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Environmental Assessment Beartooth Front Storm Damage Clean-up and Fuels Reduction Healthy Forests Restoration Act Project – Main Fork Rock Creek and Benbow Area

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Carbon and Stillwater Counties, Montana
Township 5S, Range 16E; Township 9S, Range 19E.**



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Table of Contents

SUMMARY i

INTRODUCTION 1

- Document Structure 1
- Background and Regulatory Framework 2
- Purpose and Need for Action 10
- Proposed Action 12
- Decision Framework 13
- Public Involvement 13
- Issues 14

COMPARISON OF THE NO-ACTION AND ACTION ALTERNATIVES 16

- Alternatives 16
- Action Alternative Design and Mitigation Measures 21
- Effects Comparison of Alternatives 35

ENVIRONMENTAL CONSEQUENCES 38

- Fuels 38
- Visuals Resource 41
- Water Resources 42
- Recreation 44
- Wildlife 46
- Fisheries 53
- Forest Vegetation 55
- Heritage Resources 57
- Soils 59
- Noxious Weeds 60
- Sensitive Plants 61
- Inventoried Roadless Areas, Wilderness, & Un-roaded Areas 62

CONSULTATION AND COORDINATION 65

REFERENCES CITED 67

EA APPENDICES - Available online at: <http://www.fs.fed.us/r1/custer/>

Printed or electronic copies of the appendices are also available upon request.

- Appendix A = Fuels specialist report**
- Appendix B = Visuals specialist report**
- Appendix C = Hydrology specialist report**
- Appendix D = Recreation specialist report**
- Appendix E = Wildlife specialist report**
- Appendix F = Fisheries specialist report**
- Appendix G = Forest Vegetation specialist report**
- Appendix H = Soils Specialist Report**
- Appendix I = Range/Noxious Weeds Specialist Report**
- Appendix J = Sensitive Plants Specialist Report**
- Appendix K = Inventoried Roadless Areas, Wilderness
& Un-roaded Areas Specialist Report**

SUMMARY

The Beartooth Ranger District, Custer National Forest (CNF), United States Forest Service (USFS) proposes to improve public and firefighter safety by cleaning up areas of wind-damaged trees and reducing fuel loading on 238 acres of National Forest System (NFS) lands in the Main Fork Rock Creek drainage and 377 acres of NFS lands in the Benbow area (Figure 1).

The Benbow area is in the Little Rocky Creek and Fishtail Creek drainages, approximately 35 miles northwest of Red Lodge and 1.5 miles southwest of Dean, Montana (Figure 5). The Main Fork Rock Creek area (Main Fork) is approximately 9.5 miles south-southwest of Red Lodge, Montana (Figure 6).

The purpose of this project is to:

- Improve the ability to control and/or suppress wildfires to protect human and natural resources in the project areas.
- Reduce the risk to wildland firefighters and residents of the wildland-urban interface should a fire occur.
- Improve the ability to safely leave the areas in the event that a wildfire occurs.

This action is needed to respond to increased fuel loads created by the November 2007 storm event. These needs would be addressed by reducing fuel loads, creating fuel breaks, and reducing beetle infestation potential in treatment areas. Fuel breaks and fuel reduction would also serve the purpose of improving overall defensibility of values at risk in the event of a wildfire. Values at risk near or in the Little Rocky and Fishtail drainages include the communities of Dean and Nye, a small subdivision off Forest Road #2414, numerous private residences and ranches along Fiddler Creek Road, and the nearby Stillwater Mine. Values at risk in and near the Main Fork include numerous private residences, recreational lease cabins on National Forest System (NFS) lands, and heavily utilized Forest Service recreation sites associated with US Highway 212 (Beartooth Scenic Highway). The City of Red Lodge and outlying subdivisions are located at the mouth of the Main Fork of Rock Creek canyon.

The proposed action focuses on cleaning up down and storm-damaged trees and thinning live trees in the Benbow and Main Fork areas. In addition to the proposed action, the Forest Service also evaluated the No-action Alternative, which would not conduct any fuels reduction or storm damage clean-up.

Based upon the effects of the alternatives, the District Ranger will decide whether to implement the proposed action alternative, a modified action alternative, or the No-action alternative. If an action alternative is selected, it will include:

- The location, design, and scheduling of proposed fuel reduction on National Forest Lands in the Benbow and Main Fork areas, if any;
- Design features, mitigation measures, and monitoring requirements.

INTRODUCTION

Document Structure

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into five parts:

- *Introduction:* The section includes information on the background and history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- *Comparison of the No-action and Action alternatives:* This section provides a more detailed description of the agency's proposed action for achieving the stated purpose and the no-action alternative. The Proposed Action alternative was developed based on significant issues raised by the public. This discussion also includes possible project design features and mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative as they relate to Key issues.
- *Environmental Consequences:* This section describes brief summaries of the environmental effects of implementing the proposed action and no-action alternatives. This analysis is organized by resource area. Within each resource area sub-section, the affected environment is described first, followed by the effects of the No-action alternative and the action alternative.
- *Agencies and Persons Consulted:* This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- *Appendices:* Appendices are an integral part of this environmental assessment and provide complete versions of project specialist reports to support the effects summaries in the Environmental Consequences section. The appendices are available for viewing and download on the Custer National Forest website at: <http://www.fs.fed.us/r1/custer/>. Printed or electronic copies of the appendices are available upon request.

The October 2008 version of this EA, EA appendices, and the project record were reviewed and updated in response to 36 CFR 218 objections received and subsequent direction from the Reviewing Official. Additional documentation, including more detailed analyses of project-area resources and supporting documentation, may be found in the project planning record located at the Beartooth Ranger District Office in Red Lodge, Montana and is available for public inspection.

Background and Regulatory Framework

A wind event with recorded gusts over 100 miles per hour brought widespread damage to the Beartooth Front area on November 12, 2007. This wind created heavy concentrations of wind damaged and fallen trees on NFS lands, including the Main Fork and Benbow areas (Figure 1). Concentrations of wind damaged and fallen trees in combination with fuels conditions that existed before the wind event have increased beetle infestation potential and created potentially hazardous fuel loads.

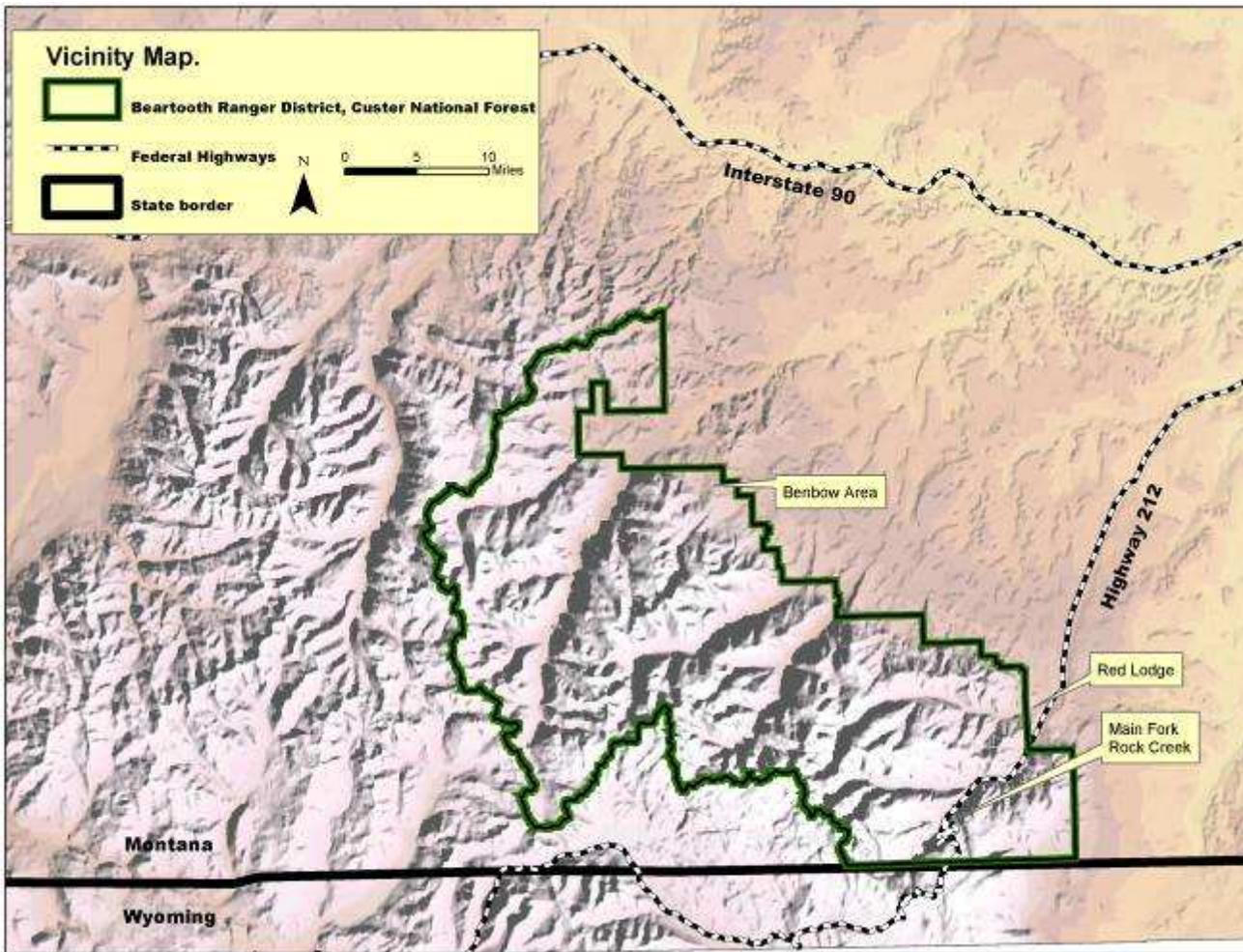


Figure 1. Vicinity map.

Related storm clean-up and fuels reduction efforts

The November 2007 wind event also affected recreation facilities across the Beartooth District, such as signs, picnic tables, trails, roads, and recreation residences damaged by falling trees. To provide facilities for safe use by the public, some hazard tree removal and repairs at these facilities were completed under separate efforts in winter and spring 2008.

The Bureau of Land Management (BLM), Billings Field Office has proposed 40 acres of mechanical treatment for storm damage clean-up, fuels reduction, and forest health improvement along the Benbow Road #2413 at the Custer NF boundary (Sparks 2008). This work has not been completed.

In recent years, the Beartooth Ranger District has completed several fuels reduction projects along the Forest Boundary near the West Fork Rock Creek and Main Fork Rock Creek. Future fuel reduction planning efforts are also anticipated along the Beartooth Front near Nye and Dean. The Beartooth Front Storm Damage Clean-up and Fuels Reduction project would continue and/or complement these other related efforts in the Main Fork and Benbow areas.

Climatic and terrain influences

During dry periods, lightning and human-caused fires are a regular occurrence on the Beartooth District. Trees weakened by drought can also become more susceptible to insect infestations. For most of the past 10 years, summer precipitation has been below historic levels. Recent drought in Stillwater and Carbon Counties has significantly heightened risk of wildland fire along the Beartooth Front (Stillwater County 2007). This is evidenced by lower than normal live fuel moistures over the past few years. Live and dead forest fuel moistures on the Beartooth District have been recorded since the 1970's and are used to calculate Energy Release Component (ERC) for wildland forest fires. Higher ERC values indicate higher potential wildland fire severity. In general, larger fires (≥ 1000 acres) tend to be associated with higher ERC values. Large fires can be quite expensive and dangerous. Over the past several years, peak summer ERC values have been exceeding historic high values on the Beartooth Ranger District.

Wildfire size, frequency, and length of wildfire season have increased in western U.S. forests in the late 20th century (Westerling et al 2006, Graham et al 2004, Meyer and Pierce 2003). This trend is evident on the Beartooth Ranger District. In the past 20 years, strong winds, topography and high ERC values have resulted in rapidly spreading high-intensity fires on Custer National Forest lands in Carbon and Stillwater Counties. Examples include the 2008 Cascade fire (10,200 acres), the 2006 Derby fire (200,000 acres), the 2002 Red Waffle fire (2,000 acres), the 2000 Willie fire (1,503 acres), the 1996 Shepherd Mountain fire (14,890 acres), and the 1988 Storm Creek (56,856 acres) and Clover/Mist fires (387,400 acres). Several of these fires have resulted in damage to Forest Service facilities and private property, including loss of homes and structures. Predicted continued climatic changes may result in earlier spring snowmelt, longer fire seasons, and consequent large wildfires (Westerling et al 2006).

Strong wind events similar to the November 2007 wind event are common in Stillwater and Carbon Counties (Stillwater County 2007, Carbon County 2005). Much of the Custer National Forest along the Beartooth Front is characterized by steep forested and wind-prone slopes. In addition to potential for storm damage to trees and increased fuels loads, there is rapid wildland fire growth potential. The Beartooth Mountains consist of large plateaus and steep narrow drainages. Steep slopes affect fire ignition and spread by preheating the fuels upslope and enabling spotting to occur from rolling and aerial fire brands. Narrow drainages, including the Main Fork and Little Rocky Creek, can funnel winds down slope from the plateaus and increase wind speeds. Flame length, rate of spread, and fire spotting generally increase with wind speed. As evidenced in the aforementioned large fires, wind, topography, heavy fuels loads, and high ERC values result in rapid fire spread and high burn severity and intensity on the Beartooth District.

Forest Vegetation and Fuel Loads



Figure 2. Photo of West Fork Rock Creek work center around 1906.



Figure 3. Photo of West Fork Rock Creek work center, 2008.

Prior to European settlement of the area, lightning-caused fires reduced fuels on the Beartooth Ranger District. Computer modeling simulations indicate the Beartooth Front was characterized by high severity fires every 35 to 200 or more years. From 1870 to 1904, more than 138,000 acres of forest land

burned on the Beartooth District (Figure 2). Based on personal accounts, historic photos, and tree age, the last known large fire event for the Fishtail and Little rocky creek drainages was 104 years ago, and 118 years ago for the Main Fork of Rock creek drainage. Local landowners have provided anecdotal evidence that the north face of the Beartooth Ranger District, which includes the Fishtail and Little Rocky creek drainages, burned in a stand replacement fire around 1904.

Considerable growth of timber along the Beartooth front has occurred since the fires of the early 1900's (Figure 3). Fire suppression to protect natural resources, homes and cabins in the project areas has prevented wildfire from performing its natural fuels reduction role. Forests in the project areas are primarily even-aged mature lodgepole pine. Lodgepole forests that survive more than about 100 years often become susceptible to and die from mountain pine beetle infestations (Gibson 2004). The resulting buildup of dead and dry fuels can invite a large stand-replacing wildland fire. There are also spruce, Douglas-fir, aspen, subalpine fir, ponderosa pine, and whitebark pine forests. Prior to European settlement, these forest types had low intensity fires periodically burning through them to reduce fuels. Crown fires can readily spread into these forest types from adjacent lodgepole forests. Fire exclusion has generally made these forest types more susceptible to beetle infestations and stand-replacement fires.

The September 1948 Hellroaring and Rock Creek fires burned approximately 3,000 acres in Hellroaring and Main Fork Rock Creek drainages south of M-K campground. Most historic human-caused fires on the Beartooth District occur in drainage bottoms with more frequent recreational use. Since 1953 there have been 80 recorded wildfires in the Main Fork Drainage ranging in size from 0.1 to 1503 acres. Of those, 33 have been lightning (41%) and 47 human or other ignition sources (59%). Over the last ten years, there have been 20 fires in the Main Fork, or an average of 2 fires per year. Of those fires, 8 were lightning (40%) and 12 were human caused or other ignition sources (60%). From 1953 to 2007, 3 recorded fires have occurred within or on the edge of the proposed treatment units in the Main Fork of Rock Creek. Two fires were human caused and 1 caused by lightning.

Since 1953 there have been 28 recorded wildfires in the Fishtail creek and Little Rocky creek drainages, and surrounding area ranging in size from 0.1 to 380 acres. Of those, 12 have been lightning (43%) and 16 human or other ignition sources (57%). From 1953 to 2007, two lightning-caused fires and one human caused fire (Benbow fire) have occurred within or on the edge of the project area. The human-caused Benbow fire (380 acres, 1980) occurred in portions of Proposed Action treatment units and destroyed one primary residence in a small subdivision along Meadow Creek.

The November 2007 wind event resulted in heavy concentrations of trees blowing over or being damaged in the Main Fork Rock Creek and Benbow areas (Figure 4). Numerous additional photos of storm damage and fuel loads are in Section T of the Project Record. When combined with fuel loads that existed before the storm, these trees form areas of down fuel that will readily carry fire.



Figure 4. Photo of Benbow area storm damage in proposed treatment unit 1.

Bark beetle infestation potential

If beetle infestations increase at and near wind-damaged areas, they could potentially spread to and kill live trees, which could increase fire risk as the amount of fuel increases. Concentrations of wind damaged and fallen trees can increase bark-beetle infestation potential (Samman and Logan. 2000, Hagle et al 2003). Such concentrations can attract beetles from surrounding areas. Wind damaged and fallen trees serve as food sources and over-wintering habitat for several bark beetles, including mountain pine beetle, pine engraver beetle, Douglas-fir beetle, and spruce beetle. When abundant host trees (such as fallen trees) are present, beetle populations increase and often exhaust that food supply and then inhabit and kill nearby live trees. These beetles kill live trees by breeding and laying eggs in the phloem (or vascular tissue) of trees, which conveys water and food to the tree (Hagle et al 2003). Recent aerial surveys mapped thousands of trees killed by bark beetles on the Beartooth District. 2003 and 2006 aerial surveys detected and mapped populations of mountain pine beetle infestation in the Little Rocky Creek and Main Fork drainages. New attacks by engraver beetles in ponderosa pine and Douglas-fir beetles were observed in May 2008 in Benbow area storm damage. Based on information provided by a Forest Service entomologist, there is a high likelihood that much of the downed Douglas-fir in the Benbow area will be infested by Douglas-fir beetle (Gibson 2008). In the Main Fork, insipient spruce beetle populations may well be concentrated in some of these numerous windthrown trees (Gibson 2008). If beetle infestations increase at and near wind-damaged areas, they could not only kill thousands of live trees, but also increase fire risk as the amount of fuel (or dead trees) increases.

Community Wildfire Protection Plans

The fires of 2000 focused national attention on the threats wildland fire posed to people, communities, and natural resources and resulted in the advent of the National Fire Plan. A major component of that overall effort emerged with the 2001 approval of “A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Strategy,” (10-Year Strategy) by the Western Governors’ Association, the Secretaries of the Departments of Agriculture and Interior, and a broad range of stakeholders. The 10-Year Strategy was evaluated and updated in 2006 (Western Governors Association 2006). Primary goals of the 10-Year Strategy are: (1) improve prevention and suppression, (2) reduce hazardous fuels, (3) restore fire adapted ecosystems, and (4) promote community assistance. The goals are interrelated and mutually reinforcing: restoring fire-adapted ecosystems and reducing hazardous fuels will reduce risks to communities and provide economic benefits, as well as improve fire prevention and suppression.

In 2001, Red Lodge was included in the Federal government’s nationwide list of communities at high risk from wildfire in the vicinity of Federal lands (Federal Register, Volume 66, #160, August 17, 2001). Both Carbon and Stillwater Counties developed community wildfire protection plans through a collaborative process between citizens, Federal, State, County, and local agencies, and the private sector. Each County defined several goals to begin mitigation of fire risk within and near the Wildland Urban Interface (WUI). WUI is defined as areas within or adjacent to a community that is at-risk due to wild fire potential.

The 2005 Carbon County Community Wildfire Protection Plan and Pre-Disaster Mitigation Plan (CWPP/PDM) states that “The most extreme situation with respect to fuel conditions and values at risk occurs south and west of Red Lodge where there are numerous high-value individual homes and subdivisions located in the wildland urban interface area in close proximity to the National Forest boundary.” This includes the Main Fork Rock Creek.

The 2008 City of Red Lodge Growth Policy states that “The City of Red Lodge is surrounded by wildland areas that contain heavy fuel loads and the potential for severe wildland fire activity. Surrounding areas of concern include the Main and West Forks of Rock Creek and the Palisades Area, all south and west of town. These areas contain significant fuel loads that could easily cause ignition within City Limits by blowing fire brands” (City of Red Lodge 2008).

The 2007 Stillwater County Wildfire Protection Plan (CWPP) identified much of the Benbow area as WUI (Stillwater County 2007). The CWPP states that “Generally, the development of most concern in the county from the standpoint of fire protection is occurring along the wildland urban interface area.” Goals of the Stillwater CWPP include maximizing protection of property from wildland fire in rural areas. Specific CWPP objectives include “Pursue WUI fuel reduction projects in high-risk areas around the county” and to “Jointly develop a fuels reduction project for the major subdivision area (BLM, FS, RFD, private landowners).” Stillwater County’s mitigation project ranking listed fuel reduction in high risk areas by the USFS as a “High” priority. The Benbow area is in a high-risk area adjacent to subdivided private lands and is therefore a high Stillwater County priority for fuels treatment. Increased insect infestation in the Benbow area due to presence of storm-damaged trees could increase dead trees and the corresponding fire hazard. The majority of proposed treatment in the Benbow area is within WUI.

Healthy Forests Restoration Act of 2003

The Healthy Forests Restoration Act of 2003 (HFRA) established procedures for Federal agencies conducting environmental analysis for authorized hazardous-fuel-reduction projects on Federal land. The proposed Beartooth Front Storm Damage Clean-up and Fuels Reduction Project is designed under the requirements of HFRA and for the purpose of responding to the 10-year Comprehensive Strategy. Specifically, project activities were identified in the CWPP/PDM and CWPP, portions of these project areas were identified as WUI, and presence of wind throw poses the significant threat of increased fire danger and potential impacts of a large wildfire to various ecosystem components. Potential impacts of a wildfire are described in the Environmental Consequences section and Appendices of this Environmental Assessment.

Watershed and Water Supply Protection

One purpose of the HFRA is to reduce wildfire risk to municipal water supplies. The Main Fork Rock Creek and Little Rocky drainage meet HFRA definitions of Municipal Water Supply Systems in that they contain “systems constructed or installed for the collection, impoundment, storage, transportation, or distribution of drinking water” (HFRA 2003). There are multiple public water systems in the Main Fork Rock Creek as defined by the Safe Drinking Water Act (42 USC 300f). Additionally, numerous privately owned groundwater wells and springs used for residential drinking water and irrigation ditches and wells are fed by water from the Main Fork, Little Rocky, and East Fishtail watersheds.

The Main Fork Rock Creek contains public water systems supplied by shallow wells at multiple Forest Service campgrounds and organizational camps and downstream of the Forest Boundary at Rock Creek Resort, all in close proximity to the Main Fork Rock Creek.

A catastrophic wildland fire in these areas could increase runoff and sedimentation. This could potentially decrease water quality. Post-fire run-off can contain increased levels of nutrients and sediment (Miller et al 2006, Wondzell and King, 2003). Such increases could potentially affect water quality and quantity in shallow wells with surface water connection and irrigation ditches that serve communities and residences in these areas.

Custer National Forest Land and Resource Management Plan.

The 1986 Custer National Forest Land and Resource Management Plan (Forest Plan) Forest-wide Fuels Management standard specifies that "A combination of treatments will be used that will most efficiently meet the fuels management direction of each management area" (USDA 1986, page 39). Activities in the Beartooth Front Storm Damage Clean-up and Fuels Reduction project are proposed in several Forest Plan Management Areas. Each Management Area (MA) has specific goals and standards defined in the Forest Plan. Activities in the Main Fork Rock Creek are proposed in MA F, MA M, and MA T. Activities in the Benbow area are proposed in MA B, MA D, and MA M. Maps of Forest Plan MAs and proposed MA treatment acreages spreadsheet are in the project record.

The MA B goal is to “Provide for continuation of livestock grazing...” (page 45). MA B standards include:

- Management activities may include removal of wood products....

- The fire management control objective is to hold 90 percent of fire starts to less than 50 acres.
- The appropriate fire suppression response may vary from contain to confine based on location and fire danger.
- Planned ignitions may be used for range and wildlife enhancement, fuels and debris reduction.

The MA D goal is to “maintain or improve the long-term diversity and quality of habitat for the selected species as well as accommodating the other resource management activities....” (page 53).

MA D standards include:

- The fire management control objective is to hold 90 percent of fire starts to less than 50 acres.
- The appropriate fire suppression response may vary from contain, to control, to confine.
- Planned ignitions may be used for range improvement and wildlife habitat, timber stand maintenance, fuels reduction, sanitation, maintaining vegetation, and associated wildlife habitat dependent on periodic fire.

The MA F goal is “To provide a spectrum of recreation opportunities and settings in the and around developed sites and the access corridors to the sites...” (page 61). MA F standards include:

- Vegetation in developed sites will be managed to maintain the appropriate recreation setting, including planting new plants to supplement existing vegetation as well as preventative measures for insect and disease control when necessary.
- Harvest within developed recreation sites will normally be for removal of hazardous trees and protection of improvements.
- The fire management control objective will be to hold 90 percent of fire starts to less than 50 acres.
- Appropriate fire suppression response will be to control all wildfires. Contain and confine will not be appropriate.
- Planned ignitions may be used for slash and debris disposal, enhancement of visual quality and preventative measures to reduce wildfire intensity.

Riparian areas are designated MA M and occur in nearly every other management area and, for the most part, are not specifically mapped in the Forest Plan. The Forest Plan MA goal for riparian areas is to provide healthy, self-perpetuating plant and water communities that will have optimum diversity and density of under-story and over-story vegetation (pages 80-82). MA M standards include:

- Silvicultural prescriptions will be used along fishery streams to insure that an adequate number of trees will be available to maximize the continual, natural development of pools necessary to meet the need of the individual fishery involved.
- The fire management control objective will be to hold 90 percent of fire starts to less than 10 acres.
- The appropriate suppression responses will be contain and control. Confine will not be an appropriate response. Minimal suppression equipment will be used.
- Prescribed fire may be used for debris cleanup

The MA T goal is “To provide facilities, information and interpretation to Forest visitors regarding the human and natural history of the landscape seen from the highway (212) corridor” (page 98). MA T standards include:

- Timber harvest of posts, poles, and firewood will be permitted as long as it maintains or enhances the visual resource.
- The fire management control objective will be to hold 80 percent of fire starts to less than 100 acres.
- The appropriate fire suppression response will be contain, control, and confine.
- Planned ignitions may be used for debris disposal. Broadcast burning will not normally be used as a management tool.

While not repeated here, there are other applicable Goals, Standards, and Objectives in the Forest Plan.

Custer National Forest Fire Management Plan

The Forest Plan requires that a Fire Management Plan be developed and implemented. Custer National Forest Fire Management Plan (USDA 2008a) goals include:

- Make firefighter and public safety the highest priority in every fire management activity. The objective for this goal is to ensure that wildland and prescribed fire operations cause no injuries to either the public or firefighters.
- Reduce wildland fire hazards in and near high value public and private property. The objective for this goal is to employ strategies to reduce risk of fire destroying or damaging cultural, historic, or any private structure. The strategy for this goal is to use a combination of mechanical hazardous fuel reduction practices and prescribed fire to reduce the intensity of unwanted fires near structures, cultural and historic sites.

The Fire Management Plan specifies that “long-term fuels management on the CNF will focus on protection of property, lowering the risk to firefighters, the general public and restoring conditions that promote lower intensity wildland fires, reducing large fire suppression costs and improving ecosystem health” (USDA 2008a, page 28). This Plan also states (pages 11-12) that “mechanical treatments for fuels reduction will be used to modify wildland fuels to reduce the flammability and resistance to control. The mechanical reduction of fuels near structures and other developments is the preferred option for treating fuels. In many instances this treatment will precede an application of prescribed fire. Non fire treatments most commonly used may include thinning, pruning, lop and scatter, hand or machine piling, chipping or mulching or removal as fuel wood by the general public.”

Purpose and Need for Action

The Forest Service has prepared this Environmental Assessment (EA) to disclose and inform the public regarding the potential environmental effects that could result from implementing fuels reduction activities in locations near Red Lodge and Dean, Montana and to briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact. This EA was completed in compliance with the National Environmental Policy Act (NEPA), HFRA, and other relevant laws and regulations. This EA discloses the direct, indirect and

cumulative environmental impacts that would result from the proposed action. It is prepared according to the format established by Council of Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508) and guidance for environmental assessment of forest health projects (Connaughton 2002).

Planning was coordinated with Federal, State, and local government entities and agencies, and local federally recognized tribes. Additional documentation, including public involvement, comment, and coordination, may be found in the project planning record located at the Beartooth Ranger District Office in Red Lodge, Montana and is available for public review.

The project areas are susceptible to severe wildfire behavior that can potentially impact the communities of Red Lodge and Dean, other at-risk Federal lands, and Forest Service infrastructure, such as developed recreation facilities and leased recreation residences. Based upon findings from field reconnaissance, information gathering, and analysis by USFS fire and fuels management specialists, the existing condition within the proposed project area includes fuel loading, arrangement of fuels on the ground and in the tree crowns, wind patterns, and topography that make it difficult to efficiently and safely suppress wildfires (Fuels analysis, Appendix A). The desired fuel condition is to improve the ability of firefighters to suppress human-caused fires in the drainage bottoms and along the National Forest boundary in the project areas by reducing fuel loads and fuel continuity.

The purpose of this project is to:

- Improve the ability to control and/or suppress wildfires to protect human and natural resource in the project areas.
- Reduce the risk to wildland firefighters and residents of the wildland-urban interface should a fire occur.
- Improve the ability to safely leave the areas in the event that a wildfire occurs.

This action is needed to respond to potentially hazardous fuels conditions, including increased fuel loads created by the November 2007 storm event. These needs would be addressed by reducing fuel loads, creating fuel breaks, and reducing beetle infestation potential in treatment areas. Fuel breaks and fuel reduction would also serve the purpose of improving overall defensible space around the communities of Red Lodge, Dean, and associated infrastructure on private and public lands.

Proposed actions respond to the goals and objectives outlined in the Custer Forest Plan and Fire Management Plan. Specific MA control objectives, appropriate suppression responses, and goals/objectives for use of mechanical fuels treatments and prescribed fire are listed above. The proposed Beartooth Front Storm Damage Clean-up and Fuels Reduction HFRA project is designed under the requirements of HFRA and for the purpose of responding to the 10-year Comprehensive Strategy, focusing on reducing wildfire risk to communities, municipal water supplies, and other at-risk lands. This proposal concurrently addresses identified hazards and vulnerabilities described in the Carbon County CWPP/PDM, Stillwater County CWPP, and City of Red Lodge Growth Policy.

The Beartooth Front Storm Damage Clean-up and Fuels Reduction project consists of specific proposals. It is important to note that none of these proposals are intended to nor can completely prevent wildfires in the Main Fork and Benbow areas. These are fire-dependent ecosystems comprised primarily of even-aged timber stands. Many of these stands are at an age when they would, under natural conditions, burn in a high severity stand-replacing wildfire. This situation has been exacerbated

by down fuels created by the November 2007 wind event. The lack of access roads, tendency for high winds, short burning condition windows, and continuous fuels in these areas can make fuels treatments using prescribed broadcast burning or wildland fire use very expensive and oftentimes not physically possible. Proposed treatments may create thinned areas from which future prescribed burning and/or fire suppression tactics could be implemented.

There will be additional human- and lightning-caused wildfires in the project areas. Dependent upon weather and other conditions, wildfires in these areas could grow large and suppression may not be immediately possible. Rather than attempt to treat fuels across large landscapes, proposed activities are focused on treatments in specific and strategic areas where such treatments would likely be most effective at improving public and firefighter safety and improving the ability to suppress fires. Fuels reduction units are connected to existing fuel breaks, such as roads, talus slopes, meadows, and other openings in vegetation. A variety of treatments are proposed to create fuel breaks along Main Fork Road # 2421, Benbow Road # 2414, and adjacent to the Forest boundary. Given that a high percentage of recent fires in the area have been started due to human activities, fuels reduction is focused on the areas most used by the public, such as near roads and developed recreation facilities with storm damage. When (not “if”) wildfires start in the project areas, proposed fuels treatments are designed to improve the ability of firefighting personnel to suppress wildfires, protect infrastructure, use existing roads as fire control lines, and increase effectiveness of aerial fire retardant use. Proposed fuels treatments are also designed to approve the ability of firefighting personnel and the public to leave the areas in the event that a wildfire cannot be safely suppressed.

It is estimated that there are thousands of acres of November 2007 wind damage on the Beartooth District. It is important to note that the majority of the wind damaged areas are not proposed for treatment due to wilderness designation, steep terrain, lack of merchantable timber products, and lack of access roads. Proposed removal of dead, wind-damaged, and beetle infested trees is a treatment that would help reduce local beetle populations and prevent further mortality within and immediately adjacent to specific treatment areas. Proposed treatments are intended to improve resistance to beetle infestation potential in specific areas, not at the landscape level. Timing is critical since treatment activities must take place before adult beetle flight occurs and the insect spreads to different sites (Samman and Logan 2000). Weather over the next few years will likely be largest determining factor as to whether a bark beetle infestation occurs along the Beartooth Front (Gibson 2008).

Proposed Action

In January 2008, the Forest Service proposed fuels reduction and storm damage clean-up across 109 acres in the Benbow area, 1070 acres in the West Fork Rock Creek area, and 238 acres in the Main Fork Rock Creek area. In response to public comment and Forest Service Interdisciplinary Team recommendations and to better address the project purpose and need, the District Ranger modified the proposed action to:

- Not include previously proposed treatments in the West Fork Rock Creek areas burned in the 2008 Cascade wildland fire and unburned areas in the West Fork Rock Creek. The Forest Service has modified proposed treatments in the West Fork and will analyze effects of and make a decision for such treatments as a separate environmental analysis effort.
- Not include previously proposed removal of storm damaged trees in Main Fork Rock Creek

campgrounds. Environmental analysis has been completed and clean-up in these areas was authorized under administrative site maintenance categorical exclusions. On-the-ground work to remove storm damage in these areas was completed in spring 2008.

- Clarify that while the potential for treatment areas exceeding a 40 acre opening size was identified in maps and tables in the original proposal, retention of some remaining standing trees in thinned areas and streamside management zones would prevent any one continuous opening from being larger than 40 acres.
- Per public request, 268 acres of storm damage clean-up and thinning areas were added in the Benbow area. This includes treatment in Benbow Unit 60 adjacent to private lands.
- Specify fuels objectives for each treatment type.
- Specify equipment to be utilized in each unit, such as handwork (chainsaws and handpiling), machine work (heavy equipment or commercial logging machinery), or a combination of hand and machine work.

The modified proposed action is the Action Alternative that is considered for this environmental analysis. The Action Alternative would meet the purpose and need by reducing fuels and cleaning up storm damage across 377 acres in the Benbow area and 238 acres in the Main Fork Rock Creek area. A full description of the Action Alternative is provided below.

Decision Framework

The Responsible Official for this proposal is the Beartooth District Ranger, Custer National Forest. The District Ranger considered comments and objections submitted regarding the project. The District Ranger will decide whether and how to meet the Purpose and Need in the Benbow and Main Fork areas and document this decision in a Decision Notice. The District Ranger will decide whether to implement the proposed action alternative, a modified action alternative, or the No-action alternative. If an action alternative is selected, it will include:

- The location, design, and scheduling of proposed fuel reduction on National Forest Lands in the Benbow and Main Fork areas, if any;
- Design features, mitigation measures, and monitoring requirements.

Public Involvement

The proposal has been listed in the CNF's Schedule of Proposed Actions since April 2008. The proposal was provided to the public and other agencies for comment from January 25 to February 25, 2008. Comment period and public meeting notification were provided via a legal advertisement published in the Billings Gazette newspaper on January 29, 2008 and news releases sent to several area and regional newspapers. Approximately 200 letters describing the proposed action and asking for comment were mailed or e-mailed to individuals, agencies, groups, and Forest Service permit holders that could be potentially affected by or interested in the proposal. The Beartooth District Ranger presented project information to the Red Lodge City Council and Carbon County Commissioners. Public collaboration meetings were held on January 30 in Nye and on February 6 and 19, 2007 in Red Lodge. A total of 17 responses to project collaboration and public comment efforts were received (see project record).

Using the comments received (see *Issues* section), the interdisciplinary team developed a list of issues to address. In October 2008, analysis summarized in an Environmental Assessment and draft Finding of No Significant Impact were sent to individuals that previously provided comment or otherwise expressed interest in this project.

Pursuant to 36 CFR 218, an October 10, 2008 Legal Notice of the opportunity to object to this authorized hazardous fuel reduction project was published in the Billings Gazette. Two objections were received (see project record). In response to these objections, a conference call meeting was held on December 3, 2008 with the objectors to resolve objection issues. No issues were resolved during the conference call. On December 8, 2008, a letter from the reviewing official was mailed to the objectors describing the reviewed findings and direction for the deciding official to follow (see project record).

Issues

Issues were identified through content analysis of public comment received during the project comment period, Interdisciplinary Team discussion, and legal requirements. The Forest Service separated the issues and comments into two groups:

- **Key Issues** are significant issues that drive project design, identify additional project needs, or result in a specific monitoring or mitigation measure.
- **Comments for Analysis** are non-significant issues identified from comment to be analyzed to display effects of the project or to carry forth project-specific requests or suggestions made by scoping respondents.

The District Ranger identified 9 topics raised during scoping as Key Issues that relate to proposed activities in the Main Fork and Benbow areas (Table 1). An Indicator was developed for each Key Issue to measure or describe how project activities would be affected by proposed activities. The Forest Service identified 21 Comments for Analysis to display effects of the project (Table 2). Other comments were dismissed from further analysis because they were either 1) beyond the project’s scope; 2) a request that would not address the project’s purpose and need; 3) already decided by law, regulation, Forest Plan, or other higher level decision; 4) irrelevant to the decision to be made; 5) not related to the project’s effects; 5) conjectural in nature or not supported by scientific evidence; or 6) the magnitude, extent, duration, speed, and direction of preliminary effects were determined to be non-significant. The CEQ NEPA regulations require this delineation in Sec. 1501.7, “...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)...”

Table 1. Key Issues.

Number	Key Issue	Indicators
1	Effects to visual resources.	Consistency with Forest Plan Visual Quality Objectives (VQO’s).
2	Effectiveness of fuels treatments in decreasing fire risk and improving firefighter and public safety.	Qualitative and quantitative change in future fire behavior within the treatment areas based on modeling results
3	Effects to recreational users	Consistency with applicable Forest Plan recreation goals, objectives, and standards.

4	Identification of a need for commercial and personal firewood harvest opportunities.	Number of vehicle accessible cull decks retained unburned for a minimum of one field season.
5	Effects to water quality.	Equivalent clearcut area acres (ECA); qualitative discussion of effects to water yield, sedimentation, and channel and floodplain function.
6	Effects to aquatic habitat and biota.	Equivalent clearcut area acres (ECA), temporary stream crossings, miles of new system or temporary roads, and large woody debris frequencies in selected areas. Qualitative determination of potential for riparian, streambank stability and LWD related effects to aquatic species and habitat, accounting for aquatic mitigation measures.
7	Effects of project implementation to noxious weed proliferation and post-project weed monitoring needs.	Noxious weed risk assessment rating.
8	Effects of tree removal and equipment use on future off-road use and car camping sites.	Post-project compliance with Beartooth Travel Management Plan (USDA 2008b).
9	Effects to snag amount and distribution.	Average number of snags per acre retained in a stand and whether recommendations in the Northern Region snag management protocol (USDA 2000) would be met.

Table 2 – Comments for Analysis.

Number	Comments for Analysis
10	Effects of project activities to subdivisions adjacent to the Forest boundary.
11	Effects of logging truck traffic and associated safety concerns.
12	Concern about use of heavy equipment and suggestion for use of smaller equipment, such as horse logging.
13	Effects to moose.
14	Concern about project implementation causing fire starts.
15	Identification of a need for interpretive education associated with project.
16	Suggestion to “allow the public to use the plowed road on weekends to drive to a plowed parking area beyond.....”
17	Effects of thinning to future timber stand wind damage potential.
18	Effects of future regeneration to fuel loading and fire risk.
19	Effects to snag habitat.

Number	Comments for Analysis
20	Effects to viability of snag associated wildlife.
21	Effects to wildlife habitat diversity
22	Effects to Management Indicator Species (MIS) and MIS viability.
23	Effects to old growth habitat and species.
24	Effects to Sensitive wildlife species.
25	Effects to pine marten.
27	Effects to lynx.
28	Cumulative effects of proposal and historic timber harvest.
29	Effects to beetle infestation levels.
30	Effects to soils.
31	Effects to heritage resources.

COMPARISON OF THE NO-ACTION AND ACTION ALTERNATIVES

This section describes and compares the alternatives considered for the Beartooth Front Storm Damage Clean-up and Fuels Reduction – Main Fork and Benbow Areas project. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. As recommended by the CEQ (Connaughton 2002), the No-action is presented to contrast the impacts of the proposed action with the current condition and expected future condition in the absence of the Action Alternative.

Alternatives

No-action Alternative

No-action

Under the No-action alternative, current management plans would continue to guide management of the project area. No fuels reduction or additional storm-damage clean-up activities would be implemented to accomplish project goals.

Action Alternative

The Proposed Action

The actions proposed by the Forest Service to meet the purpose and need would reduce fuels and clean-up storm damage across 377 acres in the Benbow area (Figure 5 and Table 3) and 238 acres in the Main Fork Rock Creek area (Figure 6 and Table 4). No activities are proposed in parklands, prime farmlands, wild and scenic rivers, or ecologically critical areas.

Table 3. Proposed Benbow Area Units.

Unit number	Unit acres	Proposed treatments	Treatment Method
1	66	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine and hand.
2	30	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
3	75	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
54	35	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
55	1	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
56	15	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
57	18	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
58	28	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine and hand
59	20	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine and hand
60	89	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
TOTAL BENBOW ACRES = 377			

Table 4. Proposed Main Fork Area Units.

Unit number	Unit acres	Proposed treatments	Treatment Method
41	37	Remove and salvage windfall and wind-damaged trees along US Highway 212 ¹ .	Machine
42	10	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
43	33	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
44	17	Thin remaining live trees in Parkside Campground ² .	Machine
45	40	Thin remaining live trees in Greenough Lake Campground and recreation site and Limberpine Campground ² .	Machine
46	6	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine
47	87	Remove and salvage windfall and wind-damaged trees ¹ . Thin remaining live trees ² .	Machine

Unit number	Unit acres	Proposed treatments	Treatment Method
48	8	Remove and salvage windfall and wind-damaged trees in MK Campground ¹ . Thin remaining live trees in MK Campground ² .	Machine
TOTAL MAIN FORK ACRES = 238			

The following descriptions correspond to numbered end notes in the “Proposed treatments” column in Tables 3 and 4:

Treatment 1: Windfall and wind-damaged trees would be removed using ground-based timber harvest equipment where such trees are concentrated or scattered. Equipment used could include skidders, low-angle cable-logging systems, feller bunchers, and/or forwarders. Where available, merchantable trees would be salvaged and sold as commercial timber. Tree removal could begin as early as winter 2008/2009 and continue for up to 5-10 years as timber is sold under contract and/or as funding becomes available to treat areas with lesser amounts of merchantable timber. Remaining slash and non-merchantable down and damaged material would either be removed or piled and burned onsite. Piles would be burned under prescribed conditions under an approved burn plan. Prescribed burning could take several years depending on burning factors like fuel moisture, weather conditions, etc.

Treatment 2: Live trees would be thinned to create a shaded fuel break. All thinning would be dependent upon availability of funding. Thinning could begin as early as winter 2008/2009 and continue for up to 5-10 years as funding becomes available. Thinning would include cutting and removal of both small ladder fuels and larger trees to retain average spacing of 10 feet between remaining individual tree crowns. Tree spacing between remaining individual tree boles would be approximately 20’ to 30’ between remaining individual trees. The largest and most vigorous trees would be retained as spacing allows. Where trees are predominantly less than 5” Diameter at Breast Height (DBH), bole spacing would be 15’ to 25’. Thinning would be accomplished by hand crews or using mechanized equipment. While cut biomass would be utilized for forest products where possible, the majority of these areas contain non-merchantable size standing timber. Any cut merchantable trees could be sold as commercial timber to offset treatment costs. Remaining slash and non-merchantable down and damaged material would either be removed or piled and burned onsite. In machine operable ground, slash would be machine piled to leave ≤ 10 tons to the acre. Piles would be burned under prescribed conditions under an approved burn plan. Prescribed burning could take several years depending on burning factors like fuel moisture, weather conditions, etc.

For both treatments 1 and 2, in areas not machine operable, or where it would not be possible to utilize biomass for forest products: 1) Tree boles 6” and greater would be bucked to 6 foot lengths and left in place; 2) All material down to a 3” top would be handpiled; 3) Remaining material would be bucked to lie flat on the ground; and 4) Piles would be burned under prescribed conditions under an approved burn plan. Due to variability in wind damage, topography, equipment operability considerations, streamside management zones, and current road locations, treatments would vary within each unit and continuous openings would not exceed 40 acres.

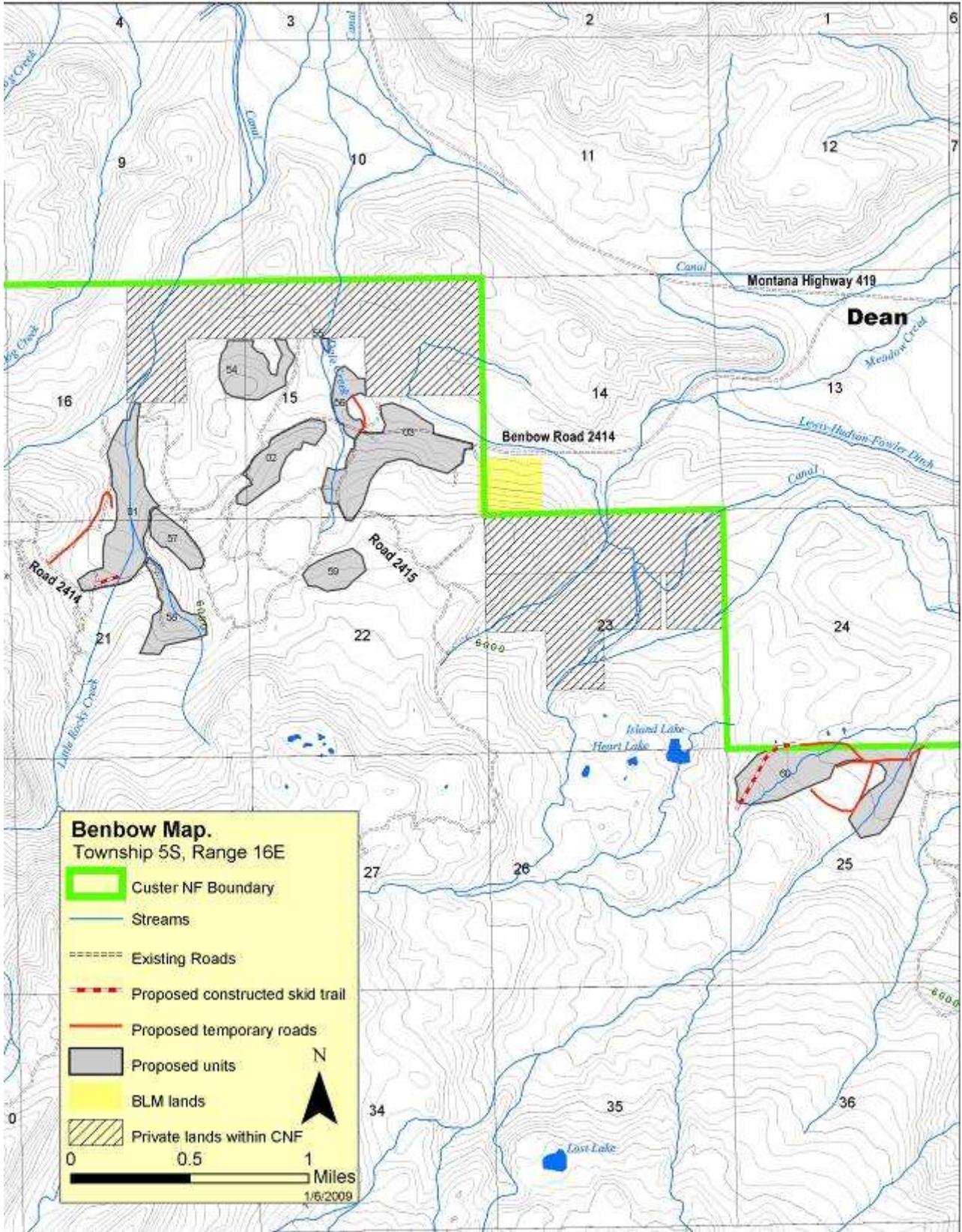


Figure 5. Map of proposed units – Benbow area.

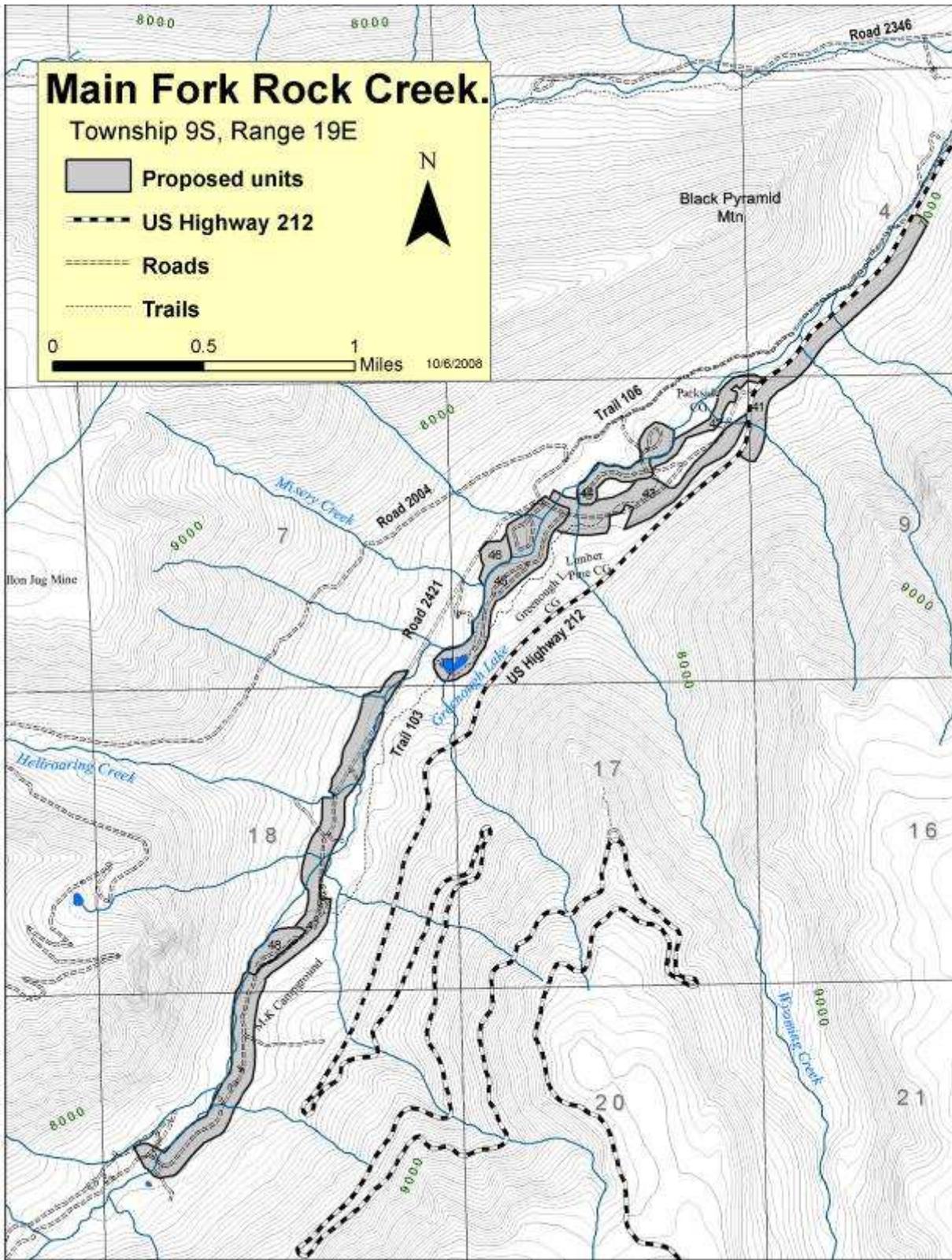


Figure 6. Map of proposed units – Main Fork area.

Action Alternative Design and Mitigation Measures _____

In response to public comments on the proposal, design and mitigation measures in Table 5 were developed to address Key Issues and to ease some of the potential impacts the action alternative may cause. These measures also address some concerns identified as Comments for Analysis and ensure compliance with applicable law, regulation, and policy. The measures in Table 5 are included as part of the Action Alternative.

Table 5. Action Alternative Project Wide and Site Specific Design & Mitigation Measures.

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Access	Currently the Forest Service does not have legal access to proposed Benbow Unit 60. The Forest Service would acquire temporary access for administrative use only to implement treatment and post-treatment activities proposed in Unit 60.	Unit 60
Identified need for commercial and personal firewood harvest opportunities	All non-saw material decks not purchased and removed by timber sale purchasers and located in vehicle-accessible areas would be retained and made available for firewood cutting for a period of one year. This would be accomplished by including a timber sale contract clause that provides for piling non-saw material separate from limbs and tops when timber sale purchaser elects not to purchase and remove that material. Contract administration personnel would monitor implementation to ensure contract compliance.	All units.
Recreation and suggestions for project-specific interpretive education	<p>Signing, news releases and field level contacts to inform and educate the public regarding dispersed recreation opportunities or restrictions would be applied.</p> <p>Post-project interpretive education efforts focusing on forest health and fuel reduction would raise public awareness to the goals and objectives of the proposed project would be included as an opportunity for funding under the project KV plan and be implemented if adequate funding is attained.</p>	All project areas.

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Effects to subdivisions adjacent to the National Forest	Property boundaries would be inspected by Forest Service personnel prior to implementation to ensure boundaries are appropriately surveyed and marked. Any additional surveying/marketing would be completed prior to implementation of activities adjacent to said boundaries. Forest Service contract administrators would perform on-the-ground review of all property lines during and after treatment to determine if any trespass occurred during project implementation.	1, 3, 54, 56, 60,
Effects of logging truck traffic and associated safety concerns	Signing, law enforcement patrols and use of road and/or area closures to the public during specific time periods along with use of limited operating periods for the timber sale purchaser would be applied. Periodic monitoring would be conducted by Forest Service contract administration and Law Enforcement personnel.	All units.
Concern about use of heavy equipment and suggestions for use of smaller equipment such as horse logging.	Successful contract bidders could elect to use smaller equipment or horses to implement project activities. Monitoring of contractor activities by Forest Service contract administration personnel would ensure that project design features are applied and equipment, either large or small, is used in a manner that prevents irreversible resource damage.	All units.

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Hydrology & Fisheries	<p>State of Montana Streamside Management Zone (SMZ) Law and Rules (ARM 2007b) would be applied in unit layout and design and during operations: Class 1 streams do not necessarily support fish, nor are they always perennial. Class 1 streams generally flow more than 6 months and always contribute surface flow to the next order stream down valley. Class 2 streams do not support fish. Either they flow less than six months of the year and do contribute surface flow to perennial streams down slope, or they flow more than six months but do not contribute surface flow. Class 3 streams do not support fish, normally flow less than 6 months and rarely contribute surface flow. When in doubt, non-streams would be treated as Class 3, Class 3 as Class 2, and Class 2 as Class 1 streams. All alternative practices would be reviewed and approved by Montana DNRC. Forest Service contract administration personnel and contractors would be fully informed of all stipulations prior to implementation.</p>	All units.
Hydrology & Fisheries	<p>Clarification of Stream definitions would be applied in unit layout and design and during operations: The minimum criteria to meet the definition of a stream under the Montana Forestry Best Management Practices (BMPs) (DNRC 2002) is the same as for Class 3 streams under the SMZ Law (ARM 2007b), i.e., dry scoured or partially scoured channels that flow less than six months per year and generally do not conduct water to the next order drainage downslope. Class 3 streams can be dry one year and flowing for a short duration the next year. Mitigating impacts to natural drainage features that do not meet these minimum stream criteria would still be addressed through BMPs.</p>	All units.

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Hydrology & Fisheries	CNF Fisheries and Hydrology personnel would be involved in marking SMZ and wetland boundaries, and should mark all streambed and bank retention Large Woody Debris.	All units.
Hydrology, Fisheries, Soils, and Wildlife	<p>For both timber sale and fuels reduction contracts, applicable Forest Plan standards and guidelines, Montana Streamside Management Zone BMP's, Montana Forestry BMP's and the Soil and Water Conservation Practices BMP's would be utilized. Project activities would comply with Montana Stream Protection Act and appropriate permits would be obtained where necessary.</p> <p>In addition to BMP and SMZ requirements, mechanized equipment use would be restricted within 50-feet of isolated wet areas, such as seeps, springs, and wet meadows.</p>	All units.
Hydrology, Fisheries, and Soils	<p>Temporary Road Construction: All temporary roads shall be constructed to minimize cuts and fills.</p> <p>When locating and constructing temporary roads and skid trails, intermittent or perennial stream crossings would be avoided. If crossings cannot be avoided, appropriate BMPs would be incorporated into the crossing design and appropriate permits would be obtained prior to implementing the project. Permits generally require at least 30 days for processing applications prior to implementation. Measures would be taken to ensure Forest Service contract administration personnel and contractors would be fully informed of all permit stipulations prior to implementation.</p> <p>Construction of temporary roads within ephemeral swale areas would be avoided and minimized. Where crossings are needed, they would cross ephemeral swales at right angles.</p>	All units.

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Hydrology, Fisheries, Soils, Recreation, Wildlife, Visuals	<p>Decommission all temporary roads and skid trails as follows:</p> <ul style="list-style-type: none"> • Within 6 months of completion of use, all constructed temporary road and skid trail segments would be reclaimed so as to prevent erosion, facilitate revegetation, and not be passable by 4x4 vehicles. • To the extent practical and where available, logging slash (cull logs, rootwads, large limbs) or large rocks would be placed where available to prevent re-use of temporary roads and skid trails, especially at points of entrance to the road. • Existing non-system routes used for project activities and access points in and adjacent to treatment units identified for closure in the Beartooth Travel Management Plan (USDA 2008b) would be reclaimed and physically blocked to ensure accessibility would not be improved over pre-project conditions, thereby ensuring traffic related sediment production/ transport would not increase over pre-project conditions. • All disturbed areas would be seeded with an approved noxious weed-free seed mix (see Noxious Weed Design Features/Mitigations below). 	All units where skid trails are utilized or temporary roads are constructed.

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Hydrology & Fisheries	<p>The following would be applied for use of fords to facilitate yarding or hauling: To comply with the Montana SMZ regulations (ARM 2007b), Class 1 and 2 streams would only be crossed for skidding purposes by suspended means, i.e., log cribs or temporary bridges and only with alternative practice approval from Montana DNRC. Class 1 and 2 streams would not be forded for skidding purposes, but Class 3 streams could be forded at 200 foot minimum intervals, at stable sites and only when the stream is dry. Streams could be forded for hauling activities. Unimproved fords would be avoided. Improved fords would consist of hardening approaches and channel bottom in order to minimize the generation or delivery of fine sediment. Hardening could consist of placing rubber mats, concrete planks or a layer of substrate that is larger than currently exists so as to not be mobilized by high flows.</p>	All units.
Hydrology and Fisheries	<p>Temporary stream crossings and fords would be obliterated and restored as follows: All temporary culverts, log cribs and skidder bridges installed for this project would be removed and crossing site approaches would be restored to match adjacent topography. New fords would always be considered temporary and full rehabilitation of crossing sites would occur after hauling activities cease. Rehabilitation would include recontouring and ripping if necessary, installation of adequate drainage, and slash placement to disperse overland flows and eliminate potential for public motorized access.</p>	All units.

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Hydrology, Fisheries, & Soils	Areas of concentrated soil disturbance such as temporary roads, landings, and temporary stream crossings would be scarified where compaction exists and seeded with noxious weed free seed of an approved mix after harvest activities are complete. Seeding would occur prior to the following winter season and prior to placing slash. Erosion control and drainage measures would be applied within 15 days of the completion of unit harvest activities.	All areas impacted by project activities (roads, units, log landings, etc.)
Hydrology & Fisheries	A Custer National Forest level BMP Audit would be scheduled and completed on select treatments and roads within two years of full project implementation. Effectiveness monitoring will be essential to determining if proposed prescriptions are effective at protecting or improving aquatics resource.	All units and roads used in project activities.
Hydrology & Fisheries	A long-term trend monitoring plan would be developed to determine if the proposed management is improving riparian conditions at a satisfactory rate.	All project areas.
Hydrology & Fisheries	Post-treatment large woody debris frequency would be inventoried in treatment areas to insure stream retention guidelines were adequately followed and to evaluate the efficacy of the prescription for future recommendations on similar proposed actions.	All units.
Soils	Coarse Woody Material would be left at a minimum rate of approximately 7-9 tons/acre to help the recovery of long-term soil productivity.	All units.
Soils	Skid trails and landings would be designated prior to construction and/or use in any fuels treatment contract by including Forest Timber Sale Contract Requirement B(T)6.422.	All units.

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Soils	<p>Skid trails would be located on existing jeep trails or old unclassified roads where available.</p> <p>Skid trails would be located to avoid concentrating runoff and provide breaks in grade. Skid trails and landings would be located away from natural drainage systems and divert runoff to stable areas.</p>	All units.
Soils	Unit 1 landing and skid trail designation would be accomplished in consultation with either the CNF Soil Scientist or Hydrologist.	1
Soils	Heavy slash would be maintained on skid trails during use.	All units.
Recreation, public safety, effects to subdivisions adjacent to the National Forest.	<p>During summer months, clean-up and fuels reduction operations would be limited to weekdays to minimize impacts and avoid higher use of the area by recreation users on the weekends unless the work could occur without risk to the public. Limiting operations and log hauling to week days whenever possible would reduce impacts to adjacent land owners. Special orders closing operating areas to the public Monday – Friday during project activities would be implemented for public safety when necessary.</p>	Access roads to all units except for Unit 60.
Recreation	<p>To address a suggestion to “allow the public to use the plowed roads on weekends to drive to a plowed parking area” beyond project area,” during the winter use season from December 1st to April 15th, the public would be allowed on weekends and holidays to use roads plowed to facilitate project activities.</p>	Access roads to all units except for Unit 60.
Recreation, public safety	<p>Monitoring of contractor activities would be conducted by Forest Service contract administration personnel to ensure effectiveness of signing, use of road and/or area closures to the public during specific time periods to improve safety, and use of limited operating periods for the contractor to improve safety and provide for some recreational use of the area during the contract period.</p>	All Forest Service roads used for project activities.

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Visuals	<p>The following unit layout and design measures would be applied to mimic existing patterns found in the landscape to reduce unnatural edges between treated and non treated areas:</p> <ul style="list-style-type: none"> •Tie outer unit boundaries where possible to natural landform and vegetation edges. •Minimize straight lines and geometric shapes to create free form vegetative shapes that mimic natural patterns by feathering unit edges and meandering and varying roadside thinning unit widths. Feathering should be a gradual transition between treated and non-treated areas. <p>When possible, leave trees in such a way as to make the stand appear open in some areas and denser in others.</p>	All units.
Visuals	<p>In immediate foreground (300 feet) of Main Fork Road, Highway 212, Benbow Road, and recreation sites in retention and partial retention visual quality objective (VQO) areas, trees in thinned areas would be retained at irregular spacing intervals for a more natural appearance.</p>	<p>Apply this mitigation to the following units and any other units deemed necessary during implementation: <u>Main Fork area:</u> All units <u>Benbow Area:</u> 01, 02, 03, 56, 57, 58</p>

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
	<p>To minimize visual effects of stumps of removed vegetation in retention and partial retention VQO to maintain naturally appearing scenery the following would be applied:</p> <ul style="list-style-type: none"> • Where slopes are flat and terrain allows, in areas with retention VQO, cut stumps of all size classes flush with the surface of the ground within 300 feet, or visual sight distance if less than 300 feet, of Highway 212, Main Fork Road, and all campgrounds, trails, trailheads and dispersed recreation areas. • Where slopes are not flat and terrain allows, in areas with retention VQO, cut stumps of all size classes low (less than 4 inches on the high side of the stump) within 300 feet, or visual sight distance if less than 300 feet, of Highway 212, Main Fork Road, and all campgrounds, trails, trailheads and dispersed recreation areas. • Where slopes are not flat and terrain allows, in areas with partial retention VQO, cut stumps of all size classes low (less than 6 inches on the high side of the stump) within 300 feet, or visual sight distance if less than 300 feet, of Benbow Road and all trails, trailheads and dispersed recreation areas. 	<p>Apply this mitigation to the following units in Retention VQO and any other units deemed necessary during implementation: <u>Main Fork area:</u> All units</p> <p>Apply this mitigation to the following units in Partial Retention VQO and any other units deemed necessary during implementation: <u>Benbow Area:</u> 01, 02, 03, 56, 57, 58</p>
Visuals	<p>To maintain a naturally appearing landscape in campgrounds and picnic areas which are sensitive viewpoints, the following would be applied:</p> <ul style="list-style-type: none"> • Retain a portion (about 10-15%) of understory trees which do not pose a hazardous fuels risk for vegetative screening around recreation sites. This can be accomplished by leaving individual trees as well as leaving trees in clumps. • Within 50 feet of campground and picnic area developed site footprints, preserve some vertical diversity in the forested stand by retaining clumps of small trees or individual trees or shrubs that do not pose a ladder fuels risk. 	<p>Sensitive Viewpoints for this mitigation are: <u>Main Fork Rock Creek area:</u> Parkside Campground (Unit 44), Limberpine Campground (Unit 45), Greenough Lake Campground and recreation site (Unit 45), and M-K Campground (Unit 48).</p>

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Visuals	<p>Apply the following to reduce any long-term visual effects of marking paint that may be left on site:</p> <ul style="list-style-type: none"> •If paint is used for marking, use a cut tree mark and place “stump” mark on side away from viewing of the nearest sensitive viewpoint. •When possible, mark unit boundary trees on the side of the tree away from the nearest sensitive viewpoint (i.e. on the side of the tree facing away from the road). 	All units
Visuals	<p>Enhance views when possible at pullouts used as scenic overlooks. At pullouts which could be used as scenic overlooks, remove vegetation in a way that enhances the view from these areas.</p>	Opportunities to be determined by Recreation Staff during implementation
Visuals	<p>To minimize visual effects of landings and slash debris once the project is complete, the following would be applied:</p> <ul style="list-style-type: none"> •When possible use topography and vegetation to screen landings from view of Main Fork Road and Highway 212. Once management activities are complete, clear slash and debris in landings and revegetate. •If any vegetative clearing is needed for landings, shape edges of landings to mimic natural patterns and openings. •Remove any slash debris that may make it to the main road surfaces once the management activities are complete. 	All landings
Visuals	<p>Slash Treatment –To retain a naturally appearing landscape and reduce visual effects of pile and burn sites, the following would be applied:</p> <ul style="list-style-type: none"> •When possible, establish burn piles away from sensitive viewpoints (roads, campgrounds, trails, trailheads, dispersed recreation sites, and cabins). If piles are visible, remove as soon as possible by burning, chipping, etc. •After one year, pile-burned sites visible from sensitive viewpoints, areas would be rehabbed by re-burning, scattering, and/or covering with natural duff. 	<p>Sensitive Viewpoints for this mitigation are:</p> <p><u>Main Fork Rock Creek area:</u> Main Fork Road, Parkside Campground, Limberpine Campground, Greenough Lake Campground and recreation site, M-K Campground, and Parkside NRT.</p> <p><u>Benbow area:</u> Benbow Road</p>

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Visuals	Limiting Future Recreation Use – If barriers are needed to limit recreation use of an area, naturally appearing barriers would be used that borrow from the immediate landscape character. Examples include boulders or wood rail fence. If boulders are used as barriers in recreation areas, 1/3 the size of the boulder should be buried and the naturally weathered side should be up.	To be determined by Recreation Staff during implementation
Wildlife	All project workers, contractors, etc. would comply with the Grizzly Bear Food Storage order.	All
Wildlife	Active treatment areas would be inspected for the presence of active ruffed grouse nests and drumming logs. If any are found, individuals implementing the activity will stop work within 300 feet of the nests or drumming logs until July 1.	All
Wildlife	If an active raptor nest is found during unit layout, it would be protected and buffered from planned activities.	All
Wildlife	If an active goshawk nest is discovered within a stand prior to or during treatment activities work would be halted and the wildlife biologist would be notified immediately to determine steps to resolve the situation, maintain habitat, and minimize human disturbance. Steps would include maintaining habitat specific for Northern goshawk (e.g., crown cover, snags, interlocking tree crown patches) over the long term.	All
Wildlife	Management activities within ¼ mile (125 acres) of any known goshawk nest would be restricted from March 1 through August 31 to reduce potential human disturbance during the breeding – nesting period. An exception may be made if surveys confirm that goshawks are not nesting or within the area. A wildlife biologist may fit the acreage zone or polygon to the topography to best reduce potential human disturbance around the nest.	While no existing nests are known in the project area, this mitigation would be applied in the event that nests are discovered.

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Wildlife	Existing aspen clones within the proposed treatment areas would be treated to remove all coniferous trees within one conifer tree length from the aspen.	All
Wildlife	An average of at least 2 snags per acre would be maintained within treated stands. Emphasis would be on maintaining snags greater than or equal to 12” diameter, leaving the largest snags available. Trees maintained as snags would be greater than 75 feet from roads and/or private property, and are not a safety hazard during project implementation.	54, 60
Wildlife	An average of at least 5-10 snags, per acre would be maintained within treated stands. Emphasis would be on maintaining snags that are greater than or equal to 12” diameter, leaving the largest snags available and Douglas-fir when available. Trees maintained as snags would be greater than 75 feet from roads and/or private property, and are not a safety hazard during project implementation.	1, 2, 3, 41, 42, 43, 44, 45, 46, 47, 48, 55, 56, 57, 58, 59
Wildlife	If fawns and/or calves are found in active treatment units from the third week of May through the first week of July), individuals implementing the activity (Forest Service/contractor) would coordinate options with the project leader or District wildlife biologist to work in other areas within the vicinity until the young are removed from the area.	All
Wildlife	No pre-commercial thinning would be allowed to occur in mapped potential lynx habitat within the project area.	All project activity areas
Range Management	Dependent upon funding, new fence would be constructed where natural barriers or existing fence would be compromised by treatments.	Units 3 and 60

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Noxious Weeds	All mud, dirt, and plant parts would be removed from all off road equipment before moving into project area. Cleaning must occur off National Forest lands. This does not apply to service vehicles that will stay on the roadway, traveling frequently in and out of the project area. Reference Timber Sale Contract Provision C/CT6.351#.	All units where mechanical treatment occurs
Noxious Weeds	To minimize the creation of sites suitable for weed establishment, soil disturbance would be minimized.	All units where mechanical treatment occurs.
Noxious Weeds	All disturbed soil would be revegetated (except the travel way on surfaced roads) in a manner that optimizes plant establishment for that specific site, unless ongoing disturbance at the site will prevent weed establishment. Native material would be used where appropriate and available. A native seed mix that includes fast, early season species to provide quick, dense revegetation would be used. To avoid weed contaminated seed, each lot would be tested by a certified seed laboratory for State of Montana noxious weeds and documentation of the seed inspection test would be provided.	All units where mechanical treatment occurs
Noxious Weeds	Local seeding guidelines for detailed procedures and appropriate mixes would be used. Native material would be used where appropriate and available. Revegetation may include planting, seeding, fertilization, and weed-free mulching as indicated by local prescriptions.	All units where mechanical treatment occurs
Noxious Weeds	Success of revegetation would be monitored and evaluated in relation to project plan. Revegetation efforts would be repeated as necessary and as indicated by local prescriptions.	All units where mechanical treatment occurs
Noxious Weeds	Weed infested roads, landing and skid trail locations would be treated before use where practical.	All units where mechanical treatment occurs
Noxious Weeds	Presence of weeds would be monitored after sale activity and weeds would be treated as indicated by local prescriptions.	All units

Concern or Resource	Description of Design Features/Mitigations	Where feature or mitigation would be applied
Noxious Weeds	Trust, stewardship, or other funds would be used to treat soil disturbance or weeds as needed after timber harvest and regeneration activities.	All units
Heritage	New cultural resources discovered during project implementation would immediately be brought to the attention of the Forest Archaeologist and plans designed to avoid, reduce further disturbance or mitigate existing disturbance would be formulated in consultation with the Montana State Historic Preservation Officer (MTSHPO), the Crow Tribe and the USFS.	All units
Heritage	All proposed activities located outside the units that may involve ground disturbance (e.g. log landings, access roads, proposed temp road and skid trail construction, equipment/machinery storage areas, prescribed burn piles and existing road use) would be reviewed by an archaeologist prior to implementation in order to insure no cultural resources are disturbed.	All areas affected by project activities.
Heritage	One culturally sensitive site may require consultation with the Crow Tribe in order to verify its significance and to insure its respectful consideration and treatment.	Not disclosed due to heritage protection law.
Sensitive Plants	While there are no known sensitive plant populations within areas affected by the project, if populations are found during project implementation, populations would be monitored and any potential adverse effects would be mitigated.	Any areas with soil or vegetation disturbance caused by this project.

Effects Comparison of Alternatives _____

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives. Table 6 provides an overall summary of this section of the EA as it relates to Key Issues.

Table 6. Effects comparison summary of Alternatives for Key Issues.

Key Issues	Effects of No-Action Alternative	Effects of Action Alternative
Visuals Resource	Would be consistent with Forest Plan goals, standards, and guidelines for visual resources.	Would be consistent with Forest Plan goals, standards, and guidelines for visual resources.
Effectiveness of fuels treatments in decreasing fire risk and improving firefighter and public safety	<p>Fuels within the project area would continue to accumulate. Under the current fuel loading and stand conditions, there is potential to have stand replacement fire.</p> <p>Fire behavior would be crown fire with 60.7 foot maximum flame lengths and 5.6 miles per hour (mph) maximum rates of spread.</p> <p>In areas not damaged by wind, maximum construction rates for fire suppression line would be 0.2 mph for hand crews and engines and 1.5 mph for heavy equipment, such as bulldozers. Respective maximum line construction rates in wind damaged areas would be 0.3 for hand crews and 0.6 mph for heavy equipment.</p>	<p>Thinning would reduce ladder fuels, increase canopy base height and reduce canopy bulk densities. Ignition potential from any source, fire intensity, and fire duration within treatment units would be reduced.</p> <p>Fire behavior would be surface fire (rather than crown fire) with 18.2 foot maximum flame length height and 3.1 mph maximum rate of fire spread.</p> <p>In treatment units, maximum construction rates for fire suppression line would be 0.5 mph for hand crews and engines and 1.8 mph for heavy equipment.</p>
Effects to recreational users	Reduced recreation opportunities because blown down trees and hazard trees reduce access for recreation in these areas. Would not be consistent with applicable Forest Plan recreation goals, objectives, and standards.	Loss of use or access to recreation opportunities during implementation. In the long-term, removal of the blown down trees would restore and maintain recreational use by dispersing users. Would be consistent with applicable Forest Plan recreation goals, objectives, and standards.
Identification of a need for commercial and personal firewood harvest opportunities.	No log decks or slash piles would be provided for firewood opportunities.	Log decks and slash piles would be provided for firewood opportunities for a one year period.

<p>Effects to water quality</p>	<p>Low risk of existing levels of blowdown to cause substantial increases in water yield and streamflow downstream of the immediate blowdown areas.</p>	<p>Minimal additional influence on water yield and streamflow. Low risk of existing levels of blowdown to cause substantial increases in water yield and streamflow downstream of the immediate blowdown areas. No adverse indirect effects are anticipated. Fuels reduction would have a long-term benefit in that it would locally reduce the potential for high intensity/long duration fire in localized riparian areas.</p>
<p>Effects to aquatic habitat and biota.</p>	<p>No Direct effects. Indirect effects would be excessive amounts of large woody debris remaining in stream channels with localized adverse impacts to fish and amphibian populations in stream systems, but no impacts to the entire population.</p>	<p>Negligible to nonexistent direct effects on aquatic species. Beneficial impacts to Yellowstone cutthroat trout and wild trout. Reduced potential for high intensity wildfire, decrease the risk of streambed and bank scour, and allow for faster regeneration on stream banks and riparian buffer areas would have long-term beneficial indirect and cumulative effects.</p>
<p>Effects of project implementation to noxious weed proliferation and post-project weed monitoring needs.</p>	<p>Low to moderate risk rating.</p>	<p>Moderate risk rating.</p>
<p>Effects of tree removal and equipment use on future off-road use and car camping sites.</p>	<p>No routes or dispersed recreation sites would be opened by fuels treatment and storm damage clean-up in the Main Fork and Benbow areas. Increased resource damage and exposure to potential liability due to a lack of clearing standards and resource protection measures would be likely.</p>	<p>Routes or dispersed recreation sites opened by or used for fuels treatment and storm damage clean-up in the Main Fork and Benbow areas not designated for motorized recreation use in the Beartooth Travel Management Plan (USDA 2008b) would be rehabilitated and physically blocked off at the end of the project.</p>
<p>Effects to snag amount and distribution.</p>	<p>Recommendations in the Northern Region snag management protocol (USDA 2000) would be met.</p>	<p>Recommendations in the Northern Region snag management protocol (USDA 2000) would be met.</p>

ENVIRONMENTAL CONSEQUENCES

This section summarizes the environments of the affected project areas and the potential changes due to implementation of the alternatives. It also presents a summary of the scientific and analytical basis for comparison of alternatives presented in Table 6. Additional information specific to each issue or resource area can be found in project Specialist Reports, which are appendices to this EA and are available in electronic version on the Custer National Forest's webpage at:

<http://www.fs.fed.us/r1/custer/>. Printed or electronic copies of Specialist Reports are available upon request. The Environmental Consequences section and related EA appendices also provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact. Additional supporting documentation and reference materials are in the Project Record, which is on file at the Beartooth Ranger District and available for public review upon request.

Fuels

Effectiveness of fuels treatments in decreasing fire risk and improving firefighter and public safety is a key issue. The measurement indicator used to display effects of alternatives is qualitative change and quantitative change in future fire behavior within the treatment areas based on modeling results. The Beartooth Front Storm Damage Clean-Up and Fuels Reduction Project Fuels Report (Appendix A) discloses the effects of this project to fuels and potential fire behavior. Following is a brief summary of the report:

Affected Environment

Main Fork Rock Creek:

On National Forest lands, the northern portions of the Main Fork canyon is mostly even aged lodgepole, approximately 110 to 120 years old, putting the last potential stand replacement fire in the 1890s. Lodgepole pine is the predominant tree species in the drainage. Fire return intervals are generally moderately long to long intervals of (e.g., 100-200 yr) stand replacement fires, with a substantial amount of terrain influenced by moderately long interval (e.g., 50 to 100 yr) mixed severity fires (Hann et al 2008). Since 1953 there have been 80 recorded wildfires in the Main Fork Drainage ranging in size from 0.1 to 1503 acres. Of those, 33 have been lightning (41%) and 47 human or other ignition sources (59%). Over the last ten years, there have been 20 fires, or an average of 2 fires per year. Of those fires, 8 were lightning (40%) and 12 were human caused or other ignition sources (60%). From 1953 to 2007, 3 recorded fires have occurred within or on the edge of the proposed treatment units in the Main Fork of Rock Creek. Two fires were human caused and 1 caused by lightning.

On November 11, 2007 a wind event converted approximately 367 acres of timber fuel model (FM) 8 in proposed treatment areas to three blowdown fuel models. FM 8, blowdown FM SB2 and blowdown FM SB4 are the predominant fuel models in the proposed treatment units. Firefighter initial attack capabilities to suppress and contain wildfires under current conditions are limited by several factors. Predicted fire behavior under extreme conditions along the Road #2421 corridor could preclude direct attack and potentially limit access and egress. Under predicted fire behavior, access by firefighters and

emergency personnel could be limited. Crown fire rates of spread and long range spotting in the canyon bottom could compromise egress on Highway 212 and Road # 2421. Highway 212 is the only egress opportunity for vehicles exiting the canyon. Under current conditions, an active crown fire in the Main Fork of Rock Creek drainage could limit access to firefighting resources to prepare or defend structures. Current fuel loads in conjunction with structure conditions, could make many structures in the Main Fork of Rock creek drainage un-defendable and reduce survivability.

The Main Fork of Rock creek drainage has openings of grass, talus slopes, rock outcrops, and area of grass/sage and timber mix that could be potential fire safe zones within the canyon where the general public or firefighters could go to wait for a flaming front of fire to pass. These areas, along Highway 212 and Road # 2421, may need to be modified to be fire safe, in the event of a wildfire. Access to these potential zones under extreme fire behavior could be compromised.

Benbow Area:

Fire return intervals are generally 100-200 years for stand replacement fires, with a substantial amount of terrain influence. Since 1953 there have been 28 recorded wildfires in the Fishtail creek and Little Rocky creek drainages, and surrounding area ranging in size from 0.1 to 380 acres. Of those, 12 have been lightning (43%) and 16 human or other ignition sources (57%). From 1953 to 2007, 3 recorded fires have occurred within or on the edge of the project area. Two were lightning fires, both in 2007, and one was human caused (Benbow fire). The Benbow fire (380 acres, 1980) occurred in portions of proposed treatment units 3 and 59 and destroyed one primary residence in a small subdivision along Meadow creek. Several wind driven stand replacement fires have occurred in the local area around Fishtail and Little Rocky creeks, including Shepard Mountain (14,890 acres, 1996), Storm Creek (61,300 acres, 1988) and Derby (281,000 acres, 2006). The Shepard Mountain fire occurred in the East Rosebud drainage, which has approximately the same orientation as both Fishtail and Little Rocky creek drainages. At the height of burning on the Shepard Mountain fire, the crown fire spread 5 miles in three hours, burning 35 homes and cabins.

Three fuel models for a total of 377 acres were identified within the project area prior to the November, 2007 wind event. After the November, 2007 wind event approximately 265 acres of FM 8 spread across the proposed treatment units were converted to blowdown fuel models. Outside the proposed treatment units, within the Fishtail and Little Rocky Creek drainages, there is estimated to be an additional 5900 acres of heavy to moderate blowdown. Of those acres, approximately 2400 acres are a heavy blowdown FM SB4, and approximately 3500 acres are moderate blowdown FM SB3. Area fuel loading for FM 8 ranges approximately 6-40 tons per acre, and approximately 90-105 tons per acre in FM SB2. Fuel loads in blowdown FM SB3 and SB4 range between 105-150 tons per acre. Most of the proposed treatment units and project area have ladder fuels from regeneration. Blowdown and snow damaged tops and downed trees are very prevalent.

Values at Risk:

Values at risk within and adjacent to the Main Fork Rock creek, Little Rocky creek, and Fishtail creek include numerous private residences and Forest Service infrastructure. Forest Service infrastructure in the Main Fork area includes 6 campgrounds, 6 trailheads, and 60 recreation residence lease cabins. The City of Red Lodge and outlying subdivisions, high-value individual homes, and Rock Creek Resort are located in and at the north end of the Main Fork of Rock creek canyon. Values at risk near or in the Little Rocky and Fishtail drainages, include the towns of Dean and Nye, a small subdivision consisting

of 6 structures along Meadow creek off Benbow Road #2414, high-value individual homes and ranches along Fiddler Creek road, and the Stillwater Mine. Numerous privately owned groundwater wells and springs used for residential drinking water and ditch systems and wells used for irrigation purposes, are fed by water from Main Fork Rock Creek, and Fishtail and Little Rocky Creeks.

Effects of the No-Action Alternative

Direct effects: There are no known direct effects to fire behavior or changes to fuel loading in the short term by taking No-action.

Indirect effects: Indirect effects would be that in the absence of wildfire or any fuels treatment, fuel loading would continue to increase. Severe fires would be most likely to occur where dead fuels have accumulated. With concentrations of dead fuels, individual trees or groups of trees may torch, and fire can continue through the crowns aided by high winds (Anderson 2003). Flame lengths in the predominate fuel models (FMs) would range from 39.9 to 60.7 feet. Crown fire was modeled in FM 8 and SB2. Modeled rates of spread ranged from 133.8 to 451 Chains per Hour (CPH) in predominant fuel models (one chain is 66 feet in length or 1/80 of a mile). Production rates for fire resources for FM 8 would be 7 to 15 CPH for crews and engines, and 105 to 120 CPH for equipment. Production rates for fire resources for blowdown FM SB2 and FM SB4 would be 10 to 20 CPH for crews and engines, and 40 to 55 CPH for equipment.

Cumulative effects: Under the current fuel loading and stand conditions, there is potential to have stand replacement fire. Cumulative effects to fuels would be that fuels within the project area would continue to accumulate until a stand replacement fire occurs. It is less likely that such a fire would be suppressed without proposed treatments.

Effects of the Action Alternative

Direct effects: Surface and canopy fuels would be reduced by removing crowns of standing trees and removal of down and dead fuels within the project area. Thinning would reduce ladder fuels, increase canopy base height and reduce canopy bulk densities.

Indirect effects: Desired conditions for the project areas would be conditions that reduce fire behavior with the purpose of improving access and egress for firefighters, emergency personnel and the general public; and improve firefighter capabilities in suppressing fires in the project area. Treatments would include thinning to a 10 X 10 foot crown spacing, and reduction of surface fuels to 10 tons to the acre or less. The proposed action would reduce fuels in blowdown and timber FMs resulting in reduced fire behavior in proposed treatment areas. Reduced fire behavior would be surface fire (rather than crown fire). Surface fire was modeled in post-treatment fuel models. Based on modeling, rates of fire spread would be 5.8 to 249.3 CPH in post treatment fuel models. Flame length heights would be reduced to a range of 2.1 to 18.2 feet. Production rates for fire resources for post-treatment FM 8 and FM SB2 would be 15 to 40 CPH for crews and engines, and 105 to 120 CPH for equipment. Production rates for fire resources for post-treatment blowdown FM SB4 would be 15 to 24 CPH for crews and engines, and 125 to 145 CPH for equipment.

Cumulative effects: Proposed treatment areas and past timber harvest have and would only change small portion of the total fuels loads present within the three drainages. Theses treatments are designed to enhance egress and access in the canyons by public and firefighters, improve firefighter capabilities in

suppressing wildfires, and improve the survivability of structures, within the proposed treatment units. The proposed action would reduce the potential for ignitions from any source to result in undesirable effects within the project area. Proposed treatments would limit fire intensity and duration within the treatment units, which would be less impactful to riparian areas and soils, and potentially allowing these areas to recover faster from wildfire effects.

Visuals Resource

A key issue is effects to visual resources, particularly the visual appearance around recreation sites and those areas with Forest Plan visual quality objective of retention (retention VQO). The analysis indicator and threshold for this issue are the visual quality objectives assigned to the project area by the Forest Plan (USDA 1986). The Visuals Resource (Scenery) Specialist Report (Appendix B) describes the existing condition of the scenic resources within the project area and evaluates the potential effects of the alternatives on scenic resources. Following is a brief summary of that report:

Affected Environment

In the Main Fork Rock Creek Area, forested stands of lodgepole pine surround recreation sites and cover the valley floor. Open sagebrush and grassland parks to the east and northeast of the project area offer panoramic views of the surrounding canyon walls and the Main Fork project area. In the Little Rocky Creek area, or Benbow area, the subdued, rounded landforms and vegetative components, consisting of a continuous forest canopy with few natural openings, result in a landscape common to the area with some inclusions of distinctive features.

The landscape character attributes of form and texture have been affected by the November 2007 wind event, resulting in downed trees and openings where a continuous canopy of trees had previously characterized the area. In some areas the wind damaged and fallen trees dominate the landscape character being viewed with large areas of downed trees and large, up-ended root wads dominating the view. Wind damage viewed from the Main Fork Road generally does not dominate the landscape being viewed. More wind damaged trees and up-ended root wads are noticeable beyond Greenough Lake Campground and near M-K Campground. From Benbow Road, the wind damage is primarily viewed as broken topped trees with some up-ended trees. Larger areas of wind damage are not easily viewed from Benbow Road due to vegetative screening. These downed trees will continue to dominate the landscape being viewed until new growth sprouts around them.

The wind event has affected the scenic attributes around recreation sites by altering the valued landscape character attributes around these sites, changing the shade, screening, and views from these sites. The wind event has removed vegetative screening in some areas and opportunities now exist which provide dramatic views of the surrounding cliff walls and rugged, picturesque mountains.

Effects of the No-Action Alternative

Hazardous buildups of vegetative fuels in the forest would remain and current management practices would continue to occur in the Main Fork and Benbow areas. Visual quality objectives under the No-action Alternative would be maintained. Large amounts of downed woody material would continue to be visible in the immediate foreground of sensitivity level one travel routes and use points. Large amounts of dead woody material are perceived negatively by viewers regardless if the tree mortality is caused by

harvesting or natural forces (Ryan 2005). No-action would be taken to improve the existing visual condition, and the valued landscape character attributes would be at risk. If the vegetation in these areas was consumed by a future fire, scorched timber would alter the forested setting, changing the sense of place for visitors in the area and the existing landscape character would be lost for 20 to 30 years until the re-growth of vegetation begins to develop characteristics of a closed canopy and the valued landscape character attributes return. If recreation sites were consumed by fire, scenery viewing opportunities would be altered and valued cultural landscape attributes would be lost.

Effects of the Action Alternative

The majority of effects to scenery resources are short term in duration with long term benefits which would help maintain the valued landscape character and valued cultural attributes. Tree stumps would impact visual resources in the short term and would be most noticeable in the immediate foreground views of Main Fork Road, Benbow Road, recreation sites, and system trails. Mitigation measures would be applied to reduce the visibility of stumps and minimize their impacts. Stumps would become less visible within one to two growing seasons as grasses, forbs, and shrubs sprout new growth. The Action Alternative would meet the retention, partial retention, and modification VQOs as outlined in the Custer National Forest Management Plan, because the effects of proposed activities in retention VQO are anticipated to be naturally appearing, repeating the form, line, color, and texture which are frequently found in the characteristic landscape. It is anticipated that the proposed activities would meet VQOs assigned to the project area in the short term either at project completion or about one to two growing season after all proposed project activities are complete.

The Action Alternative would be consistent with Custer National Forest Management Plan goals, standards, and guidelines for visual resources. No direct, indirect, or cumulative effects to scenery resources would be expected in the long term from the storm damage clean-up and fuels reduction activities. There would be no irreversible or irretrievable commitments related to scenery resources from the Action Alternative.

Water Resources

Potential effects to water quality are a key issue. The Water Resources analysis (Appendix C) discloses effects to water quality by focusing on the effects of the proposed activities to hydrologic processes and water resources; specifically water yield, sedimentation, and channel and floodplain function. Units of measure utilized to display effects are equivalent clearcut area acres (ECA) and a qualitative description of project effects. Following is a brief summary of that report:

Affected Environment

Rock Creek generally has moderate entrenchment, sinuosity and gradient with cobble sized substrate (B3 streamtype, Rosgen 1996). Less entrenched segments result in decreased gradient and substrate size (C4 streamtype). Little Rocky and Fishtail Creeks are relatively high gradient with moderate entrenchment and sinuosity, and boulder sized substrate (B2a streamtype). B stream types with large substrate are relatively resistant to changes in streamflow or sediment loads.

Numerous watersheds were affected by the November 2007 storm event and were evaluated for project analysis (see Appendix C). Past and present land management activities along with natural events have

influenced hydrologic processes in all watersheds within the project area. However, equivalent clearcut area analysis involving past timber harvest, road construction, wildfire and wind events suggests that hydrologic processes in nearly all watersheds are not affected to any substantial degree. The exception is the West Fork Fishtail and Upper Little Rocky watersheds which are in a ECA condition that is at or slightly above levels that could produce measurable changes in annual water yield and possibly streamflow (Troendle 1983, Stednick 1996). Blowdown timber stands resulting from the November 2007 wind events are the main reason for these elevated levels.

Effects of the No-Action Alternative

There would be no direct effects associated with the no-action alternative. ECA modeling for the No-action alternative indicates that streamflows and water yields could slightly increase in the West Fork Fishtail and Little Rocky drainages due to blowdown, but there is a low risk of existing levels of blowdown to cause substantial increases in water yield and streamflow downstream of the immediate blowdown areas. Based on ECA modeling, no detectable increases in streamflows and water yields would be expected in other streams analyzed for the No-action alternative.

Indirect effects are based on ECA modeling for the No-action alternative, which indicates that streamflows and water yields could slightly increase in the West Fork Fishtail and Little Rocky drainages due to blowdown, but there is a low risk that existing levels of blowdown would cause substantial increases in water yield and streamflow downstream of the immediate blowdown areas. Based on ECA modeling, no detectable increases in streamflows and water yields would be expected in other streams analyzed for the No-action alternative.

Cumulative effects include the possibility of a high intensity/long duration wildfire scenario, with substantial risk of impact to adjacent soils, streams and floodplains in areas of high blowdown density.

Effects of the Action Alternative

Temporary crossings are proposed for both skidding operations and log hauling are the only actions that would have direct effects to water resources due to the immediate sediment delivery and flow disruption that generally occurs during installation and removal of the structure. Minor and temporary sediment generation is anticipated for all log crib and bridge locations during installation and removal. Temporary culverts would generate the most sediment during installation and removal, but levels should be minimal once installed. Construction of an improved ford may generate the least sediment during installation and removal, but the most sediment during operations. All crossings would meet the requirements of SMZ regulations, Montana Forestry BMP's, and MTDFWP 124 permit stipulations and would be fully rehabilitated to ensure approaches are adequately drained, revegetated, stabilized and closed to future traffic. Sediment generation should subside to background levels soon after sites are closed and rehabilitated.

Since a reduction in timber canopy has already occurred as a result of the winter 2007/2008 natural blowdown events, removing all or a portion of the windthrown timber will have little additional influence on water yield and streamflows in the short-term. Additionally, proposed thinning and prescribed burning activities would affect a minimal amount of actual timber canopy across a minimal amount of watershed area, and therefore also have little additional influence on water yield or streamflows. The proposed treatments would affect one percent or less of any single watershed.

Although adverse indirect effects are not anticipated from these proposed treatments, long-term beneficial effects are. Removal of blowdown and associated slash, combined with thinning to further reduce fuel loads would reduce the potential for high intensity/long duration fire in localized riparian areas, thereby reducing the magnitude of adverse impacts to streams, wetlands, floodplains, and overall water quality.

On-site sediment production is anticipated from the proposed activities that utilize heavy equipment to remove or pile trees. However, the majority of this sediment would be deposited and stabilized prior to reaching streams and wetlands. Less than two miles of temporary road would be constructed to facilitate log hauling; 0.6 miles in the Little Rocky drainage and 1.1 miles in the Fishtail drainage. Except for crossing sites, temporary road locations are far enough away from perennial streams to provide an adequate filter zone for sediment deposition. The effects of both temporary road construction and skidding operations would be short-term as roads and skid trails stabilize and revegetate after closure. Closure and obliteration of temporary roads would involve ripping, seeding, slashing and installation of appropriate drainage features.

From a direct and indirect effects standpoint, the proposed treatments would have minimal additional influence on water yield and streamflow for two main reasons. First, hydrologic processes have already been affected by the loss of timber canopy from blowdown. The proposed treatments would not further reduce timber canopy to any substantial degree. Secondly, the amount of blowdown treated is a small percentage of the total blowdown that currently exists. However, from a cumulative effects standpoint, considering the potential for wildfire, the proposed treatments would help to reduce fire intensity within blowdown areas, reduce impacts to riparian areas, and hasten recovery of post-fire landscapes. It must be recognized that these benefits of treatment under a wildfire scenario are localized, as only a small percentage of the total blowdown would be treated. Therefore, from a watershed scale perspective, the proposed action is not substantially different than the No-action alternative.

The proposed treatments would comply with state and federal water quality laws, and Forest Plan Standards and Guidelines, assuming adequate implementation of BMPs and SMZ regulations.

Recreation

Effects to recreation, including visitor use, access, and dispersed camping activities are key issues. The issue indicator is consistency with applicable Forest Plan recreation goals, objectives, and standards. Effects of tree removal and equipment use on future off-road use and car camping sites is also a key issue. The issue indicator is post-project compliance with Beartooth Travel Management Plan (USDA 2008b).

Comments for analysis related to recreation are: 1) Effects of project activities to subdivisions adjacent to the Forest boundary. 2) Effects of logging truck traffic and associated safety concerns. 3) Identification of a need for interpretive education associated with project. 4) Suggestion to “allow the public to use the plowed road on weekends to drive to a plowed parking area beyond.....”

The Recreation Specialist Report (Appendix D) analysis describes the existing condition of the recreation resources within the project area and evaluates the potential effects of the alternatives on recreation resources. Following is a brief analysis of effects to recreation resources based on that report:

Affected Environment

The project area includes the Main Fork Road, Highway 212, Benbow Road, developed recreation sites, numerous dispersed recreation sites and system trails in the Benbow and Main Fork Rock Creek Areas. The affected environment includes the roads, trails, developed recreation sites and recreation residence tracts in or accessed through the proposed treatment units. Dispersed recreation use (i.e. camping and picnicking) occurs within 300 feet of the roads near the proposed treatment areas. Heavy recreation use of sites in the Main Fork Rock Creek occurs due to proximity to Red Lodge and US Highway 212, the Beartooth All-American Highway. Roads in the Benbow area are frequently used for motorized recreation, such as travel with ATV's or motorcycles.

Effects of the No-Action Alternative

The No-action Alternative would result in blown down and hazard trees remaining in areas accessed by recreation users. Therefore the direct and indirect effects of this alternative would reduce recreation opportunities because the blown down trees and hazard trees reduce access for recreation in these areas, including blocking traditionally used dispersed recreation sites. No routes or dispersed recreation sites would be opened by fuels treatment and storm damage clean-up in the Main Fork and Benbow areas. User created and unauthorized activities by forest recreation users would be expected in response to the No-action Alternative. Recreation users would take on clearing trees or creating new user routes around them to meet their own immediate needs for recreation or access. Increased resource damage and exposure to potential liability due to a lack of clearing standards and resource protection measures would be likely.

Cumulative effects would include increased resource impacts from increased use being focused into nearby areas without blown down. Hazard trees would concentrate recreation users and degrade the recreation opportunities in those areas. The increased risk of wildfire and decreased ability to suppress a fire event would increase risk to recreation users in the event of a fire in these areas.

There would be no direct, indirect or cumulative effects to subdivisions adjacent to the Forest boundary. Needs for project-specific interpretive education would not be addressed by the no-action alternative. There would be no safety concerns or direct, indirect or cumulative effects from logging truck traffic. Since the Benbow and Main Fork roads would not be plowed under the no-action alternative, there would be no opportunities for winter wheeled vehicle use on plowed roads during weekends.

The Forest Plan goal of providing a spectrum of recreation opportunities and settings would not be met because of limited use and access to NFS lands created by the blown down and hazard trees. Standards for public safety and removal of hazard trees to protect improvements would not be met because the blown down trees and hazard trees would remain in place.

Effects of the Action Alternative

The majority of effects to recreation resources are short term in duration with long term benefits which would help maintain recreation opportunities. Short-term effects of storm damage clean-up and fuels reduction activities are the loss of use or access to recreation opportunities during some if not all of the time project implementation activities occur. The timing of project implementation for treatment of units in the Main Fork of Rock Creek and the Benbow area has a direct impact to recreation users. Project implementation during the summer use season would impact more recreation users than during the other three seasons of the year due to activity and noise caused by workers and equipment in proposed treatment units and on roads accessing these units. Short-term effects would be temporary

displacement of recreational users while proposed activities are occurring. Beyond the short-term, the Action Alternative would result in removal of blown down and hazard trees that currently impact access and use of the treatment units for recreational users. Therefore the results of this alternative would restore and maintain recreational uses in the treatment areas because after project implementation the removal of the blown down trees would help disperse users and reduce impacts of concentrating use in areas unaffected by storm damage.

The proposed project has the potential to create new dispersed camping sites due to thinning, skid trails and pile burning activities. Routes or dispersed recreation sites opened by or used for fuels treatment and storm damage clean-up in the Main Fork and Benbow areas not designated for motorized recreation use in the Beartooth Travel Management Plan (USDA 2008b) would be rehabilitated and physically blocked off at the end of the project.

If the design features and mitigation measures are implemented, the Action Alternative would meet the goals, objectives and management standards outlined in the Custer National Forest Management Plan. No direct, indirect, or cumulative effects to recreation resources are expected in the long term from the storm damage clean-up and fuels reduction activities. There are no irreversible or irretrievable commitments related to recreation resources from the Action Alternative.

Comments for analysis related to recreation are addressed through project specific mitigations detailed in the Action Alternative Design and Mitigation Measures section of this EA. These comments are: 1) Effects of project activities to subdivisions adjacent to the Forest boundary; 2) Effects of logging truck traffic and associated safety concerns; 3) Identification of a need for interpretive education associated with project; 4) Suggestion to allow the public to use the plowed road on weekends to drive to a plowed parking area. With application of prescribed design and mitigation measures, these comments are addressed and there would be no significant direct, indirect, or cumulative effects to resources associated with these comments.

Wildlife

Effects to snag amount and distribution is a Key Issue. The measurement indicator is the average minimum number of snags retained per acre, with the threshold being determined by recommendations in the Northern Region Snag Management Protocol (USDA 2000).

Numerous Analysis Issues were identified relative to wildlife (Effects to: moose, snag habitat, snag associated species viability, wildlife habitat diversity, MIS & MIS viability, old growth habitat and species, Sensitive wildlife species, pine marten, and lynx). The affected environment and environmental effects to old growth and old growth habitat are disclosed in analysis for the goshawk, which is the Custer Forest Plan old growth habitat indicator species.

Project analysis and effects determinations for wildlife issues are disclosed in the Biological Evaluation and Assessment for Threatened, Endangered, Sensitive and Management Indicator Species/Key Species for Beartooth Front Storm Damage Clean-Up and Fuels Reduction Project 2008 (Appendix E). Following is a brief summary of that report:

Affected Environment

The Main Rock Creek and Little Rocky Creek drainages support land of varied topography with elevations ranging between 5500 to 8000 feet and a variety of forested and non-forested plant communities. The forest stands in Main Rock Creek are primarily mature to pole sized lodgepole pine stands. Spruce/lodgepole and spruce/sub-alpine fir stands are located along the riparian corridor with occasional aspen stands throughout the drainage. The Little Rocky Creek and Fishtail areas are dominated by dry site lodgepole pine and Douglas-fir stands with intermixed grassy meadows and aspen stands.

Snag Amount and Distribution, snag habitat, snag associated species viability: Snags are essential for both primary and secondary cavity users. Site specific snag densities and sizes are not available for the project area, but snag densities based on 1997 Forest Inventory and Assessment (FIA) samples are available for the entire Beartooth Ranger District. Snag densities > 10.0 inches diameter at breast height (dbh) are 12.7 per acre for the Beartooth District. Data indicates large diameter snags > 20 inches dbh are relatively rare in watersheds where treatment are proposed (0.3 to 0.7 snags >20 inches dbh per acre). FIA samples were collected in 1997 and there have been several wildfires since 2000 that have killed trees and increased the number of snags on the District. Due to resource concerns and timber harvest economics, no salvage sales or large-scale snag removal efforts have occurred. Due to increases in the number of dead trees on the landscape, 1997 FIA snag estimates are likely low.

Wildlife habitat diversity: The diversity of forest stand structure in the project area is decreasing due to the current successional pathway and disturbance patterns. This has led to a gradual elimination of the more open, fire maintained stands of larger diameter coniferous trees and healthy aspen stands. Lack of low-intensity fire disturbance has resulted increased tree density in the overstory; abundant tree regeneration and shrub development in the understory on wet sites; little tree regeneration or shrub development in the understory on dry sites; and a buildup of ground fuels (both larger diameter and litter layers). This has resulted in pole to mid aged/sized contiguous tree stands that are more prone to stand replacing fire because of increased fuel loading.

MIS & MIS viability, old growth habitat and species, Threatened, Endangered, and Sensitive wildlife species, pine marten, and lynx: Suitable habitat for and documentation of occurrence of various wildlife species in the project area are summarized in Tables 7, 8, 9, and 10.

Table 7. Threatened, Endangered, or Proposed Wildlife Species Considered for Analysis

Species ¹	Suitable Habitat w/in Project Area	Species Documented w/in Cumulative Effects Area	Basic Habitat Description ³	No-Action Determination of Effect ²	Proposed Action Determination of Effect ²	Rationale for Proposed Action Determination
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Species ¹	Suitable Habitat w/in Project Area	Species Documented w/in Cumulative Effects Area	Basic Habitat Description ³	No-Action Determination of Effect ²	Proposed Action Determination of Effect ²	Rationale for Proposed Action Determination
Canada Lynx (<i>Lynx Canadensis</i>)	Yes	No	Spruce/fir, high alpine, and habitats with high horizontal cover	No effect.	May effect - Not likely to adversely affect	1) impacts to lynx habitat would be low; 2) the project is in compliance with applicable lynx standards, guidelines, and conservation measures; 3) a positive change in prey habitat would likely occur; 4) lynx have not been reported in the area; 5) only 9% of the total blowdown is proposed for salvaging leaving over 14,000 acres of new denning and foraging habitat; and 6) the project is small in scale where less than 2% of the cumulative effects analysis area (LAUs) would receive vegetation treatments.
Gray Wolf (<i>Canis lupus</i>)	Yes	Yes	Remote, well connected forested generalist	No effect.	Not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat.	1) wolves in the project area are designated as nonessential experimental population; 2) den and rendezvous sites are not known to occur in the area; 3) the project is temporary and small in scale (<2% of cumulative effects analysis area); and 4) impacts to wolf habitat and prey are low.

¹ Federally listed species based on USFWS website, May 10, 2008, [Listed Species by National Forest](#).

² The determination is based on the presence of suitable habitat.

³ Montana Natural Heritage Database. 2008. <http://www.mtnhp.org/animalguide/>

Table 8. Determination of effect for Region 1 Sensitive Species with Suitable Habitat w/in Project Area and/or documented within cumulative effects area.

Species ¹	No-action Determination of Effect ²	Proposed Action Determination of Effect ²	Basic Habitat Description ³	Rationale for Proposed Action determination
Grizzly Bear (<i>Ursus horribilis</i>)	No Impact	May impact individuals or Habitat, but is not likely to cause a trend to Federal listing or loss of viability	Remote, well connected forested generalist.	1) The project area is located outside the Primary Conservation Area; 2) Den sites are not known to occur in the area; 3) impact to grizzly bear habitat is considered low; 4) the food storage orders are in place; 5) the project is in compliance with Forest Plan Standards and conservation plan standards, goals, and guidelines; 6) No road construction, reconstruction, or maintenance would occur; and 7) the project is small in scale where less than 2% of the cumulative

Species ¹	No-action Determination of Effect ²	Proposed Action Determination of Effect ²	Basic Habitat Description ³	Rationale for Proposed Action determination
				effects analysis area would receive vegetation treatments.
Harlequin duck (<i>Histrionicus histrionicus</i>)	No Impact	No Impact	Inhabit fast moving, low gradient clear mountain streams	1) implementation of Best Management Practices; 2) implementation of Streamside Management Zone guidelines; 3) the project will not effect overhanging bank vegetation; and 4) the project is small in scale where less than 2% of the cumulative effects analysis area would receive vegetation treatments.
Wolverine (<i>Gulo gulo</i>)	No Impact	No Impact	Remote subalpine and spruce/fir forested areas	1) Den sites are not known to occur in the project area; 2) only 9% of the total blowdown is proposed for salvaging leaving over 14,000 acres of new denning and foraging habitat; 3) the project is temporary and small in scale (<2% of cumulative effects analysis area); and 4) impacts to wolverine habitat and prey are low.

¹ Species listed as sensitive on the 2008 Forest Service Northern Region Sensitive Species List (USDA 2008c).

² The determination is based on the presence of suitable habitat.

³ Montana Natural Heritage Database. 2008. <http://www.mtnhp.org/animalguide/>

Table 9. Custer National Forest terrestrial Habitat Indicator Species (MIS) and Key Wildlife Species with suitable habitat within project are or documented within cumulative effects area.

Species	Description of No-Action Effect ³	Description of Proposed Action Effect ³	Basic Habitat Description ⁴	Rationale for Proposed Action Determination
MIS¹				
Old Growth habitat indicator - Northern goshawk (<i>Accipiter gentilis</i>)	Neutral	Neutral	Mature forest generalist	1) impacts to potential goshawk habitat would be low; 2) no negative change in prey base would occur; 3) the proposed action would make the project area less vulnerable to stand replacement wildfire; 4) goshawk have not been reported in the area; and 5) the project is small in scale where less than 2% of the cumulative effects analysis area would receive vegetation treatments.
Dog hair ponderosa pine indicator - White-tailed deer (<i>Odocoileus virginianus</i>)	Neutral	Neutral	Grassland to montane conifer forest	1) the proposed action would temporarily increase the amount of human related activities and associated noise throughout the project area but over the long-term forage would be improved; 2) the proposed action would make the project area less vulnerable to stand replacement wildfire; 3) implementation of the project design features; and 4) the project is small in scale where less than 2% of the cumulative effects analysis area would receive fuel treatments.
Aspen indicator - Ruffed grouse (<i>Bonasa umbellus</i>)	Neutral	Neutral	Primary habitat includes dense early seral staged forests dominated by	1) the proposed action would temporarily increase the amount of human related activities and associated noise throughout the project area but over the long-term, forage and nesting cover would be improved; 2) the proposed action

Species	Description of No-Action Effect ³	Description of Proposed Action Effect ³	Basic Habitat Description ⁴	Rationale for Proposed Action Determination
			aspen, secondary habitat includes other dense deciduous or conifer woodland areas	would make the project area less vulnerable to stand replacement wildfire; 3) if all proposed project design measures are followed, there would be little risk to altering nesting behaviors or success within the project area; and 4) the project is small in scale where less than 2% of the cumulative effects analysis area would receive fuel treatments.
Riparian tree indicator - Bullock's (Northern) oriole (<i>Icterus bullockii</i>)	Neutral	Neutral	Open deciduous woodland and riparian areas	1) the proposed action would temporarily increase the amount of human related activities and associated noise throughout the project area but over the long-term forage and nesting cover would be improved; 2) the proposed action would make the project area less vulnerable to stand replacement wildfire; 3) this activity could have short-term adverse impacts on nesting activities, but is not believed to be substantial due to the small area affected and duration of expected impact. There would be little risk to altering nesting behaviors or success within the project area; 4) Opening the tree canopy would help to stimulate deciduous shrub growth and improve habitat for all three species; and 5) the project is small in scale where less than 2% of the cumulative effects analysis area would receive fuel treatments.
Riparian shrub indicator - Yellow warbler (<i>Dendroica petechia</i>)	Neutral	Neutral	Brushy riparian especially with willows	
Hardwood draw tree indicator - Ovenbird (<i>Seiurus aurocapillus</i>)	Neutral	Neutral	Mid-late successional, closed-canopied deciduous or deciduous/conifer forests with limited understory	
KEY SPECIES²				
Elk (<i>Cervus Canadensis</i>)	Neutral	Neutral	Grassland to forested alpine areas	1) the proposed action would temporarily increase the amount of human related activities and associated noise throughout the project area but over the long-term forage would be improved; 2) the proposed action would make the project area less vulnerable to stand replacement wildfire; 3) implementation of the project design features; 4) the project would not negatively impact access and habitat management for big game; and 5) the project is small in scale where less than 2% of the cumulative effects analysis area would received fuel treatments.
Mule deer (<i>Odocoileus hemionus</i>)	Neutral	Neutral	Rugged grassland to forested alpine areas	
White-tailed deer (<i>Odocoileus virginianus</i>)	Neutral	Neutral	Grassland to montane conifer forest	

¹ Management Indicator Species include the categories of Habitat Indicator and Key (Major Interest) Species. Habitat Indicator species are based on the Custer Forest Plan (USDA 1986).

² The Key (Major Interest) Species are based on the Custer Forest Plan. Management Indicator Species include the categories of Habitat Indicator and Key (Major Interest) Species.

³ The determination is based on the presence of suitable habitat.

⁴ Montana Natural Heritage Database. 2008. <http://www.mtnhp.org/animalguide/>

Table 10. Wildlife Species of Local Public Concern Considered for Analysis.

Species ¹	Description of No-action Effect ²	Description of Proposed Action Effect ²	Basic Habitat Description ³
Moose ⁴ (<i>Alces alces</i>)	Neutral	Neutral. See white-tailed	Variable: summer, mountain meadows, river bottoms, wet areas; winter, willow flats, mature

		deer, mule deer and elk section for effects and rationale.	coniferous forests. Willows are an important habitat component.
Pine martin (<i>Martes Americana</i>)	Neutral	Neutral. See goshawk section for effects and rationale.	Boreal preferring mature conifer or mixed wood forests. Uses deadfall and snags as den sites.

¹ The Wildlife Species of Local Public Concern are based on public comments received during the public scoping period (January 2008).

² The determination is based on the presence of suitable habitat.

³ Montana Natural Heritage Database. 2008. <http://www.mtnhp.org/animalguide/>

⁴ Moose, along with elk, bighorn sheep and black bear are special emphasis species for Management Area D (Custer Forest Plan 1986) on the Beartooth Ranger District.

Effects of the No-Action Alternative

Snag Amount and Distribution, snag habitat, snag associated species viability: There would be no effects to Snag Amount and Distribution, snag habitat, or snag associated species viability.

Recommendations in the Northern Region snag management protocol (USDA 2000) would be met.

Wildlife habitat diversity: The diversity of forest stand structure in the project area would continue to decrease due to the current successional pathway and disturbance patterns.

MIS & MIS viability, old growth habitat and species, Sensitive wildlife species, pine marten, and lynx: The effects determination for Federally threatened and endangered species are summarized in Table 7. The effects determination for USFS sensitive species with habitat or known occurrence in the project area are summarized in Table 8. The description of effects for other Management Indicator Species and “Key species” with habitat or known occurrence in the project area are shown in Table 9. Table 10 displays the description of effects for wildlife species of local public concern.

Effects of the Action Alternative

Direct, Indirect, and Cumulative Effects to Snag Amount and Distribution, snag habitat, snag associated species viability: The proposed action would likely remove some existing snags that were created (wind damaged trees) by the November 11, 2007 storm event. However many of the wind damaged trees do not have commercial value due to fracturing so they would remain on the landscape to provide snag habitat. Non-commercial treatments including mechanical and prescribed burning would tend to retain large live trees during the mechanical phase and consume and create several snags during the prescribed burning phase. Considering the past, present and reasonably foreseeable future actions of cumulative effects the proposed action would remove some existing snags because of timber harvest activities and prescribed burning. These losses in snags are expected to be offset by the creation of snags from prescribed burning.

Implementation of the proposed action would have a neutral effect on snag habitat. This determination is based on the following rationale: 1) the proposed action would meet the regional snag management recommendations (USDA 2000); 2) the proposed action has a project design feature that would maintain existing snag habitat in the projects area; 3) some of the proposed treatments would create additional snag habitat and 4) the project is small in scale where less than 2% of the cumulative effects analysis area would received fuel treatments. Maintaining an average of at least 2 snags, where available, per acre that are greater than or equal to 12” diameter, which are greater than 75 feet from roads and/or private property, and are not a safety hazard during project implementation would maintain essential habitat for cavity users.

Species Viability: On the Custer National Forest, all of the species considered in Appendix E occur over a geographical area encompassing several states. Because their distribution is so large, the viability of the species is not tied to actions occurring only on a small portion of their natural range such as the Custer National Forest. Therefore, one could argue that viability at the Forest scale is not an issue. Even so, it is recognized that adverse actions occurring within a small portion of the range, if extended out to their entire range, could lead to problems in species viability over time. Therefore, it is important to assess how the actions within a portion of a species range contribute to the viability across the range. To address this, activities are evaluated in terms of their effect on habitat, at the project level, landscape level, and planning unit, if needed. At the project and forest level, the analysis focuses upon the likelihood of the species or its habitat “persisting” within the analysis area over time. No significant adverse effects to persistence or species viability would occur (see Appendix E).

MIS & MIS viability, old growth habitat and species, Sensitive wildlife species, pine marten, and lynx: The habitat, effects determination, and determination rationale for Federally threatened and endangered species with habitat or known occurrence in the project area are summarized in Table 7. The habitat, effects determination, and determination rationale for USFS sensitive species with habitat or known occurrence in the project area are summarized in Table 8. The habitat, presence, and description of effects for other Management Indicator Species and “Key species” with habitat or known occurrence in the project area are shown in Table 9. Table 10 displays the habitat, presence, and description of effects for wildlife species of local public concern.

Additional background information and rationale for the determination of effects for these species is in the Biological Evaluation and Assessment for Threatened, Endangered, Sensitive and Management Indicator Species/Key Species for Beartooth Front Storm Damage Clean-Up and Fuels Reduction Project 2008 (Appendix E). Effects to old growth habitat and species are disclosed in the analysis for the goshawk, which is the Forest Plan old growth indicator species (USDA 1986).

Conclusions:

With application of prescribed design features and mitigations detailed in the Action Alternative Design and Mitigation Measures section of this document, the Action Alternative would not result in significant direct, indirect, or cumulative effects to wildlife resources.

Fisheries

Effects to aquatic habitat and biota is a key issue. The issue indicator is ECA, temporary stream crossings, miles of new system or temporary roads, and large woody debris frequencies in selected areas. Effects to Sensitive wildlife species and MIS were identified as comments for analysis. The Fisheries Report and Biological Evaluation (Appendix F) analysis describes the existing condition of fisheries and amphibian resources within the project area and evaluates the potential effects of the alternatives on these resources. Following is a brief summary of that report:

Affected Environment

Stream channels throughout the project area generally have stable stream banks with a very low to moderate sensitivity to disturbance. As a result of the November 2007 wind storm, ECA condition is at or slightly above levels that could produce measurable changes in annual water yields and possibly streamflows in West Fork Fishtail and Upper Little Rocky.

Fish bearing streams and lakes occurring within the project area include: 1) East Fork Fishtail, West Fork Fishtail and Little Rocky creeks in the Benbow area, and 2) Hellroaring, Wyoming, and Rock creeks, and Greenough Lake in the Main Fork Rock Creek area. The remaining, much smaller perennial systems in the project area, including Dale Creek in the Benbow area, and 7 unnamed headwater tributaries, are not known to support fish. No Federally listed threatened or endangered fish or amphibian species, designated critical habitat, fish or amphibian species proposed for Federal listing, or proposed critical habitat occur in the project area. Yellowstone cutthroat trout, a Forest Service sensitive fish species, are present within the Little Rocky Creek and Wyoming Creek drainages in the project area. The project area is within the historic distribution of the Western (Boreal) toad and Northern Leopard frog. Yellowstone cutthroat trout are the only sensitive fish species present in the project area. Nonnative wild trout occurring in the project area include brook, brown, and rainbow trout.

Amphibian habitats present within the treatment area include isolated wetlands in portions of Unit 58 (Little Rocky Creek drainage) and Unit 60 (West Fishtail Creek drainage), and Greenough Lake (Unit 45) in the Main Fork Rock Creek drainage. Potential sensitive amphibian species include the Northern leopard frog (*Rana pipiens*) and Western toad (Boreal toad) (*Bufo boreas*). Non-sensitive native amphibians present in the project area include the Columbia Spotted frog (*Rana luteiventris*), Boreal Chorus frog (*Pseudacris maculate*), and Tiger salamander (*Ambystoma tigrinum*).

Table 11 summarizes the potential effects to aquatic sensitive species and Management Indicator Species in the project area. Additional discussion of and rationale for effects is provided in the subsections below and in Appendix F.

Table 11. Potential effects of the alternatives on sensitive and management indicator (MIS) aquatic species and wild trout in the project area.

SENSITIVE AND MIS SPECIES	NO-ACTION ALTERNATIVE	ACTION ALTERNATIVE
Yellowstone cutthroat trout	May impact Individuals or habitat but will not likely contribute to a trend towards federal listing or loss of viability to the population or species.	Beneficial Impact.

Northern leopard frog	No impact.	No impact.
Western (Boreal) toad	No impact.	No impact.
Wild Trout	May impact Individuals or habitat but will not likely contribute to a trend towards federal listing or loss of viability to the population or species.	Beneficial Impact.

Effects of the No-Action Alternative

There would be no direct effects to fish and amphibian species and their habitats associated with the No-Action alternative. Indirect effects to aquatic habitat and species under the No-action Alternative would primarily result from retention of excessive amounts of large woody debris from the November 2007 storm remaining in stream channels in localized reaches. Densities of LWD in impacted areas exceed the range of variability that these stream systems have developed under. These areas are now subject to high intensity riparian burns and are also prone to excessive scour of streambeds and banks at higher flows when LWD is mobilized. Subsequently, aquatic habitats and species, including the Yellowstone cutthroat trout, within these windfall reaches could be impacted dramatically if riparian fuel loads and in-channel LWD densities are not decreased.

Cumulative effects include potential for wildfire throughout the project area and in some cases excessive fuel loads in riparian areas could produce high intensity burns, and if followed by a high precipitation or flashing runoff event, could be detrimental to local fish and amphibians and their habitats. In this event, streams would eventually stabilize as vegetation recovers. However in some areas, already isolated and fragmented populations of trout may be lost before recovery is achieved and the aquatic environment stabilizes (Little Rocky Creek). Native, common amphibian populations may be displaced until wetland areas and lake environments recover, but populations are not expected to be impacted under this scenario.

Effects of the Action Alternative

Under the Action Alternative, construction of temporary roads and stream crossings (log bridges, armored fords, or culverts) for equipment access to windfall areas, and equipment use and log skidding along riparian areas and wetlands, are the only actions that could potentially impose direct effects on fish and amphibian species. Of the 1.14 miles of proposed temporary roads in the Little Rocky Creek drainage and 0.64 miles in the Fishtail Creek drainage only about 0.10 miles are in close proximity (within 500 ft) of perennial streams. All temporary routes and stream crossings would meet the requirements of SMZ regulations, Montana Forestry BMP's, and MFWP 124 permit stipulations. Additionally, temporary roads, skid trails and stream crossings would be fully rehabilitated once the project was completed. Therefore, sediment generation should be minimal, short in duration, and localized. These and other protection measures included in the proposed action would ensure the physical integrity of riparian areas, wetlands, and stream courses. Subsequently, direct mortality of individual aquatic species as a result of this action is expected to be negligible to nonexistent.

Adverse indirect effects would not be expected from the proposed treatments, but long-term beneficial effects would be. A reduction in timber canopy has already occurred as a result of the windfall events and thinning and some prescribed burning activities in these areas are expected to reduce the potential for high intensity wildfire, decrease the risk of streambed and bank scour, and allow for faster regeneration on stream banks and riparian buffer areas.

The cumulative effects of the Action Alternative on aquatic resources, when combined with past activities and natural processes, should be beneficial to aquatic resources, including wild trout populations, sensitive and MIS aquatic species, non-sensitive native amphibian species, and their habitats. Risk to riparian and aquatic environments is expected to decrease and these areas should stabilize more rapidly under the Action Alternative.

No actions proposed in the action alternative conflict with goals and standards for fish and amphibian species within CNF Management Areas B, D, F, M, and T, as long as SMZ regulations and Montana Forestry BMP's are effectively implemented.

Forest Vegetation

Three comments for analysis were identified relative to forest vegetation: 1) Wind damage potential from effects of tree thinning; the issue indicator is the level of risk of wind damage; 2) Bark beetle potential in areas of wind damaged trees; the issue indicator is increased population levels over the next 2 years; 3) Effects of post treatment regeneration on fire potential; the issue indicator is potential future fire type (surface, passive crown, active crown or running crown);

Following is a summary of Forest Vegetation analysis presented in Appendix G:

Affected Environment

The predominant forest cover in the Main Fork treatment area is lodgepole pine (spruce, sub alpine fir and Douglas fir occur as smaller components) and in Benbow the major components are ponderosa pine, Douglas fir and lodgepole pine. Much of the lodgepole forest types on the Beartooth Face of the Beartooth district experienced a large stand replacing fire in the early 1900's and most lodgepole pine stand ages are about 100 years old.

Physical damage is common from both snow and wind. The November 2007 wind event in 2007 damaged thousands of acres of trees across the Beartooth District. This damage is seen as individual trees to small groups or swaths of trees several acres in size of uprooted, snapped off and leaning trees. In some areas the resulting fuel loads are in excess of 100 tons to the acre. This event has created a complex fuel depth from the ground level up to the canopy base and into the canopy.

Wind Damage Potential: Intermediate cutting (thinning) and creating openings (clearcutting) increases the potential for wind damage in many timber types. As the intensity of tree removal increases stands becomes more susceptible to wind damage. Lodgepole pine, spruce, and sub alpine fir is prone to wind damage due to its typical shallow root system. Ponderosa pine and Douglas fir develop a much deeper tap root which tends to better anchor them from wind damage effects.

Bark beetle potential in areas of wind damaged trees: These forested areas have endemic levels of insects and minor infections of diseases. Beetles are a component and function of the forested ecosystem and are one of the primary recycling agents in forested stands. Prominent bark beetle species found in treatment areas include: pine engraver beetle (*Ipps. pini.*), Douglas fir beetle (*Dendroctonus pseudotsugae*), mountain pine beetle (*Dendroctonus ponderosae*), western balsam beetle (*Dryocoetes confuses*), and spruce beetle (*Dendroctonus rufipennis*). Mortality from these insects have been minor in the proposed treatment areas as noted in the 2001, 2002, 2003, 2005, and 2007 aerial insect detection flights. These species are currently at endemic levels killing incidental individuals or groups of 5 to 10

trees within the project area. Beetle mortality is closely associated with overstocked, continuous stands, drought periods and secondary damaging agents such as snow or wind damage. Recent storm damage mortality is likely to be infested with beetles. Dependent on weather, vigor of trees and population levels beetles could infest live trees. The amount and expanse of this wind damage has caused concern of what it may do to elevate beetle infestations and potentially increasing mortality which further adds to the hazardous fuel loads. Gibson (2008) indicated the greatest threat of bark beetle outbreaks appears to be from the Douglas-fir beetle and the spruce beetle. It is reasonable to assume there will be insipient populations concentrating in some of the numerous windthrown spruce trees. The potential for the downed Douglas-fir being infested is high. On the adjacent National Forest System lands near 4K ranch a few new attacks by the engraver beetle in downed ponderosa pine and Douglas-fir beetle in the downed Douglas-fir were observed in May 2008. Attacks are just starting and anticipated to increase. Mountain pine beetle was also found in the lodgepole and ponderosa pine. These attacks represent endemic populations; however with the extensive lodgepole pine stands on the District and the documented high mountain pine beetle populations across the region (more than 891,000 acres in 2007) the potential must be recognized. The potential for mountain pine beetle populations to increase due to the wind damaged trees is low because mountain pine beetles rarely attack downed trees.

Effects of post treatment regeneration on fire potential: The majority of the proposed silviculture systems would be intermediate and not regeneration treatments. The intermediate treatments are not designed for regeneration establishment; to meet the fuel objectives single story structures are desired. However, it is realized that the shade-tolerant species (Douglas-fir, Engelmann Spruce and sub alpine fir) would continue to establish under these canopies (creating ladder fuels). Understory establishment would depend on factors such as weather, species, seed availability, adequate seed bed, moisture, etc.. It is also realized that future treatment of new understory is likely. Timing of treatment would depend on when this understory becomes a risk for fire moving into the crowns. These units would be expected to be managed as single story conditions into the future until another decision is made.

Effects of the No-Action Alternative

Wind Damage: Small scale wind damage would continue with areas having concentrated damage due to strong frontal passages and high impact storm events (i.e. thunderstorms). Wind events like that of 2007 on the Beartooth District are not common, but can happen in the future. Occurrence of that type of event would likely see similar wind damage. The overall effects of the No-action alternative (not including 2007 type events) are that the treatment areas landscapes would likely remain in a low risk for additional wind damage.

Bark beetle potential in areas of wind damaged trees: Weather conditions into 2010 are likely the main factor that will determine which direction beetle populations will go. If weather conditions are cool and wetter, under both the No-action and the proposed action it can be expected that endemic populations will persist in the wind damaged trees over the next few years with continued activity across the treatment area in live trees as seen over the past years. If weather conditions are warmer and dryer, under the No-action alternative, populations of the Douglas-fir beetle and the spruce beetle would have the highest potential to move into live trees and potentially create high mortality.

Effects of post treatment regeneration on fire potential: Modeled simulations (see Appendix G) show that the No-action alternative exceeded the threshold of active crown fire in all but the first five years under severe fire conditions. For moderate conditions the No-action stayed below the threshold of active crown fires. A simulated 2026 fire in modeled areas would kill the entire stands of trees.

Effects of the Action Alternative

Wind Damage: When considering species susceptibility, treatment intensity, creation of openings, topographic position and the prevailing winds the direct effects of the proposed treatments would increase the risk for wind damage. Post treatment, the Benbow treatment area would be in a low risk for wind damage largely due to the dominance of windfirm species, the topographic position and the treatment units not being in the drainage bottoms that parallel the prevailing winds. The overall wind damage risk for Main Fork after treatment would be low/moderate mainly due to the major species susceptibility to wind damage and the fact that the treatment units lie in or slightly above the drainage that parallels the prevailing winds.

Bark beetle potential in areas of wind damaged trees: If weather conditions are cool and wetter, under both the No-action and the proposed action it can be expected that endemic populations will persist in the wind damaged trees over the next few years with continued activity across the treatment area in live trees as seen over the past years. The proposed action if implemented would reduce that potential in the treatment units for two reasons. First, removal of infested downed trees (large slash and cull material) removes the potential brood sites for the beetle. Second, the proposed thinning and regeneration harvests will change stand conditions (stocking density) not conducive to beetle infestations. Stand alterations to reduce susceptibility are well documented for each beetle species (Appendix G).

Effects of post treatment regeneration on fire potential: Modeled simulations (see Appendix G) show that implementing the proposed action (promoting regeneration) would lower fire severity and the predicted potential of mortality under severe fire conditions. The proposed action promoting regeneration stayed below the threshold in both modeled stands for both severe and moderate fire conditions. Passive fires are predicted under severe fire conditions in year 2019 to 2026. A simulated 2026 fire in modeled areas would kill the entire stands of trees.

Heritage Resources

While effects to cultural resources were not identified as either a key issue or comment for analysis, the Forest Service is required to ensure compliance with applicable law and policy. A Cultural Resource Specialist Report was prepared but it is not included as part of this Environmental Assessment. Pursuant to the Freedom of Information Act and various cultural resource protection laws and regulations, information contained in this report is considered confidential and cannot be released to the general public. The following is a summary of this report that does not include confidential information:

The proposed project falls under the CNF Site Inventory Strategy (SIS) known as the *Wildland Urban Interface and Large Scale Hazardous Fuels Reduction SIS* implemented in 2005 to address landscape scale (500 acres or greater) hazardous fuel reduction projects proposed under the Healthy Forest Restoration Act of 2003 and the “Healthy Forest Initiative”. This strategy allows for proactive site treatment to reduce hazard fuels, making cultural resources more fire resistant, rather than leaving untreated islands within project areas.

In 1999, the CNF identified sites that met the national criteria for “priority heritage assets. Priority asset sites are those sites that have had a significant value investment; and/or are eligible for nomination to the National Register of Historic Places (NRHP); and/or are considered “at risk” due to substantial effects to

site integrity. Culturally sensitive sites are defined as “Cultural resources associated with traditional Indian ceremonies, cultural practices and important events in tribal history...” and include “...burials, rock art, stone circles of greater than 7m in diameter, monumental rock features, fasting structures, eagle catching pits, sweat lodges, wooden structures, Sun Dance lodges and grounds, offering and prayer locales and historic battle sites.”

Affected Environment

At least half of the project area has been previously inventoried for the presence of cultural resources. The un-inventoried acres consist primarily of hazardous areas that are currently unsafe to enter due to high amounts of congested windfall debris that resulted from the recent high-wind storm event. The probability of cultural resources being present in these un-inventoried areas is almost equally divided across high, medium and low areas. Twenty-five known sites were reviewed and two have been formally recommended Not Eligible for nomination to the National Register of Historic Places (NRHP).

Effects of the No-Action Alternative

Under the No-action Alternative no direct effects would occur to sites in open settings, on private property or sites treated previously. Direct effects consisting of tree fall debris/fuel loading and tree uproot could occur on several sites located in timbered areas. While there would be no ground disturbing activities associated with the No-action Alternative, the probability of future catastrophic wildfires in the project area would be likely. Hazardous fuels would continue to accumulate across the project area.

In terms of indirect effects, all known cultural resources sites could be damaged or consumed by wildfire or by fire suppression activities. Following a wildfire event improved ground surface visibility could lead to the discovery of known or new cultural resources and subsequent illegal artifact collecting, damage or vandalism could occur. Erosion, due to loss of vegetation cover from fire, may also result in damage to cultural resources.

The cumulative effect of the No-action Alternative would be the continued buildup of hazardous fuels with an increased potential for multiple damaging effects to cultural resources. The opportunity to treat cultural resources, with the goal to make them more “fire resistant” or to insure their continued historic use would not be realized.

Effects of the Action Alternative

Under the Action Alternative, direct effects would occur on, or adjacent to, 10 cultural resource sites. Two of these sites are priority assets and one is culturally sensitive. The proposed treatment plans for these 10 sites would be reviewed by the MT SHPO. An archaeologist would identify all site locations and/or structures to be treated and would monitor all treatment activities. The culturally sensitive site may require consultation with the Crow Tribe in order to verify its significance and to insure its respectful consideration and treatment.

Three historic roads would be routinely maintained and used during the proposed project. Routine maintenance would serve as a beneficial activity by providing for the continued use of these cultural resources. One of these roads accesses the NRHP listed 4K Ranch but none of the structures associated with this former dude ranch would be disturbed.

Complete avoidance would occur at nine sites. These sites may be monitored during and after unit treatment activities to insure that they are not disturbed.

Seven unrecorded sites would be formally recorded during project implementation.

The cumulative effect of the Action Alternative would be the restoration of the project area to a more desired condition and the protection and preservation of cultural resources, through fuel load reduction, making them more fire resistant.

Soils

While effects to soils were not identified as either a key issue or comment for analysis, ensuring compliance with Region 1 Soil Quality Standards (USDA 1999) is necessary. The Beartooth Front Storm Damage Cleanup and Fuels Reduction project area was surveyed to detail existing condition and determine potential effects to the soil resource and a Soils Specialist Report (Appendix H) was prepared. Following is a brief summary of this report:

Affected Environment

The project area was visited and surveyed in May 1, 2008 (Benbow Area) and June 13, 2008 (Main Fork). Field review consisted of traversing representative units and assessing soil parameters as well as visually estimating existing disturbance. No units were identified as having previous mechanical commercial timber sale activities. It is estimated that activity area detrimental soil disturbance is no more than 5%.

The majority of the soils on sampled sites are coarse textured, having a high cobble and gravel content. This is a sign that they will resist erosion. A majority of these sites also have subangular blocky or granular structures. This is an indicator that these sites do not have residual compaction or detrimental effects from historic management. There is very little bare ground, a sign of resistance to erosion and most sites have high coarse woody debris content, reflecting a historic buildup of woody material from fire exclusion.

Effects of the No-Action Alternative

There would be no short-term effects on the soil resource over and above the existing condition. No additional thinning, fuels reduction, prescribed burning, or road management activities would disrupt the natural soil processes. No soil compaction, rutting, puddling, or soil displacement would occur with No-action. Soils that are undisturbed would remain so. Soil productivity in areas with compacted soils would slowly improve as plant roots, soil organisms, and freeze-thaw events loosen the soil. Standing dead and damaged trees, downed trees, needles and branches would remain on the site and fall to the ground. Soil organisms would decompose the organic materials thus adding humus and nutrients to the soil. Natural processes would continue until another major disturbance such as fire or a windstorm opens the tree canopy and speeds up the recycling process again.

An intense wildfire is a possibility at some time in the future. An extreme wildfire followed by a severe rain event could lead to accelerated erosion and sedimentation, and possible mass wasting. Soil erosion rates would fluctuate with natural changes in vegetation. Historically, in the Beartooth Ranger District

forests generally recover over time following wildfires. Depending on the severity of the fire the time frame could be as long as decades.

Effects of the Action Alternative

Based on field reconnaissance, review of literature, and GIS analysis, impacts to long term soil productivity are not anticipated from any of the proposed activities. Mechanical treatments would not exceed Region 1 soil quality thresholds (USDA 1999) assuming existing routes are maximized and dry conditions exist. No adverse impacts from hand piling/burning would occur. The analysis found little of the area was impaired from current cattle use, and recreational activities. Long term cumulative effects are not anticipated since regrowth of the grassland/shrubland understory is high and that mechanical fuels treatments would maximize use of existing travel routes to limit disturbance.

Long term impacts to soils are not anticipated from the proposed treatments. The soil analysis indicates that all alternatives and all activities proposed would meet the Region 1 Soil Quality Standards through the implementation of management practices outlined in Design Criteria and restoration of landings and heavily used skid trails, if needed, to reduce the total amount of detrimental soil impacts. The existing condition indicates there is little detrimental soil disturbance throughout the project area. All Forest Plan management direction would be met by the proposed action.

Noxious Weeds

Effects of project implementation to noxious weed proliferation and post-project weed monitoring needs is a Key Issue. The Forest Service Northern Region Risk Assessment Rating Procedure for Undesirable Plants (USDA 2001) was used to determine the risk of noxious weeds and other undesirable plants spreading in the analysis area due proposed activities. The indicator for this Key Issue is the noxious weed risk rating. Following is a brief summary of the Range/Noxious Weeds Report (Appendix I):

Affected Environment

There are noxious weed infestations in small portions of storm damaged areas that are proposed for clean-up and fuel reduction. These infestations have very low canopy cover of each noxious weed species and are less than 1% cover in each mapped vegetation polygon. In the Benbow area, noxious weeds include Canada thistle, spotted knapweed, sulfur cinquefoil, and houndstongue. In the Main Fork of Rock Creek in the vicinity of the project area, spotted knapweed and Canada thistle are the two noxious weeds of concern. They are found in small scattered stands, or as individual plants along all the roads in the area.

Noxious weeds (seeds and reproductive plant parts) are easily spread by vehicles and heavy equipment. These vehicles can spread existing plants and seed as well as bring noxious weed seed into an area where ground disturbance assists in providing a good seed bed.

The Beartooth District Weed Control Program is actively monitoring and treating noxious weeds annually on all of the known weed infestation within the project area. This activity, as authorized by the Custer National Forest Final EIS for Weed Management (USDA 2006) will continue regardless of whether a decision is made to conduct all, or part, of the storm clean-up and fuel treatment. The goal for

noxious weed management in the project area is to prevent noxious weeds from going to seed, reducing the number of acres infested with noxious weeds, and to eradicate, and reduce, all new starts as soon as they are found.

Effects of the No-Action Alternative

Direct and indirect effects if No-action is taken are that the consequence of noxious weed establishment is low to moderate. Cumulative effects on the native plant community are likely, but are limited with continued monitoring and treatment. Current activities in the areas would continue to spread spotted knapweed, Canada thistle, and sulfur cinquefoil and the potential new noxious weed species within the project area either through moving noxious weed seeds from on site plants, or from bringing seed and reproductive plant parts of the same or new species into the project area. Noxious weed treatment as authorized by the Custer National Forest Final EIS for Weed Management (USDA 2006) would continue.

Effects of the Action Alternative

Direct and indirect effects of this project are that the consequence of noxious weed establishment is moderate. Project activities, especially in treatment units where logging equipment and vehicles would be used off main roads, would likely to result in some areas becoming infested with undesirable plant species even when preventative management actions are followed. Logging equipment and vehicles can spread spotted knapweed, Canada thistle, and sulfur cinquefoil and potential new noxious weed species within the project area either through moving noxious weed seeds from on site plants, or from bringing seed and reproductive plant parts of the same or new species into the project area.

Cumulative effects on the native plant community are likely, but are limited with continued monitoring and treatment. Specific activities, including recreational use, potential mining, mineral exploration, grazing and natural forces, would combine with fuel reduction and clean-up activities to cumulatively introduce and spread noxious weeds in the project area. Noxious weed treatment, as authorized by the Custer National Forest Final EIS for Weed Management (USDA 2006) would continue regardless of whether a decision is made to conduct storm clean-up and fuel treatment.

Sensitive Plants

Effects to sensitive plants were analyzed to meet legal and policy requirements for protecting plants listed by the Forest Service as sensitive. Following is a brief summary of the Sensitive Plants Report (Appendix J):

Affected Environment

Based on review of potential habitat, there is low to moderate potential for occurrence of the following Forest Service Region 1 sensitive plants in the project areas: Musk-root, Small yellow lady's slipper, Giant helliborine, Hiker's gentian, Beartooth goldenweed, Hall's rush, Mealy Primrose, Threeranked humpmoss, Jove's Buttercup, and Shoshonea. cursory field surveys have been conducted within or adjacent to the project area and no new populations of sensitive plants have been found (see Appendix J, Sensitive Plants Report).

Effects of the No-Action Alternative

There are no known sensitive plants or sensitive plant populations that would be affected by the No-Action Alternative. Implementation of the No-action alternative would not be anticipated to move any sensitive plant species within the project area toward federal listing under ESA.

Effects of the Action Alternative

There are no known threatened, endangered, or sensitive plant populations in or adjacent to the project area. The proposed project is designed to treat lodgepole pine forest, which is unsuitable habitat for many sensitive plant species. Since a reduction in timber canopy has already occurred as a result of the November 2007 natural blowdown event, removing all or a portion of the windthrown timber will have little additional influence on changes in shading understory vegetation. Because direct and indirect effects to sensitive plant populations are not anticipated, there should be no cumulative effects to sensitive plant species.

Although adverse indirect effects are not anticipated from these proposed treatments, long-term beneficial effects are. Removal of blowdown and associated slash, combined with thinning to reduce green fuels would reduce the potential for high intensity/long duration fire in localized riparian areas, thereby reducing the magnitude of adverse impacts to streams, wetlands, floodplains, and overall water quality (see Appendix C, Hydrology Report).

Any unknown populations that might exist in the project area would have low vulnerability to proposed activities. Use of soil and water and weed BMPs, and following SMZ criteria are designed to minimize impacts. Proposed activities are not expected to impact individuals or habitat. Implementation of the Action alternative would not be anticipated to move any sensitive plant species within the project area toward federal listing under ESA.

Inventoried Roadless Areas, Wilderness, & Un-roaded Areas _____

During scoping and the objection period, no one raised an issue related to the effects of the proposal to Inventoried Roadless Areas (IRAs) and the Absaroka-Beartooth Wilderness (A-B Wilderness). In response to comments received after the objection period (12/5/2008), the Forest Supervisor instructed the Beartooth District Ranger to disclose effects of the proposal on the four IRAs near the project area, and the A-B Wilderness. Following is a brief summary of the Inventoried Roadless Area and Wilderness Characteristics Report (Appendix L):

Affected Environment

Four Inventoried Roadless Areas are adjacent to the project area: Fishtail Saddleback IRA (#01366); Red Lodge Creek IRA (#01363); Line Creek Plateau IRA (#01911); and Rock Creek IRA (#01913) (Project Record Exhibits C-20 and C-23). The A-B Wilderness is 4.8 kilometers to the south of the Benbow area treatment units, and 800 meters northwest of the Main Fork Rock Creek treatment units.

No project treatments are proposed in any of the four IRAs or the A-B Wilderness. There are treatments proposed in the vicinity of four IRAs and the A-B Wilderness. There are treatments proposed in un-roaded areas of the Benbow and Main Fork Rock Creek areas (Figures 5 and 6). Overall, un-roaded areas within the project area do offer limited opportunities for natural appearing landscapes, areas for

solitude and primitive/semi-primitive recreation experiences. However, there are on-going activities in these areas that will continue to occur. Underlying the Benbow area is the J-M Reef, a part of the Stillwater complex, highly valued for the platinum/palladium found there. Recent locatable mineral claims follow the J-M reef within the Stillwater complex, and could potentially be developed at any time. Noise is a regular occurrence during summer months in the Main Fork area, particularly due to motorcycle and RV traffic on US Highway 212 and ATV and vehicle traffic on Glacier Lake Road #2421, Hellroaring Road #2004, and in and out of several campgrounds. Smoke from campfires at campgrounds and dispersed campsites are also common, but do not tend to linger in the Main Fork valley due to typical high winds in the area.

Effects of the No-Action Alternative

There would be no direct, indirect or cumulative effects of the No-Action alternative on any of the four Inventoried Roadless Areas near the project area, the Absaroka-Beartooth Wilderness, or un-roaded areas in the project area.

Effects of the Action Alternative

In the Benbow area and Main Fork Rock Creek portions of the project area, short term, temporary, transient and localized effects in the form of sights, sounds, and smoke would occur as a result of implementing the proposed action. These effects from project related operations may slightly reduce outstanding opportunities for solitude and high quality undisturbed air in IRAs and un-roaded areas during project implementation. On-going and reasonably foreseeable activities that create noise and dust would continue, and generally be short-term, temporary, transient and localized in nature. Short term effects of sights, sounds, and smoke could result in displacement of some recreation users in IRAs and un-roaded areas during project implementation. These displaced recreation users could elect to move to other areas on the Beartooth Ranger District to find solitude, high quality undisturbed air and primitive experiences, such as the A-B Wilderness. Some terrestrial wildlife species could be displaced into other areas, including any of the IRAs, or the A-B Wilderness during and after project implementation. Such effects would be short-term, localized, and often indiscernible from other ongoing and reasonably foreseeable activities.

In the Benbow area, vehicle traffic on Road #2414 and ATV and 4X4 vehicle use of Road #2415 (Chrome Lake Jeep Trail) creates dust and noise that may be inhaled and heard by forest visitors in the Fishtail Saddleback IRA. Unit 60 is the proposed treatment nearest this IRA in the Benbow area. Because this area is not close to a public access point, Roads 2414 or 2415, or system trails (Figure 5), forest visitors may experience a cumulative reduction in outstanding opportunities for solitude or a primitive and unconfined type of recreation.

While IRAs in the Main Fork area are less than one kilometer from proposed treatment areas, they are also less than one kilometer from several campgrounds, US Highway 212, and heavily traveled National Forest System Roads. There may be direct and indirect effects related to sights, sounds, or smells (smoke). Such as, when operations are on-going, there will be log truck traffic and noise, equipment noise, dust, and chainsaw sounds. After operations stop and slash clean-up and burning occur, there will be crews, burning, and smoke in the vicinity. Smoke may drift through the areas and sounds may be heard. In addition, on-going human activities as described above will continue. During project implementation, noise and smoke from project activities could combine with other on-going noise and

smoke in the valley and reduce opportunities for solitude or primitive and unconfined recreation in the A-B Wilderness. Such cumulative effects would be short-term, localized, and often indiscernible from other ongoing and reasonably foreseeable activities.

The Proposed Action is not expected to affect, either directly or indirectly the A-B Wilderness. As noted above there are direct and indirect effects in the form of sights, sounds, and smells to IRAs and un-roaded areas. The effects of implementing the Proposed Action on un-roaded areas in the project areas do not preclude consideration of those areas for wilderness evaluation at the time of Forest Plan revision. These effects, when considered in context and intensity will not be significant pursuant to 40 CFR 1508.27.

CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

ID TEAM MEMBERS:

Forest Service Interdisciplinary (ID) Team Members are listed in Table 12.

Table 12. ID Team Members.

Position Title	Person	Project Responsibilities
District Ranger / Responsible Official	Traute Parrie	Responsible Official. Public collaboration. Project record review.
ID Team Leader	Dan Seifert	IDT Leader. Public collaboration. Writer-editor. GIS support. Project record documentation.
Engineering	Arlin Krogstad	Engineering / transportation input. Property boundary surveys.
Fisheries	Darin Watschke	Fisheries input.
Fuels	Mark Hale	Fuels and fire suppression input.
Fuels	Jeff Stockwell	Fuels oversight. Fire suppression input.
GIS Support	Mary Gonzales	GIS Map production and analysis.
Heritage	Mike Bergstrom	Heritage input.
Heritage consultation	Halcyon LaPoint	Heritage input review and approval. Coordination with tribes and Montana SHPO.
Hydrologist	Mark Nienow	Hydrology input.
Lands	Lisa Subcasky	Land access agreements.
Landscape architect	Nicole Hill	Visuals/landscape architecture input.
Noxious weeds and Range	Terry Jones	Noxious weeds and range input.
Planner	Mark Slacks	Biological Evaluation review and approval.

		36 CFR 218 objection process coordination. Inventoried Roadless Area and Wilderness Characteristics input.
Recreation	Jeff Gildehaus	Recreation input. Unit design at/near developed recreation sites.
Forest Supervisor / Reviewing Officer	Steve Williams	36 CFR 218 objection review.
Sensitive Plants	Kim Reid	Sensitive plants input and biological evaluation.
Silviculture	Dennis Sandbak	Forest Vegetation and silviculture input.
Soils	John Lane	Soils input.
Timber	Eric Stiefvater	Timber input. GIS support. Logging systems & timber unit layout.
Timber	John Clark	Timber review & oversight.
Wildlife biologist	Barb Pitman	Biologist input.
Wildlife biologist	Tom Whitford	Wildlife input and biological evaluation. USFWS informal consultation.

FEDERAL, STATE, AND LOCAL AGENCIES:

Federal:

Lou Hanebury and Mark Wilson, U.S. Fish and Wildlife Service.

State:

Dick Moore, Fred Bicha, and Bob Moorehead, State of Montana Department of Natural Resources and Conservation.

Jim Olsen and Shawn Stewart, State of Montana Fish Wildlife and Parks.

Mark Baumler, Montana State Historic Preservation Officer.

Local:

Carbon County Commissioners.

Stillwater County Commissioners.

Stillwater County Sheriff and Coroner.
Mayor Betsy Scanlin, City of Red Lodge.
City Council, City of Red Lodge.
Tom Kuntz, Red Lodge City/Rural Fire Department
Nye Volunteer Fire Department.

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