>	0	Spruce beetle funnel traps: 272 acs Possible peeling/torching of a few beetle infested trees	Spruce beetle funnel traps: 272 acs Possible peeling/torching of a few beetle infested trees	Spruce beetle funnel traps: 281 acs. Possible peeling/torching of a few beetle infested trees	Spruce beetle funnel traps: 272 acs. Possible peeling/torching of a few beetle infested trees

Features of the Alternatives	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)	Alternative 4	Alternative 5
<b>Methods of Doulgas-fir bark beetle control other than salvage harvest</b>		<i>Common to all Action Alternatives:</i> <ul style="list-style-type: none"> <li>○ Application of anti-attractant pheromone MCH to individual live Douglas-fir trees in the Glacier Institute site, Big Creek campground and within the Wild &amp; Scenic River corridor, to protect them from beetle attack.</li> <li>○ The felling of up to an estimated 100 Douglas-fir trap trees, within up to 8 of the proposed salvage units, to more effectively manage and contain the potential growth and spread of Douglas-fir bark beetles in regions of higher beetle concentrations, where salvage is expected to be delayed, and reduce mortality of the many remaining live Douglas-fir in these areas.</li> </ul>			
<b>Miles of roads to be decommissioned in Big Creek watershed</b>	0	57	56	87	56
<b>Closure of motorized use on Elelehum Trail 194 and Deadhorse Trail 255 from March 16 to November 14.</b>	No	Yes	Yes	Yes	Yes
<b>Snowmobile consideration on decommissioned roads</b>	N/A	Stream-aligned culverts would be removed on decommissioned roads.	Ten stream-aligned culverts would not be removed on decommissioned roads.	Stream-aligned culverts would be removed on decommissioned roads.	Stream-aligned culverts would be removed on decommissioned roads.
<b>Project-specific amendment to Forest Plan</b>	N/A	No	Yes, to Forest Plan Amend. 19 (grizzly bear security): 1) to allow some stream-aligned culverts to remain in place on decommissioned roads (see above). 2) to modify open road density and grizzly bear security core 10 yr standards in Werner Creek Subunit	No	No

Table 2: Comparison of Road Management (major road segments) by Alternative

Road Segment	Exist. Sit. Prior to Temp Special Order	Exist. Sit. After Temp Special Order signed 4/1/02	Alternative 2 (Proposed Action)	Alternative 3 (Preferred Alternative)	Alternative 4	Alternative 5
<b>WERNER CREEK GRIZZLY BEAR SUBUNIT</b>						
<b>Werner Divide Road 1658</b>	Restricted seasonally; conventional vehicle motorized access available from April 15 thru November 30 from the jct. with Big Creek Road 316 to the divide. Snowmobile access available December 1 thru April 15.	Restricted for one year by a gate at the divide and by the Road 316 gate at the jct. with Nicola Creek Road 1692. Snowmobile access available December 1 thru April 15.	Restricted all year by a gate at the divide and by the Road 316 gate at the jct. with Nicola Creek Road 1692. Snowmobile access available December 1 thru April 15.	Restricted seasonally; conventional vehicle motorized access available July 1 thru October 14 from the jct. with Big Creek Road 316 to the divide. Snowmobile access available December 1 thru April 15.	Restricted all year by a gate at the divide and by the Road 316 gate at the jct. with Nicola Creek Road 1692. Snowmobile access available December 1 thru April 15.	Restricted seasonally by a gate at the divide and by the Road 316 gate at the jct. with Nicola Creek Road 1692. Motorized access available July 1 thru October 14. Snowmobile access available December 1 thru April 15.
<b>Hallowat Creek Road 315 (to jct with Road 5207)</b>	Open all year	Open all year	Open all year	Restricted seasonally with a gate beyond mile 3.0, the jct. with Werner Creek Road 5261; motorized access available from July 1 thru March 31.	Restricted seasonally due to a gate on Big Creek Road 316 at the jct. with the McGinnis Creek Road 803; motorized access would be allowed from June 1 thru March 30.	Restricted all year by a gate at the jct. with Big Creek Road 316. Road 5207 to Moose Lake would also be affected by this restriction. Road 315 would be used as a trail to provide access to Moose Lake and two trails that take off from the lake. A new trailhead at the gate would replace trailhead at Moose Lake.
<b>Kletomus Creek Road 5207 (to Moose Lake)</b>	Open all year	Open all year	Open all year	Restricted seasonally by gate on Hallowat Creek Road 315; motorized access available from July 1 thru March 31.	Restricted seasonally due to a gate on Big Creek Road 316 at the jct. with the McGinnis Creek Road 803; motorized access would be allowed from June 1 thru March 30.	Restricted all year with a berm at the jct. with Forks Westside Road 5220. Kletomus Creek Road 5207 (to Moose Lake) would be used as a trail to provide access to Moose Lake and to the two trails that take off from the lake.
<b>Werner Creek Road 5261, Nicola Creek Road 1692, and Upper Nicola Road</b>	Open all year	Roads 5261, 1692, and 1655 are restricted by gates for one year.	Restricted all year; Werner Creek Road 5261 would be restricted with a gate from the jct. with Hallowat Creek Road 315 to the junction with Nicola Creek Road	Restricted all year; Werner Creek Road 5261 would be restricted for its entire length by a berm at the junction with Hallowat Creek Road 315. A berm on Nicola Creek Road 1692 at the	Werner Creek "loop" Roads 5261, 1692, and 1655 would each be decommissioned for its entire length, from the jct. with Road 315 to the junction with Big Creek Canyon Creek Road 316	Restricted all year; Werner Creek "loop" Roads 5261, 1692, and 1655 would each be restricted for its entire length by a berm at the jct. with Road 315 and a berm at the jct. with

Road Segment	Exist. Sit. Prior to Temp Special Order	Exist. Sit. After Temp Special Order signed 4/1/02	Alternative 2 (Proposed Action)	Alternative 3 (Preferred Alternative)	Alternative 4	Alternative 5
<b>1655</b>			1692, and then restricted by a berm. Road 1692 would be restricted by berms at the jct. with Road 5261 and at the jct. with Big Creek Road 316. Road 1655 is controlled by berms on each end of Road 1692.	jct. with Big Creek Road 316 controls Road 1692 as well as remaining access to Road 5261. Road 1655 is controlled by berms on Road 5261 and Road 1692.	near four corners.	Big Creek Road 316 near four corners.
<b>Lakalaho Road 1696 (warming hut)</b>	Restricted all year by a gate	Restricted all year by a gate	Restricted all year by a berm for 3.3 miles and then decommissioned	Restricted all year by a gate for 3.3 miles and then decommissioned	Restricted all year by a berm for 3.3 miles and then decommissioned	Restricted all year by a gate for 3.3 miles and then decommissioned
<b>Forks Westside Road 5220</b>	Restricted all year by a gate	Restricted all year by a gate	Restricted all year by a gate	Restricted all year by a gate	Restricted all year by a berm	Restricted all year by a gate
<b>Big Creek Road 316 (upper portions)</b>	Restricted all year by a berm at the jct. with Werner Divide Road 1658 and by a gate at the jct. with Trumble Creek Road 9848.	Restricted all year by a gate at the jctn with Nicola Creek Road 1692 and by a gate at the jct. with Trumble Creek Road 9848.	Restricted all year by a gate at the junction with Nicola Creek Road 1692, and by a berm at the jct. with Werner Divide Road 1658, and by a berm at the jct. with Trumble Creek Road 9848.	Restricted seasonally by a gate at the jct. with Werner Divide Road 1658; conventional vehicle motorized access would be available from July 1 thru October 14 to the jct. with Lakalaho Road 1696. Road 316 beyond would be restricted with berms to the jct. with Road 9848. Snowmobile access on these parts of Road 316 would be available from December 1 thru April 14.	Restricted all year by a gate at the junction with Nicola Creek Road 1692, and by a berm at the jct. with Werner Divide Road 1658, and by a berm at the jct. with Trumble Creek Road 9848.	Restricted seasonally by a gate at the jct. with Nicola Creek Road 1692, motorized access available from July 1 thru October 14 to a point approx. 1 mile west of the jct. with Road 1696 where it would be restricted with a gate all year. A new trailhead at this gate would replace the existing trailhead for the Smoky Range National Recreation Trail. Snowmobile access on this part of Road 316 from December 1 thru April 14.
<b>LOWER BIG CREEK GRIZZLY BEAR SUBUNIT</b>						
<b>Big Creek Road 316 (lower portion)</b>	Open all year	Open all year	Open all year	Open all year	Restricted seasonally by a gate at the jct. with the Lookout Creek McGinnis Cr. Road 803; motorized access would be available from June 1 thru March 30. This restriction effectively	Open all year

<b>Road Segment</b>	<b>Exist. Sit. Prior to Temp Special Order</b>	<b>Exist. Sit. After Temp Special Order signed 4/1/02</b>	<b>Alternative 2 (Proposed Action)</b>	<b>Alternative 3 (Preferred Alternative)</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
					shuts off access for the Big Creek drainage for two months.	
<b>Elelehum Creek Road 5272 (to mile 3.6)</b>	Restricted seasonally by a gate; motorized access available from July 1 thru August 31.	Restricted seasonally by a gate; motorized access available from July 1 thru August 31.	Restricted seasonally by a gate; motorized access available from July 1 thru August 31.	Restricted seasonally by a gate; motorized access available from July 1 thru August 31.	Decommissioned and converted to a low-use trail. A new trailhead at the jct. of Road 5272 and Big Creek Road 316 would replace the existing trailhead.	Restricted seasonally by a gate; motorized access available from July 1 thru August 31.
<b>Langford Road 5222</b>	Restricted all year by a berm	Restricted all year by a berm	Restricted all year by a berm	Restricted all year by a berm	Decommissioned	Restricted all year by a berm
<b>McGinnis Creek Road 803 (includes the Lookout Creek drainage)</b>	Open all year	Restricted by gates for one year from the jct. with Road 803L to the jct. with Road 5290 at the divide.	Open all year from Road 316 across Big Creek to the jct. with Road 803L, then restricted with an all year gate to the jct. with Road 1656, and then restricted with all year berms to the jct. with Road 5290 at the divide between Lookout Creek and McGinnis Creek.	Open all year from Road 316 across Big Creek to the junction with Road 803L, then restricted all year with a gate to the jct. with Road 1656, and then restricted with berms to the jct. with Road 5290 at the divide between Lookout Creek and McGinnis Creek..	Open all year from Road 316 across Big Creek to the jct. with Road 803L, then decommissioned to the jct. with Road 1656, and then restricted with a berm to the jct. with Road 5290 at the divide.	Open all year from Road 316 across Big Creek to the jct. with Road 803L, then restricted all year with a gate to the jct. with Road 1656, and then restricted with a berm to the jct. with Road 5290 at the divide..
<b>Roads 1656 and 1664 in Lookout Cr.</b>	Restricted all year by a berm	Restricted all year by a berm	Restricted all year by a berm	Restricted all year by a berm	<i>Decommissioned</i>	Restricted all year by a berm

Table 3: Comparison of alternatives by significant issues and issue indicators

Significant Issues	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<p><b>1. Tree salvage in inventoried roadless areas does not allow natural processes to continue to occur within these areas and may therefore alter its roadless character.</b></p> <p><b>Indicators:</b></p> <p>(a) <i>acres of salvage in inventoried roadless area</i></p> <p>(b) <i>changes to natural integrity apparent naturalness, remoteness, solitude, primitive recreation opportunities, manageability, and boundaries in inventoried roadless areas</i></p>	<p>0 acres</p> <p>No change from existing situation</p>	<p>151 acres</p> <p>Reduced on 1.8% of Deadhorse IRA, and 0.6% of Standard Peak IRA</p>	<p>0 acres</p> <p>No change from existing situation</p>	<p>0 acres</p> <p>No change from existing situation</p>	<p>151 acres</p> <p>Reduced on 1.8% of Deadhorse IRA, and 0.6% of Standard Peak IRA</p>
<p><b>2. Tree salvage in the Wild and Scenic River corridor may affect the character of the corridor.</b></p> <p><b>Indicators:</b></p> <p>(a) <i>acres of salvage and acres of fuels reduction within the Wild and Scenic River corridor</i></p>	<p>0 acres</p>	<p>15 acres remove &lt; ½ of the trees</p>	<p>15 acres remove &lt; ½ of the trees</p>	<p>0 acres</p>	<p>15 acres remove &lt; ½ of the trees</p>
<p><b>3. Snag and downed wood material retention should be increased over that in the proposed action to insure that these wildlife habitat and ecosystem components are provided over the landscape over time.</b></p> <p><b>Indicators:</b></p> <p>(a) <i>acres and percentage of high and moderate snag potential areas treated</i></p> <p>(b) <i>acres and percentage of high and moderate down wood habitat potential areas treated</i></p>	<p>0 acres 0%</p> <p>0 acres 0%</p>	<p>3326 acres 42%</p> <p>2797 acres 29%</p>	<p>2866 acres 36%</p> <p>2415 acres 25%</p>	<p>2211 acres 28%</p> <p>2295 acres 24%</p> <p>Leaves additional snags in all units (All larch of all sizes and &gt;18" DBH burned Douglas-fir)</p>	<p>3326 acres 42%</p> <p>2797 acres 29%</p>

Significant Issues	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<p><b>4. Riparian habitat conservation areas (RHCA) as described in the Native Inland Fisheries Strategy (INFISH) may not be large enough to compensate for the combined effects of the Moose Fire and proposed management activities.</b></p> <p><b>Indicators:</b></p> <p>(a) <i>RHCA widths</i></p> <p>(b) <i>changes in sediment yield attributable to RHCA widths</i></p>	<p>N/A</p> <p>N/A</p>	<p><u>Each side of stream:</u> - Min. 100' intermittent streams; - 150' perennial non fish bearing; - 300' fish- bearing</p> <p>Minimum INFISH RHCA widths – would provide adequate undisturbed area to reduce risk of sediment delivery</p>	<p><u>Each side of stream:</u> - Min. 100' intermittent streams; - 150' perennial non fish bearing; - 300' fish- bearing</p> <p>Minimum INFISH RHCA widths – would provide adequate undisturbed area to reduce risk of sediment delivery</p>	<p><u>Each side of stream:</u> 300' all streams</p> <p>RHCA widths increased to 300' on intermittent and non-fisheries streams – would provide additional protection against sediment delivery</p>	<p><u>Each side of stream:</u> - Min. 100' intermittent streams; - 150' perennial non fish bearing; - 300' fish- bearing</p> <p>Minimum INFISH RHCA widths – would provide adequate undisturbed area to reduce risk of sediment delivery</p>
<p><b>5. The fire may have affected wildlife security particularly during hunting seasons.</b></p> <p><b>Indicators:</b></p> <p>(a) <i>a comparison of summer habitat effectiveness values within affected Habitat Analysis Units</i></p> <p>(b) <i>potential effects of salvage logging and road management on security and vulnerability during the hunting season</i></p>	<p>Hallowat - 62% Kletomus -45% Lower Elelehum - 38% Langford - 36%</p> <p>No salvage logging would occur. Road restrictions would not occur. Security would be reduced and animals more vulnerable compared to pre-fire conditions.</p>	<p>Hallowat - 62% Kletomus -45% Lower Elelehum - 38% Langford - 36%</p> <p>Salvage would remove cover, reducing security. Road restrictions may reduce vulnerability somewhat, but critical lower Big Creek Road #316 would remain open.</p>	<p>Hallowat - 62% Kletomus -45% Lower Elelehum - 38% Langford - 36%</p> <p>Salvage would remove cover, reducing security. Road restrictions may reduce vulnerability somewhat, but critical lower Big Creek Road #316 would remain open.</p>	<p>Hallowat - 62% Kletomus -45% Lower Elelehum - 46% Langford - 36%</p> <p>Salvage would remove cover, reducing security. Road restrictions may reduce vulnerability somewhat, but critical lower Big Creek Road #316 would remain open.</p>	<p>Hallowat - 78% Kletomus -60% Lower Elelehum - 38% Langford - 36%</p> <p>Salvage would remove cover, reducing security. Road restrictions may reduce vulnerability somewhat, but critical lower Big Creek Road #316 would remain open.</p>

Significant Issues	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<p><b>6. The proposed salvage treatments and road strategy may result in ineffective use of winter range areas by ungulate species.</b></p> <p><b>Indicators:</b>                      (a) <i>qualitative assessment of potential effects of winter logging and removal of trees on elk and mule deer hiding and thermal cover</i></p>	No salvage would occur.	Winter logging could increase disturbance to wintering animals. Removal of trees would reduce hiding cover; thermal cover could be reduced in Units 15, 16 and 70.	Winter logging could increase disturbance to wintering animals. Removal of trees would reduce hiding cover; thermal cover could be reduced in Units 15 and 16.	Winter logging would be prohibited. Removal of trees would reduce hiding cover; thermal cover could be reduced in Units 15 and 16.	Winter logging could increase disturbance to wintering animals. Removal of trees would reduce hiding cover; thermal cover could be reduced in Units 15, 16 and 70.
<p><b>7. More roads may need to be decommissioned and restricted than what Amendment 19 specifies due to accelerated runoff from burned lands and less cover and security for grizzly bears as a result of the fire.</b></p> <p><b>Indicators:</b>                      (a) <i>miles of road proposed for decommissioning</i>                      (b) <i>miles of road closed to motorized access yearlong by subunit</i>                      (c) <i>miles of road closed to motorized access seasonally by subunit</i></p>	0 miles  Werner – 53 mi L. Big Cr. – 73 mi  Werner – 3 mi L. Big Cr. – 4 mi	56 miles  Werner – 34 mi L. Big Cr. – 36 mi  Werner – 0 mi L. Big Cr. – 4 mi	55 miles  Werner – 24 mi L. Big Cr. – 36 mi  Werner – 15 mi L. Big Cr. – 4 mi	87 miles  Werner – 23 mi L. Big Cr. – 20 mi  Werner – 17 mi L. Big Cr. – 6 mi	56 miles  Werner – 34 mi L. Big Cr. – 36 mi  Werner – 9 mi L. Big Cr. – 4 mi
<p><b>8. Provide a higher level of public motorized access than Forest Plan standards allow.</b></p> <p><b>Indicators:</b>                      (a) <i>miles of road open to conventional motorized use (wheeled vehicles) yearlong</i>                      (b) <i>miles of road open to conventional motorized use seasonally</i>                      (c) <i>miles of road decommissioned</i></p>	49 miles  7 miles  0 miles	31 miles  4 miles  56 miles	26 miles  19 miles  55 miles	8 miles  13 miles  87 miles	22 miles  13 miles  56 miles
<p><b>9. Big Creek Road 316 should be re-opened because it provides good huckleberry picking and other recreation options.</b></p>					

Significant Issues	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<p><b>Indicators:</b>                      (a) <i>change in restrictions of conventional motorized vehicle use on Road #316</i></p>	<p>No change</p>	<p>No change. The portion of Road 316 located behind Big Mountain would remain restricted to wheeled motorized access yearlong</p>	<p>Road #316 would be open yearlong to wheeled motorized access to the jct. with the Werner Divide Road.</p>	<p>Road #316 would be open seasonally (6/1-3/30) from the McGinnis – Lookout Road to the jct. with the Upper Nicola Creek Connection Road. This would eliminate motorized access to most of the Big Creek drainage during the spring bear-hunting season, and reduce the season of use at the Moose Lake Campground and associated trailheads by approximately 2 weeks.</p>	<p>Road #316 would be open yearlong to the jct. with the Upper Nicola Creek Connection Road. The Whitefish Divide Road and Rd. 316 would be open seasonally (7/1-10/14). This would allow travel across the Whitefish Divide, and provide access to the upper portions of the Big Creek drainage.</p>
<p>10. Decommissioning road activities may not be compatible with snowmobiling on existing snowmobiling routes.</p> <p><b>Indicators:</b>                      (a) <i>Miles of road proposed for decommissioning on existing snowmobile routes</i></p>	<p>0 miles</p>	<p>9 miles</p>	<p>9 miles</p>	<p>31 miles</p>	<p>9 miles</p>

Table 4: Comparison of alternatives by their response to effects indicators (described in more detail in Chapter 3)

Effects Indicator	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<b>Vegetation Indicators</b>					
• Acres of salvage harvest	0 acres	2428 acres	2266 acres	1793 acres	2428 acres
• Acres of reforestation in harvest units	0 acres	1182 ac. planted 1246 ac. natural	1086 ac. planted 1180 ac. natural	738 ac. planted 1055 ac. natural	1182 ac. planted 1246 ac. natural
• Acres of natural successional development in project area	25,984 acres	24,713 acres	24,820 acres	25,162 acres	24,713 acres
• Change in access for future timber management	No change	Road decommissioning would change access to 7000 acres	Road decommissioning would change access to 6400 acres	Road decommissioning would change access to 12,000 acres	Road decommissioning would change access to 6400 acres
• Salvage harvest by structural stage (acres)	No harvest	<b>Stand initiation:</b> 1792 <b>Stem exclusion:</b> 0 acres <b>Understory reinitiation:</b> 1150 acres <b>Young forest multistory:</b> 0 acres <b>Late seral:</b> 0 acres	<b>Stand initiation:</b> 1587 acres <b>Stem exclusion:</b> 0 acres <b>Understory reinitiation:</b> 867 acres <b>Young forest multistory:</b> 0 acres <b>Late seral:</b> 0 acres	Stand initiation: 1281 acres Stem exclusion: 0 acres Understory reinitiation: 679 acres Young forest multistory: 0 acres Late seral: 0 acres	<b>Stand initiation:</b> 1792 <b>Stem exclusion:</b> 0 acres <b>Understory reinitiation:</b> 1150 acres <b>Young forest multistory:</b> 0 acres <b>Late seral:</b> 0 acres
• Legacy areas remaining (acres)	25,906 acres	23,503 acres	23,640 acres	24,113 acres	23,503 acres

Effects Indicator	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<b><u>Spruce and Douglas-Fir Indicators</u></b>					
<ul style="list-style-type: none"> <li><b><u>Spruce Beetle:</u></b> Funnel trap treatments in areas of spruce beetle infestation (acres)</li> <li><b><u>Spruce Beetle:</u></b> Salvage treatments in areas of spruce beetle infestation (acres)</li> <li><b><u>Douglas-fir beetle:</u></b> Anti-attractant MCH pheromone treatment (acres)</li> <li><b><u>Douglas-fir beetle:</u></b> Trap/Bait tree use (total number of trees)</li> <li><b><u>Douglas-fir beetle:</u></b> Salvage treatments in areas of Douglas-fir beetle infestation (total acres &amp; percent of known infested acres)</li> </ul>	No treatment would occur.	272 acres treats nearly all known acres infested at higher levels	272 acres treats nearly all known acres infested at higher levels	281 acres treats nearly all known acres infested at higher levels	272 acres treats nearly all known acres infested at higher levels
		94 acres (all 4 known infested units treated)	64 acres (3 out of 4 infested units treated)	55 acres (2 out of 4 infested units treated)	94 acres (all 4 known infested units treated)
		50 acres	50 acres	50 acres	50 acres
		up to 100 trees within one to eight proposed salvage units	up to 100 trees within one to eight proposed salvage units	up to 100 trees within one to eight proposed salvage units	up to 100 trees within one to eight proposed salvage units
		2889 acres (79%)	2425 acres (66%)	1960 acres (54%)	2889 acres (79%)
<b><u>Invasive Plant Indicators</u></b>					
<ul style="list-style-type: none"> <li><b>Relative rating of vulnerability to weed spread (1-highest, 5-lowest) by activity by alternative.</b></li> <li><b>Acres at risk from infestation/invasion of selected weeds in the Moose project weed analysis area.</b></li> <li><b>Percent of area at risk from infestation/invasion of selected weeds in the Moose project weed analysis area.</b></li> </ul>	Lowest risk	Action alternatives have higher risk than no action; all action alternative are similar in risk	Same as Alt. 2	Same as Alt. 2	Same as Alt. 2
	See Table 3-27 in the FEIS	See Table 3-27 in the FEIS	See Table 3-27 in the FEIS	See Table 3-27 in the FEIS	See Table 3-27 in the FEIS
	See Table 3-28 in the FEIS	See Table 3-28 in the FEIS	See Table 3-28 in the FEIS	See Table 3-28 in the FEIS	See Table 3-28 in the FEIS

Effects Indicator	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<p><b><u>Grizzly Bear Indicators</u></b></p> <ul style="list-style-type: none"> <li>Whether Forest Plan standards related to grizzly bear would be met (19% open rod density; 19% total road density, 68% core area)</li> <li>The potential loss of habitat values associated with dead trees.</li> </ul>	No	Yes	Yes, with a project-specific Forest Plan amendment	Yes	Yes
	Fire reduced hiding cover values on 25, 984 acres of NFS lands	Hiding cover values would be further reduced within 2403 acres of salvage units	Hiding cover values would be further reduced within 2266 acres of salvage units	Hiding cover values would be further reduced within 1793 acres of salvage units	Hiding cover values would be further reduced within 2403 acres of salvage units
<p><b><u>Gray Wolf Indicators</u></b></p> <ul style="list-style-type: none"> <li>The effect on ungulate habitat.</li> <li>The change in habitat security.</li> </ul>	No change. Post-fire carrying capacity is low.	Some reduction in hiding cover; increased disturbance, increased hunting season and winter vulnerability.	Some reduction in hiding cover; increased disturbance, increased hunting season and winter vulnerability.	Some reduction in hiding cover; increased disturbance, increased hunting season and winter vulnerability.	Some reduction in hiding cover; increased disturbance, increased hunting season and winter vulnerability.
	No change	Improvement from road management; winter logging could reduce temporarily.	Same as Alternative 2	Same as Alternative 2, but winter logging would be prohibited.	Same as Alternative 2
<p><b><u>Bald Eagle Indicators</u></b></p> <ul style="list-style-type: none"> <li>The amount of habitat alteration within the habitat zone adjacent to the North Fork Flathead River.</li> <li>The probability that management activity would disturb nesting bald eagles and cause disruption of natural behavior.</li> <li>Adherence to Montana Bald Eagle Management Plan nest territory guidelines.</li> </ul>	No changes to eagle habitat	Removal of potential perch or nest trees on 15 acres	Same as Alternative 2	No changes to eagle habitat	Same as Alternative 2
	None	Low. Activities > 1/2 mile from known nest sites	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2
	Consistent with plan guidelines.	Consistent with plan	Consistent with plan	Consistent with plan	Consistent with plan

Effects Indicator	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<p><b><u>Canada Lynx Indicators</u></b></p> <ul style="list-style-type: none"> <li>• Management actions shall not change more than 15 percent of lynx habitat within an LAU to an unsuitable condition within a 10 year period</li> <li>• Following a disturbance, such as windstorm, fire, or insects/pathogens mortality that could contribute to lynx denning habitat, do not salvage harvest when the affected area is smaller than five acres.</li> <li>• Maintain denning habitat in patches generally larger than 5 acres comprising at least 10 percent of lynx habitat.</li> </ul>	<p>No management actions would occur.</p> <p>No salvage is proposed</p> <p>All potential denning habitat would remain</p>	<p>Complies. Proposed salvage units are currently unsuitable from fire. Planting would speed recovery to suitable condition.</p> <p>All proposed salvage areas are greater than 5 acres</p> <p>Over 12,000 acres of burned but unsalvaged area would provide for denning habitat</p>	<p>Same as Alternative 2</p> <p>Same as Alternative 2</p> <p>Same as Alternative 2</p>	<p>Same as Alternative 2</p> <p>Same as Alternative 2</p> <p>Same as Alternative 2, but retains more acres</p>	<p>Same as Alternative 2</p> <p>Same as Alternative 2</p> <p>Same as Alternative 2</p>
<p><b><u>Black-backed Woodpecker Indicators</u></b></p> <ul style="list-style-type: none"> <li>• Acres and percent of habitat lost</li> <li>• Number of large bocks unsalvaged</li> </ul>	<p>0 acres; 0%</p> <p>N/A – all remain</p>	<p>1939 acres; 34%</p> <p>5</p>	<p>1682 acres; 30%</p> <p>6</p>	<p>1327 acres; 24%</p> <p>7</p>	<p>Same as Alternative 2</p> <p>Same as Alternative 2</p>
<p><b><u>Boreal Toad Indicators</u></b></p> <ul style="list-style-type: none"> <li>• Extent of activities that could cause direct mortality of boreal toads in terrestrial habitats</li> </ul>	<p>No activities would occur</p>	<p>Salvage units: 2428 acres</p> <p>Decommissioning: 57 mi.</p>	<p>Salvage units: 2266 acres</p> <p>Decommissioning: 56 mi.</p>	<p>Salvage units: 1793 acres</p> <p>Decommissioning: 87 mi.</p>	<p>Salvage units: 2428 acres</p> <p>Decommissioning: 56 mi.</p>

Effects Indicator	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<p><b><u>Wolverine Indicators</u></b></p> <ul style="list-style-type: none"> <li>An assessment of effects on potential prey species of wolverine (big game) and on levels of potential disturbance (motorized access).</li> </ul>	No change to prey species. Continued disturbance from motorized access.	Slight increase in risk of mortality to prey species. Winter logging could cause disturbance to wolverine. Road closures would improve habitat suitability.	Slight increase in risk of mortality to prey species. Winter logging could cause disturbance to wolverine. Road closures would improve habitat suitability.	Prohibition on winter logging, higher levels of trees left (more cover) and road management strategy would reduce risks.	Similar to Alternatives 2 and 3, but road management strategy would reduce risks.
<p><b><u>Snag and Down Wood Habitat Indicators</u></b></p> <ul style="list-style-type: none"> <li>Vulnerability to loss of snag habitat on national forest system lands due to firewood cutting (acres within 200' of open road)</li> <li>Acres of timber salvage relevant to snag habitat across the analysis area (total acres of high quality)</li> <li>Acres of Timber Salvage Relevant to Larger-diameter Downed Wood Habitat across the Analysis Area (total acres of high quality)</li> </ul>	<p>2008 acres</p> <p>0 acres</p> <p>0 acres</p>	<p>2084 acres</p> <p>1487 acres</p> <p>1263 acres</p>	<p>2007 acres</p> <p>1450 acres</p> <p>1233 acres</p>	<p>1907 acres</p> <p>1185 acres Leaves additional snags in all units (All larch of all sizes and &gt;18" DBH burned Douglas-fir)</p> <p>930 acres</p>	<p>1939 acres</p> <p>1487 acres</p> <p>1263 acres</p>
<p><b><u>Soils Indicators</u></b></p> <ul style="list-style-type: none"> <li>Total acres and percent detrimental soil disturbance in the analysis area.</li> </ul>	4288 acres / 8.2%	4235 acres / 8.1%	4236 acres / 8.1%	4116 acres / 7.8%	4235 acres / 8.1%

Effects Indicator	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<b>Hydrology Indicators</b>					
<ul style="list-style-type: none"> <li>Potential Sediment from Proposed Salvage Above Spawning Area (tons)</li> </ul>	No salvage – 0 tons	79 tons	64 tons	22 tons	79 tons
<ul style="list-style-type: none"> <li>Potential Sediment from Proposed Salvage Below Spawning Area (tons)</li> </ul>	No salvage – 0 tons	444 tons	362 tons	300 tons	444 tons
<ul style="list-style-type: none"> <li>Total Potential Sediment from Proposed Salvage - Big Creek (tons)</li> </ul>	No salvage – 0 tons	523 tons	426 tons	322 tons	523 tons
<ul style="list-style-type: none"> <li>Qualitative Assessment of Nutrient Load Effects</li> </ul>	Increase post-fire	Slight increase above post-fire level – highest of alternatives	Slight increase above post-fire level – mid range of alternatives	Slight increase above post-fire level – lowest of alternatives	Slight increase above post-fire level – highest of alternatives
<ul style="list-style-type: none"> <li>Number of culverts removed and sediment produced</li> </ul>	No culverts removed – high risk of culvert failure	40 culverts removed 370.8 tons	40 culverts removed 370.8 tons	62 culverts removed 517.8 tons	40 culverts removed 370.8 tons
<ul style="list-style-type: none"> <li>Potential Annual Sediment Reduction from Road Decommissioning (tons/year)</li> </ul>	None	345 tons	345 tons	438 tons	395 tons
<ul style="list-style-type: none"> <li>Water Yield increase from proposed salvage</li> </ul>	0	0 acre-ft	0 acre-ft	0 acre-ft	0 acre-ft
<b>Fisheries Indicators</b>					
<ul style="list-style-type: none"> <li>RHCA Buffer Widths (Feet)</li> </ul>	N/A	Each side of stream: - 100' intermittent streams; - 150' perennial non fish bearing; - 300' fish- bearing	Each side of stream: - 100' intermittent streams; - 150' perennial non fish bearing; - 300' fish- bearing	Each side of stream: - 300' all streams	Each side of stream: - 100' intermittent streams; - 150' perennial non fish bearing; - 300' fish- bearing
<ul style="list-style-type: none"> <li>Predicted tons of sediment delivered to streams as a direct result of <u>timber harvest</u>; and tons predicted to be delivered upstream of some portion of the bull trout spawning reaches in Big Creek and Hallowat Creek</li> </ul>	See indicators for Hydrology above	See indicators for Hydrology above	See indicators for Hydrology above	See indicators for Hydrology above	See indicators for Hydrology above
<ul style="list-style-type: none"> <li>Predicted tons of sediment delivered to streams as a direct result of <u>road decommissioning</u>; and tons predicted to be delivered upstream of some portion of the bull trout spawning reaches in Big Creek and Hallowat Cr.</li> </ul>	See indicators for Hydrology above	See indicators for Hydrology above	See indicators for Hydrology above	See indicators for Hydrology above	See indicators for Hydrology above

Effects Indicator	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<p><b><u>Fisheries Indicators (cont.)</u></b></p> <ul style="list-style-type: none"> <li>Qualitative assessment of changes in stream temperature</li> </ul>	Incremental increases may occur	No increase beyond No Action anticipated	No increase beyond No Action anticipated	No increase beyond No Action anticipated	No increase beyond No Action anticipated
<p><b><u>Air Quality Indicators</u></b></p> <ul style="list-style-type: none"> <li>Particulate Matter (PM10) Generated by Alternative (tons)</li> </ul>	0 tons	66 tons	66 tons	55 tons	66 tons
<p><b><u>Scenic Indicators</u></b></p> <ul style="list-style-type: none"> <li>a qualitative assessment of changes in scenic quality</li> </ul>	No change from post-fire conditions	Salvage harvest would create open areas in foreground as seen from North Fork Road, and foreground and mid-ground as seen from Big Creek Road. Salvage in Wild and Scenic River corridor may be slightly noticeable.	Salvage harvest would create open areas in foreground as seen from North Fork Road, and foreground and mid-ground as seen from Big Creek Road. Salvage in Wild and Scenic River corridor may be slightly noticeable.	Salvage harvest would create open areas in foreground as seen from North Fork Road, and foreground and mid-ground as seen from Big Creek Road. Salvage would not occur in Wild and Scenic River.	Salvage harvest would create open areas in foreground as seen from North Fork Road, and foreground and mid-ground as seen from Big Creek Road. Salvage in Wild and Scenic River corridor may be slightly noticeable.
<p><b><u>Recreation Indicators</u></b></p> <ul style="list-style-type: none"> <li>Qualitative assessment of treatments in or near Glacier Institute and recreation sites.</li> </ul>	No treatments would occur. Visitor safety would not be improved. Fire danger would increase over time at Big Creek campground and Glacier Institute.	Visitor safety improved at some dispersed sites. Fire danger would be reduced at Big Creek campground and Glacier Institute.	Visitor safety improved at some dispersed sites. Fire danger would be reduced at Big Creek campground and Glacier Institute.	Visitor safety improved at some dispersed sites. Fire danger would be reduced at Glacier Institute, but not Big Creek campground.	Visitor safety improved at some dispersed sites. Fire danger would be reduced at Big Creek campground and Glacier Institute.
<p><b><u>Other Roadless Areas Indicators</u></b></p> <ul style="list-style-type: none"> <li>Acres of salvage in other unroaded area</li> <li>Changes to natural integrity, apparent naturalness, remoteness, solitude, primitive recreation opportunities, manageability, and boundaries in other unroaded areas</li> </ul>	<p>No salvage would occur</p> <p>No change</p>	<p>531 acres</p> <p>Natural integrity and apparent naturalness reduced on SW part of Demers Ridge. Solitude reduced during logging operations. Primitive recreation experiences would not change. Boundaries would be more difficult to manage after harvest.</p>	<p>531 acres</p> <p>Same as Alternative 2</p>	<p>446 acres</p> <p>Similar to Alternative 2, but to a lesser degree due to fewer acres affected</p>	<p>531 acres</p> <p>Same as Alternative 2</p>

<b>Effects Indicator</b>	<b>Alternative 1 (No Action)</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
<b><u>Economics Indicators</u></b>					
• <b>Effects on Job Growth Rate</b>	0 jobs/year	220 jobs/year	217 jobs/year	179 jobs/year	220 jobs/year
• <b>Effects on Unemployment Rate</b>	No change	Slight to no change	Slight to no change	Slight to no change	Slight to no change
• <b>Effects on Personal Income and Wages</b>	No change	Minimal increase	Minimal increase	Minimal increase	Minimal increase
• <b>Effects on Cost of Living</b>	No change	No change	No change	No change	No change
• <b>Effects on Economic Dependency and Diversity</b>	No change	Little to no change	Little to no change	Little to no change	Little to no change
• <b>Effects on Economic Trends</b>	No change	Very little effect	Very little effect	Very little effect	Very little effect
• <b>Effects on Income (M\$)</b>	No change	\$5145	\$5074	\$4165	\$5145
• <b>Effects on Revenue Sharing</b>	No change	No change	No change	No change	No change
• <b>Effects on Local Economic Development Objectives</b>	Would not contribute towards meeting	Consistent with objectives	Consistent with objectives	Consistent with objectives	Consistent with objectives
<b><u>Fire and Fuels Indicators</u></b>					
• <b>Effective Fuels Reduction (Ac)</b>	0 acres	2611 acres	2474 acres	1982 acres	2611 acres
• <b>Effects on prescribed fire escape risk (pile burning and/or jackpot burning)</b>	No risk	Very low risk	Very low risk	Very low risk	Very low risk