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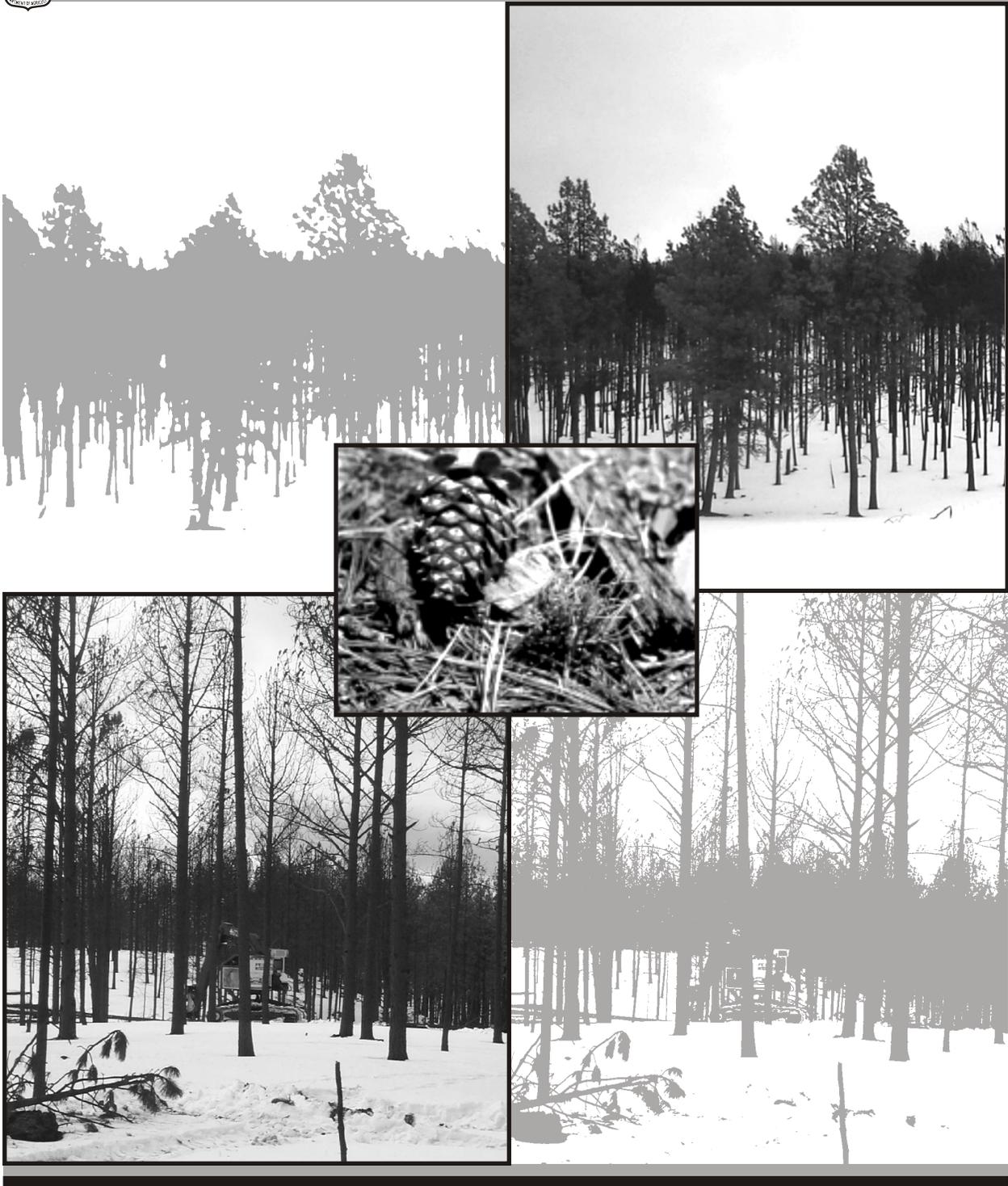
Black Hills
National
Forest

April 2001



Jasper Fire Value Recovery

Final Environmental Impact Statement



Jasper Fire Value Recovery
Acronyms / Abbreviations

ATV.....	All-Terrain Vehicle
BAER	Burned Area Emergency Rehabilitation
BMP	Best Management Practice
CEQ.....	Council on Environmental Quality
DBH	Diameter Breast Height
DEIS	Draft Environmental Impact Statement
EIS.....	Environmental Impact Statement
EROS.....	Earth Resources Observation Systems
ESA	Endangered Species Act
FEIS.....	Final Environmental Impact Statement
FOIA.....	Freedom of Information Act
GIS	Geographic Information System
IDT	Interdisciplinary Team
J-RAT.....	Jasper Rapid Assessment Team
MA	Management Area
MIS.....	Management Indicator Species
MMBF.....	Million Board Feet
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NOI.....	Notice of Intent
OHV	Off-Highway Vehicle
RIS.....	Resource Information System
ROD	Record of Decision
SS	Structural Stage
TES.....	Threatened, Endangered, or Sensitive

**JASPER VALUE RECOVERY PROJECT AREA
CUSTER AND PENNINGTON COUNTIES
SOUTH DAKOTA
FINAL ENVIRONMENTAL IMPACT STATEMENT**

[] DRAFT

[X] FINAL

LEAD AGENCY:

United States Department of Agriculture
Forest Service, Black Hills National Forest

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Custer and Pennington Counties, South Dakota

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ABSTRACT

The Final Environmental Impact Statement (FEIS) documents the results of an analysis of three alternative ways developed to implement the Revised Forest Plan for the Black Hills National Forest in the Jasper Value Recovery Project Area on the Hell Canyon and Mystic Ranger Districts on the Black Hills National Forest. Alternative B was designed to address the purpose and need for the project by recovering the value of burned timber, while protecting the physical and biological resources of the project area. It would meet the standards and guidelines in the Revised Forest Plan, as well as terms of a legal settlement agreement, while considering the most recent scientific information for a range of species. Alternative C was developed to address the purpose and need for the project and render additional protections to snag-dependent wildlife, while focusing on activity areas which have already been surveyed for heritage resources.

The No Action alternative (Alternative A) was developed as a baseline for comparing the effects of Alternatives B and C. It does not respond to

the purpose and need for action, defined for this project as recovering the value of timber burned and killed by the Jasper Fire. Alternative B is the Forest Service preferred alternative.

The Final EIS provides responses to comments received by the Forest Service during the public comment period on the Draft EIS from over 70 groups and individuals. Changes were made to the analysis and alternatives based on comments received.

The FEIS is not a decision document, but rather discloses the effects of implementing an alternative within the range analyzed. The decision by the Forest Supervisor on which alternative should be implemented will be documented in a separate Record of Decision.

Reviewers have an obligation to structure their participation in the National Environmental Policy Act process so that it is meaningful and alerts the agency to the reviewers' position and contentions. *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 553 (1978). Environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of the final environmental impact statement. *City of Angoon v. Hodel* (9th Circuit, 1986) and *Wisconsin Heritages, Inc. v. Harris*, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980).

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Summary

Introduction

The Final Environmental Impact Statement (FEIS) is intended to foster informed decision making and public participation on a site-specific proposal to maintain post-fire ecological function of the land while recovering fire-killed trees in an environmentally acceptable manner. The FEIS discloses the direct, indirect, and cumulative environmental impacts resulting from a proposed action and an alternative action for salvage timber harvest and road reconditioning within the area burned by the Jasper Fire in 2000, and a No Action alternative. The proposed action is planned for implementation in Spring, 2001.

On August 24, 2000, at 2:18 P.M. a fire was reported off of Highway 16 between Custer, SD and Newcastle, WY, near the Jasper Cave. High temperatures, strong winds, low humidity, and heavy fuel loads caused the fire to burn actively and spread rapidly. The Jasper Fire was declared contained on September 8, 2000, and controlled on September 25, 2000. A total of 83,510 acres were consumed. On the Black Hills National Forest, 52,348 acres were burned on the Hell Canyon Ranger District, 26,157 acres were burned on the Mystic Ranger District; in addition, 3,726 acres were burned on private land, and 1,279 acres were burned on Jewel Cave National Monument. The Jasper fire is approximately 25 percent larger than any other recorded fire in Black Hills history. The fire area surrounds Jewel Cave National Monument and is approximately 7 miles west of Custer, South Dakota, and 10 miles east of Newcastle, Wyoming.

It is prepared in accordance with the format established by the Council on Environmental Quality (CEQ) regulations implementing NEPA and other relevant State and Federal laws and regulations, the Black Hills National Forest has prepared this Final Environmental Impact Statement (FEIS) on the effects of recovering value of dead timber within the Jasper Fire Value Recovery Project area. The NEPA scoping process (40 CFR 1501.7) was used to invite public participation, to refine the scope of this project, and to identify preliminary issues to be addressed.

Copies of this FEIS can be obtained from the Black Hills National Forest Supervisor's Office, RR2, Box 200, Custer, South Dakota 57730 or by calling (605-673-9200).

Proposed Action

In order to recover the value of fire-killed timber and accelerate the recovery of the burned area, the Black Hills National Forest proposes to:

Summary

- Harvest fire-killed trees on approximately 11,067 acres of high and moderate intensity burn.
- Recondition approximately 232 miles of roads.
- Utilize approximately 11.5 miles of existing temporary roads.
- Temporary roads would be closed after harvest.
- No new permanent roads would be constructed.

Purpose and Need

The underlying need for this action is to implement the Revised Forest Plan and national agency direction (See Appendix A), which establishes direction for the Black Hills National Forest. It guides all natural resource management activities and establishes management standards for lands administered by the Black Hills National Forest (USDA, 1997). The purpose and need for the project is to recover value from the Jasper Fire Area in the form of timber in a timely manner and in a way that protects and enhances other resources in the area. This complies with Goal #3 in the Forest Plan (USDA, 1997) providing for sustained commodity uses in an environmentally acceptable manner. Timber plays an important role in the economic stability of the area. Salvaging timber through viable salvage sales in a cost effective and timely manner will make sawtimber and non-sawtimber material and associated wood products available for local, regional, and national needs. Viability of salvage sales is tied to market conditions, regional indices, and the time sales are offered.

Decisions to be Made

Based on the analysis documented in the DEIS, and the subsequent FEIS and planning record, the Forest Supervisor will make the following decisions:

- What amount, type, and distribution of dead and imminently dead trees will be harvested within the burned area to recover the value of fire-killed timber?
- What constraints will be placed on those harvest areas in order to accomplish this goal in an environmentally acceptable manner?

Identification of Issues

Five significant issues identified through ID Team review of scoping comments are listed below along with other resource issues (impacts) analyzed and disclosed in the Environmental Consequences. Significant issues are points of unresolved conflict relative to the proposed action and are used to develop alternative actions to the proposed action. Based on some of these issues, the original proposed action, to harvest all of the merchantable material, was modified. The original proposal was eliminated from further analysis. Issues analyzed in the Environmental Consequences are potential resource impacts identified during scoping and ID Team analysis. Following each issue, indicators (standards or units of measure) are listed which were used in comparing alternatives.

Value Recovery

Issues relating to recovering the value of timber killed in the Jasper Fire served as the focus for Alternative B, the proposed action. This issue was used to refine the original proposal to focus on economically viable treatment areas.

Indicator: Timber harvested (mmbf)

Soil Erosion

Many publics and Forest Service personnel were concerned with preventing soil erosion in the area burned by the Jasper Fire. This issue was used to refine the original proposal to focus on areas where soil erosion could be adequately mitigated so that harvest would be environmentally sound. This issue served as a focus for Alternative B.

Indicator: Soils with management concerns (acres)

Heritage Resource Protection

Forest Service personnel raised issues relating to protecting heritage resources in the area burned by the Jasper Fire proposed under Alternative B. About of 1/2 of the burn area had not been surveyed for heritage resources. Timber harvest as proposed in Alternative B would require additional surveys and compliance with Section 106 of National Historic Preservation Act. This issue served as a focus for Alternative C.

Indicator: Acres requiring needing further heritage surveys

Wildlife Habitat Protection

Several commentors raised issues relating to protecting habitat in the burned area for cavity-dependent species. Habitat for two cavity dependent species associated with burned landscapes, the black-backed woodpecker and the Lewis' woodpecker, served as a focus for Alternative C.

Indicator: Acre of woodpecker nesting habitat retained

Old Growth Stands

Some publics were concerned issues relating to harvest of former old growth stands in the Jasper Fire area. Several stands that had been designated for late succession under the Revised Forest Plan were burned by the fire. This issue served as a focus for Alternative C.

Indicator: Acres of old growth harvested

Summary

An opportunity was identified. At the time of the Jasper fire there were five active timber sales conducting harvest operations inside the burn area. Under the terms of the timber sale contract, changes to harvest units and prescriptions are possible if mutually agreed to by both the Forest Service and the timber sale purchaser. During the re-negotiation of these on-going timber sales, some remaining green stands were identified that are still under contract to be harvested. The purchasers are willing to consider foregoing harvest of the unburned or lightly burned stands within the fire perimeter in exchange for additional dead volume.

These green trees represent important cover areas for big game, goshawk foraging and future nesting habitat, and future snag replacements. This proposal presents an opportunity to identify stands of fire-killed trees to be substituted for these green stands still under contract thus preserving this important habitat.

Issues and Concerns Addressed in Effects Analysis

A considerable portion of public comment focused on the potential effects of the Proposed Action. The public questioned the impacts on a wide variety of physical, biological, and socioeconomic factors. The IDT focused its analysis to address these comments. The results of the analysis are presented in Chapter IV – Environmental Consequences and summarized in Chapter II. The following issues and concerns were identified.

Salvage harvest levels

Many publics were concerned that as much timber as possible should be recovered in an environmentally sound manner. Others did not want to see any harvest.

Aesthetics around private land

Private landowners considered the dead trees ugly and wanted them removed.

Wildlife

Commentors were concerned with the effects of the proposed harvest on a wide range of wildlife species. Some felt that all of the dead trees should be left for wildlife habitat.

Roads

Most commentors thought that adequate roads were already in place. They did not want additional roads built. Many felt any skid trails and temporary road should be closed after use.

Economics

Some publics were concerned that the timber be sold under economically feasible standards.

Montane grasslands

Some publics were concerned about impacts to specific native meadows within the burn.

Noxious weeds

Many commentors were concerned with the proliferation of noxious weeds in the burn area.

Cultural resources

Native American groups and other were concerned about the impacts to heritage resources and traditional cultural properties from harvest activities.

Soil erosion

Many commentors supported harvest of fire-killed trees but were concerned that soil erosion be minimized.

Water quality

Some groups expressed a concern about impacts to water quality from harvest activities.

Fuel loadings

Many commentors were concerned with the high fuel loadings that resulted from the fire. They felt harvest would lower future fuel loadings resulting from fallen dead trees.

Old growth

Some groups were concerned that formerly designated old growth stands should not be harvested due to conflicts with Forest Plan management direction.

Insects

Several commentors were concerned with potential outbreaks of forest insects which might cause additional mortality in green trees surrounding the burn. Others were concerned that populations of forest insects would be adversely impacted by proposed harvest levels.

Areas of Controversy

Summary

Based on the comments received during scoping, the main area of controversy surrounding this proposal is whether or not to allow timber harvest to recover the value of dead and dying trees. Many commentors support some level of timber harvest to support local economies, prevent “waste” of fire-killed trees, improve aesthetics, and fulfill the goals of the Forest Plan. However, they were concerned that harvest be done in such as was as to minimize adverse effects to physical, biological, and cultural resources.

Other commentors wanted to see the burn unharvested. They would prefer to see natural ecological processes allowed to proceed. They feel there would be unacceptable adverse impacts to wildlife, forest insects, and soils from the proposed harvest. In addition, harvest would preclude other opportunities for scientific research and monitoring of a burned landscape. They would prefer to see the burned area set aside as a special management area.

Alternative Descriptions

An Environmental Impact Statement must contain a no action alternative and alternatives to the proposed action that respond to significant issues related to the proposed action and project objectives. In response to the issues of Value Recovery and Soil Erosion, the Proposed Action (Alternative B) was developed. In response to the Wildlife Habitat, Old Growth, and Protection of Heritage Resources, Alternative C was developed. Both the proposed action and Alternative C were analyzed in detail.

Alternative A – No Action

Under this alternative, no harvest of fire-killed trees would occur. Alternative A would allow natural processes following a stand-replacing fire to proceed. Harvest of timber would continue under existing timber sale contracts. Existing contracts have been modified to address fire-caused changes. However, some green trees would be harvested and an opportunity to identify stands of fire-killed trees to exchange for these green trees would be foregone.

Alternative B

The primary reason for the proposed action is to recover the economic value of fire-killed timber in the project area. This is consistent with direction of the revised Forest Plan and the Forest Service Manual. This action would also contribute to achieving Goal 3 of the Forest Plan by providing a commodity, which would benefit local, regional, and national economies and local communities. This alternative responds to significant issues identified above (i.e. value recovery, soil erosion).

The Jasper Fire killed an estimated 239 million board feet of merchantable timber on approximately 59,300 acres. It is estimated that most of this timber should remain

merchantable through the end of the summer of 2001. The local timber industry is not capable of harvesting and processing 239 million board feet prior to the wood becoming unusable. Harvesting all of the fire-killed timber will not meet other resource needs and objectives. Therefore a process was undertaken to develop a proposed action that could reasonably be implemented. Alternative B would harvest approximately 56.2 mmbf on approximately 11,067 acres.

The proposed action is based on the following criteria: high and moderate burn areas, areas outside of existing sale cutting units, sites with average slopes no greater than 30%, sites with average volumes greater than 3,000 to 4,000 board feet per acre, areas with commercial volume near private property. Areas dropped under a recent lawsuit settlement agreement were excluded.

Alternative C

Alternative C is a subset of Alternative B which also avoids steep slopes and is economically efficient. Salvage of approximately 27.1 million board feet from approximately 5,221 acres. Several areas considered in the proposed action were removed under this alternative. This alternative was designed to respond to the additional significant issues identified above (i.e. wildlife habitat, cultural resources, and old growth). This action would also contribute to achieving Goal 3 of the Forest Plan by providing a commodity, which would benefit local, regional, and national economies and local communities.

Conclusions from Effects Analysis

The following table displays a comparative summary of the principle activities and the associated effects of the alternatives on the issues and concerns identified from public and agency comments.

Summary

	ALT A	ALT B	ALT C
Timber Management			
Acres of Harvest	0	11,067	5,224
Merchantable Timber Harvest (mmbf)	0	56.2	27.1
Merchantable Timber Retained (mmbf)	331.4	275.2	304.3
Economics			
Estimated Revenue (\$)	0	\$1.86 Million	\$0.95 Million
Payments to Counties (\$)	0	\$0.46 Million	\$0.24 Million
Present Net Value	N/A	\$1.18 Million	\$0.62 Million
Transportation			
Miles of New Construction	0	0	0
Miles of Reconditioning	0	232	168
Miles of Temporary Roads	0	11.5	9.5
Wildlife Habitat			
Lewis' Woodpecker Nesting Habitat Retained (Acres)	9,903	3,297	6,372
Black-backed Woodpecker Nesting Habitat Retained (Acres)	929	433	828
Diversity			
Old Growth Acres Harvested	0	306	53
Montane Grasslands	No Effects	No Effects	No Effects
Noxious Weeds			
Expansion of Noxious Weeds	Most	Least	Moderate
Heritage Resources			
Effects of Cultural Resources	No Effect	No Effect	No Effect
Acres Requiring Additional Surveys	0	5,443	415
Water Quality			
Stream Sediment	No Effect	No Effect	No Effect
Soils			
Risk of Soil Erosion	Moderate	Moderate	Moderate
Harvest on Soils with Severe Erosion Potential (Acres)	0	0	0
Harvest on Soils with Mass Wasting Potential (Acres)	0	0	0
Fire and Fuels			
Future Fuel Loads	Highest	Lowest	Moderate
Aesthetics			
Visual Quality Around Private Land	Low	Best	Better
Insects			
Risk of green tree mortality	Highest	Lowest	Moderate

Timber Management

Alternative A would provide no timber supply other than what is taking place already. Alternatives B and C would provide 56.2 mmbf and 27.1 mmbf respectively.

Alternative A would not contribute to achieving Forest Plan Goal #3 nor the related National Goal as stated in FSM 2435.02 since no harvest would occur. Alternative B would contribute best to meeting these goals since it would recover the most volume. Alternative C would contribute to these goals but 52% less than Alt. B.

Wildlife Habitat

For most species, the Jasper fire was the most significant effect to their habitat. Value recovery operations would not change the seral stage in high and moderate intensity burn areas. The biggest effect of value recovery efforts for wildlife would be the loss of large diameter snags and large diameter downed wood. This loss would affect most cavity dependent species, small mammals, amphibians and other species that require standing or down, dead and decaying wood.

Effects to short term availability of down wood can be partially mitigated by leaving some down logs in harvested units as discussed in the Mitigation Measures. Slash left in units will also add to the accumulation of dead wood and soil humus for snails and small mammals. The effects to the short-term availability of snags can be partially mitigated as well. As discussed in the Mitigation Measures, leaving some of the largest diameter dead trees in each harvest unit will meet Forest Plan interim direction. This will also help improve post-harvest distribution of snags. However, snag habitat will be available at reduced levels due to value recovery operations and most snags will be provided in areas outside cutting units.

Alternative A would allow natural processes following a stand replacing fire to proceed. The tops of large diameter snags would break off in 1 to 6 years leaving large broken topped snags on the landscape for 20 to 30 years following the fire. The large snags are essential to maintaining populations of Lewis' and black-backed woodpeckers. In addition to these broken tops, smaller diameter snags would fall in 2 to 10 years providing dead wood debris for amphibians and small mammals. Grass/dead trees structure will dominate the landscape for about 30 to 40 years. There is a minimal amount of black-backed woodpecker nesting habitat post fire that would support an eruption of this species in the Jasper fire area. Use of the area is possible by black-backed woodpeckers, but other factors may play into use of marginal nesting habitat such as lack of availability in areas outside of the burn.

Alternative B would emphasize value recovery operations in high volume stands. For logged areas, most of the large diameter snags will be harvested, decreasing the use of these areas considerably by Lewis' and black-backed woodpeckers in the short term.

Summary

Four large snags per acre would be left in harvest units. Long term effects in these harvested areas would decrease the availability of dead wood debris for amphibians and small mammals which will decrease the use of these areas but not significantly. For the remainder of the area that is not treated, natural decay process as indicated in Alternative A would continue.

Alternative C would emphasize value recovery operations in high volume stands that have been surveyed for heritage resources. Most structural stage 3C and 4C stands (see FEIS glossary) would not be treated in this alternative, maintaining most black-backed woodpecker nesting habitat. In logged areas, seventeen large snags per acre would be left. This would provide more habitat for Lewis' woodpecker but a decrease in habitat would occur. Effects of the harvest would decrease the availability of dead wood debris for amphibians and small mammals. However, regenerating vegetation will provide cover for these species within 5 years. Effects to these species are not significant. For the remainder of the area that is not treated, natural decay processes as indicated in Alternative A would continue.

Alternatives B and C also provide an opportunity to conserve green trees within existing timber sale areas in the burn by identifying stands of fire-killed trees to exchange for green trees currently under contract. These green stands would provide needed cover for big game, foraging and future nesting habitat for goshawks and future snag replacements for cavity dependant species.

Threatened and Endangered Species

A biological assessment was completed for this project. It was determined that value recovery operations under this proposal will have no effect on bald eagles or their habitat.

Sensitive Species

A biological evaluation was completed for this project. A determination of “may adversely impact individuals but not likely resulting in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range-wide” is made for the following species: pygmy nuthatch, black-backed woodpecker, northern three-toed woodpecker, Lewis' woodpecker, Townsend's big-eared bat, fringed-tailed bat, tiger salamander, pale milk snake, Black Hills red-bellied snake, northern leopard frog, tawny crescent butterfly, and regal fritillary butterfly. A determination of “may beneficially impact” is made for the following species: merlin, western burrowing owl, upland sandpiper, loggerhead shrike, and black-tailed prairie dog.

Noxious Weeds

Under the No Action alternative, noxious weeds that are present will tend to flourish due to the removal of competing vegetation, increased sunlight, and fertilization effects of the fire. There is also a potential for new invasive species not presently found to colonize the

area. A 30% increase in noxious weed infestations is expected in high burn intensity portions of the fire area, a 20% increase in the moderate intensity burn areas, and a 10% increase in the lightly burned areas.

Alternatives B and C are expected to decrease the expansion of weeds due to seeding proposed as mitigation in harvest units. Alternative B would treat more acres with mitigation than Alternative C, therefore this alternative would be most beneficial in suppressing noxious weeds. In all unharvested areas, weeds are expected to increase as discussed for Alternative A.

Heritage Resources

Of the 11,067 acres that are being considered under Alternative B, approximately half of the acres have been previously surveyed for heritage resources. Compliance with Section 106 of the National Historic Preservation Act would be completed prior to any surface disturbance if this alternative is selected. Mitigation and avoidance will protect eligible sites. Of the 5,224 acres that are being considered under Alternative C, approximately 4,809 acres have been previously surveyed for heritage resources. Compliance with Section 106 will also be completed for Alternative C, if it is selected, and sites will be protected.

Mitigation measures developed in conjunction with the State Historic Preservation Officer and Native American tribes to protect significant or potentially significant sites will be applied in both action alternatives. No adverse impacts are expected from implementation of either of the action alternatives.

Range Resources

Alternative B would provide the maximum opportunity to remove woody material through timber harvesting, and allow vegetation that is normally associated with meadows or openings to become established. Removal of dead trees before they fall will facilitate livestock movements and promote better distribution. Alternative C, which treats less acres, would remove less material and the No Action alternative would not remove any material.

Hydrology/Soils

Alternative B would have the most potential to impact the soil and water resource because it treats the most area, 11,144 acres. Alternative C would be in the middle, with 5,221 acres of proposed activities. Alternative A would not provide any additional activity-related impacts to the soil and water resource since this is the no action alternative. Any potential impacts to the soil and water resource, from Alternatives B or

Summary

C, would be minimized by project design and implementation of Best Management Practices.

Water Quality

There are no perennial streams or lakes in the project area. There are several miles of vegetated ephemeral channel to filter runoff before reaching a perennial stream. No adverse impacts to water quality are expected.

Fire and Fuels

Alternative B would harvest the most acres thereby reducing fuel loadings and preventing blocking of roads by fallen trees. Areas of higher fuel loadings burn more intensely and are harder to control. Blocked roads inhibit access for fire control activities. Alternative C would treat less acres and Alternative A treats no acres. Alternative B would therefore have the greatest positive impact on fire and fuels.

Montane Grasslands

Marriot (2000) recognized that exotic species invasions pose a threat to both structural and species diversity in plant communities. These species could reduce the ability of montane grasslands to recover from fire, drought, grazing or other stresses in the future. Noxious weeds are expected to increase in response to the fire. Mitigation measures and monitoring are included to avoid or mitigate additional disturbances from harvest operations. With implementation of these measures, no effects are expected to montane grasslands from any alternative.

Old Growth

Alternative A would not harvest any designated old growth. Alternative B would harvest 306 acres of burned old growth stands while Alternative C would harvest one 53-acre stand.

Aesthetics

The No Action alternative would result in a gradual change in the landscape as trees fall and accumulate on the ground. Activities in the action alternatives would be evident for the first decade, during that time a Low Scenic Integrity will be achieved. After the first decade, a natural appearance will begin to evolve and the scenic integrity will improve. Aesthetics of areas adjacent to private lands would be improved under both action alternatives.

The public has diverse opinions about the scenic quality of post-fire landscapes, with many groups desiring management to move the forest quickly towards the pre-fire scenic condition.

Insects

Populations of certain forest insects associated with dead wood are expected to increase including woodborers and *Ips* sp. Salvage harvesting will not likely prevent increases in populations of these species since they will survive in unmerchantable trees and unharvested areas. *Ips* may spread to surrounding green trees. Other species associated with weakened live trees may increase such as mountain pine beetle or red turpentine beetle. Salvage harvesting will not affect populations of these species since they use live damaged trees. Only dead trees will be harvested under Alternatives B and C.

Identification of the Preferred Alternative

Alternative B has been recommended to the Responsible Official (Forest Supervisor) as the preferred alternative.

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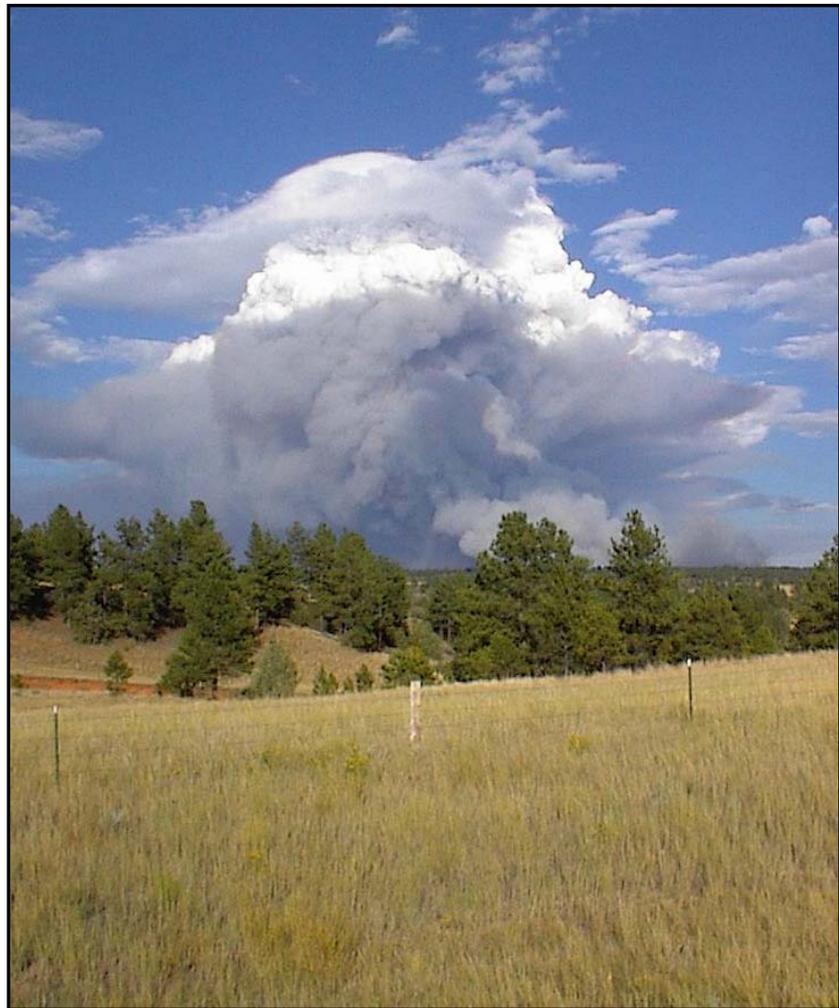
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Figure 4-6.....	End of Chapter 4
Figure 4-7.....	End of Chapter 4
Figure 4-8.....	End of Chapter 4
Figure 4-9.....	End of Chapter 4
Figure 4-10.....	End of Chapter 4

Chapter 1

Purpose and Need



1 Purpose and Need

1.1 Introduction

On August 24, 2000, at 2:18 P.M. a fire was reported off of Highway 16 between Custer, SD and Newcastle, WY, near the Jasper Cave. High temperatures, strong winds, low humidity, and heavy fuel loads caused the fire to burn actively and spread rapidly.

Jasper Fire Legal Description:

Point of ignition of the Jasper fire was T4S, R2E, Section 4. Location of the burned area occurs in all or portions of: T4S, R2E, Sections 1-6, 10-15, 23 and 24; T4S, R3E, Sections 5-8, 17 and 18; T3S, R3E, Sections 5-8, 17-21, 29-32; T3S, R2E, All sections; T3S, R1E, Sections 1-3, 11-14, 23-25, and 36; T2S, R3E, Sections 17-20, and 29-32; T2S, R2E, Sections 2-5, and 7-36; T2S, R1E, Sections 2-4, 9-16, 21-28, 34-36; Black Hills Meridian. The fire burned in both Custer and Pennington Counties of South Dakota.



Extreme fire behavior produced firestorm conditions, which, at the peak of activity, burned an estimated 100 acres per minute.

The Jasper Fire was declared contained on September 8, 2000, and controlled on September 25, 2000. A total of 83,510 acres were consumed. On the Black Hills National Forest, 52,348 acres were burned on the Hell Canyon Ranger District, 26,157 acres were burned on the Mystic Ranger District; in addition, 3,726 acres were burned on private land, and 1,279 acres were burned on Jewel Cave National Monument. The Jasper fire is approximately 25 percent larger than any other recorded fire in Black Hills history. The fire area surrounds Jewel Cave National Monument and is approximately 7 miles west of Custer, South Dakota, and 10 miles east of Newcastle, Wyoming. The

1 Purpose and Need

cause of the fire is suspected to be arson.

The purpose of this analysis is to evaluate possible actions to recover some of the burned timber value before it degrades. This would also provide an opportunity to exchange dead stands for green stands in existing timber sales to protect now scarce wildlife habitat. This document incorporates analyses from other sources, specialist information, electronic map data, and satellite information. Subsequent chapters in this document describe and contrast the Proposed Action and alternatives (Chapter 2), outline the current status of potentially affected resources (Chapter 3), identify environmental impacts of the Proposed Action and alternatives (Chapter 4), list the preparers of this environmental impact statement (EIS) (Chapter 5), and summarizes consultation and coordination with other organizations and the public.

Figure 1-1. Distribution of Acres Burned by the Jasper Fire.

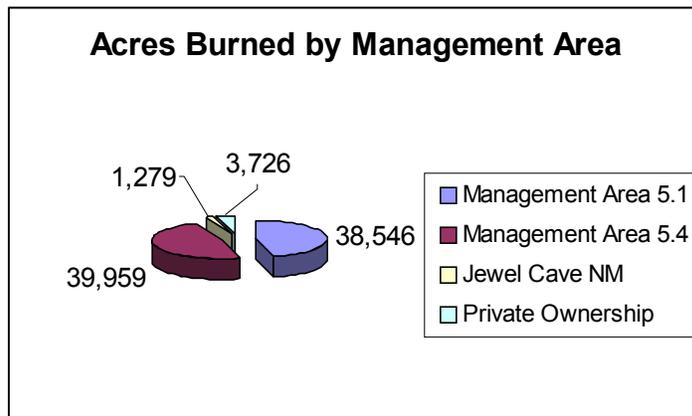
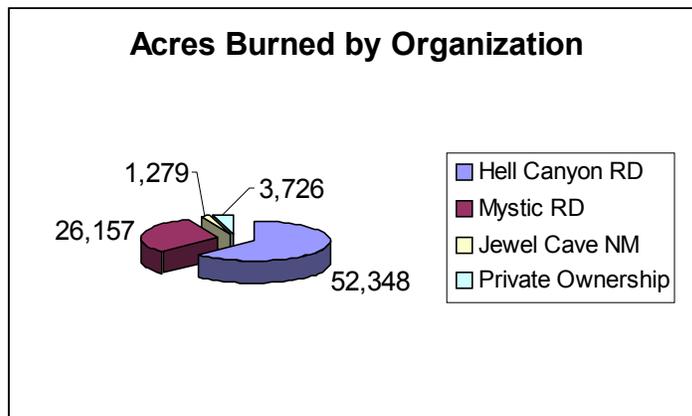
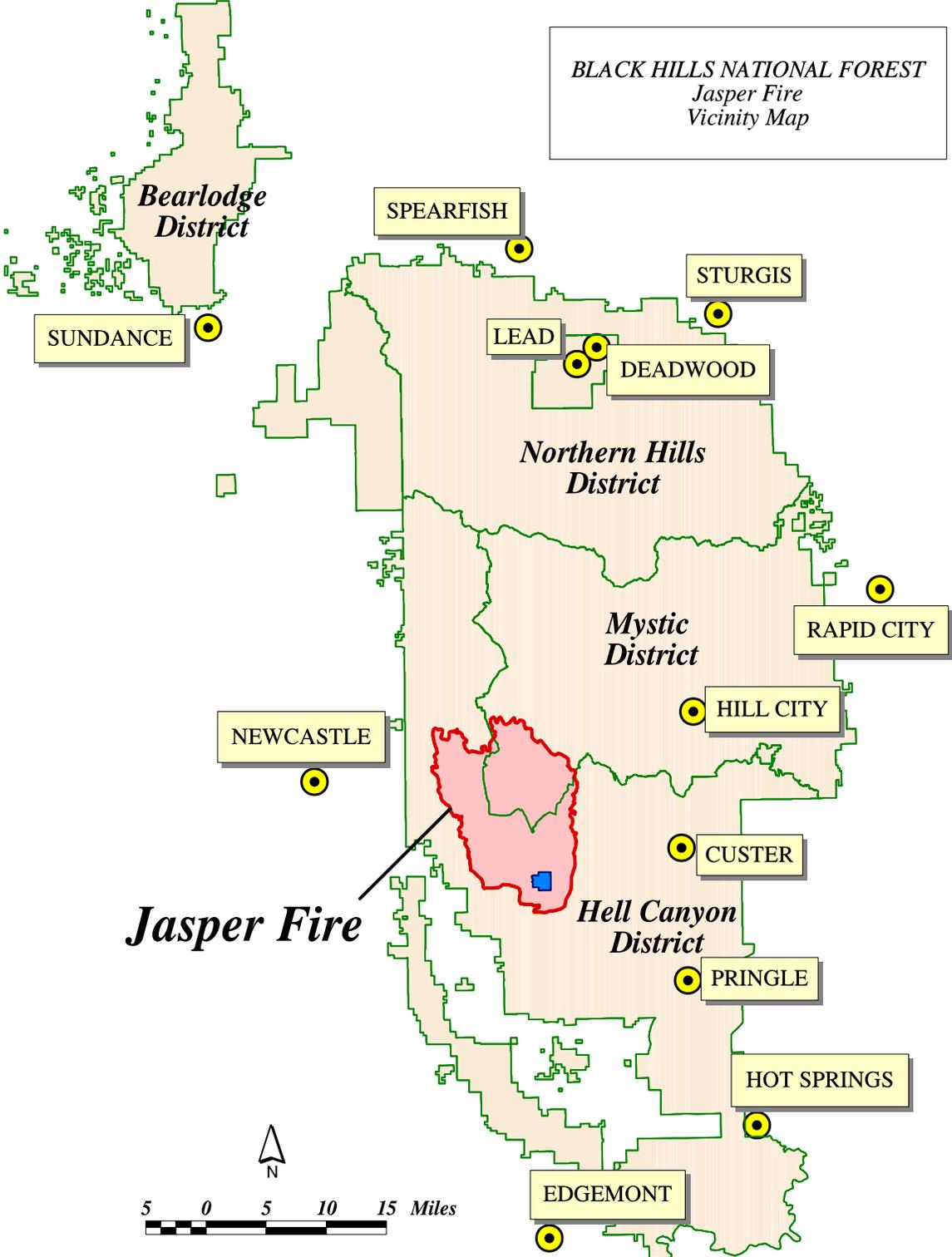


Figure 1-2. Vicinity Map of the Black Hills National Forest and the Jasper Fire.



1 Purpose and Need

1.2 Background



In compliance with the National Environmental Policy Act (NEPA) and other relevant State and Federal laws and regulations, the Black Hills National Forest has prepared this Final Environmental Impact Statement (FEIS) on the effects of harvesting dead timber within the Jasper Fire Value Recovery Project area. This FEIS is designed

to inform the public of the No Action, Proposed Action, and one alternative to the Proposed Action and their effects. The EIS discloses the direct, indirect, and cumulative environmental impacts resulting from each alternative, as well as any irreversible or irretrievable commitment of resources. It is prepared in accordance with the format established by the Council on Environmental Quality (CEQ) regulations implementing NEPA.

1.3 The Decision Making Process

National Forest planning takes place at several levels. Decision-making begins with long range planning at the national level, continuing through the Regional and Forest levels, and down to the project level. The Jasper Value Recovery Project is a part of this hierarchical planning process. This FEIS is a project-level analysis; its scope is confined to issues within the project area.

1.3.1 Management Direction

This Environmental Impact Statement (EIS) process and documentation has been prepared according to direction contained in the following:

- National Forest Management Act (NFMA);
- National Environmental Policy Act (NEPA);

- Council on Environmental Quality (CEQ) regulations; and
- Endangered Species Act (ESA).

An EIS is a disclosure rather than a decision document. Its primary purpose is to document environmental analysis to support a Forest Service decision, documented in a Record of Decision (ROD), regarding a proposed action or alternatives to it. Specific decisions to be made by the Forest Service in consideration of this analysis are described later in this chapter. This EIS also provides the Forest Service with a means of addressing issues associated with other administrative procedures, including those stipulated in the Black Hills National Forest Land and Resource Management Plan (USDA, 1997) and the National Forest Management Act of 1976 (NFMA, P.L. 94-588). The project file for the Jasper Fire Recovery program is also referenced. The project file documents the Interdisciplinary Team's (IDT) evaluation.

1.3.2 Management Areas

The National Forest System lands administered by the Black Hills National Forest have been divided into management areas, each with different management goals, resource potential, and limitations. These areas are established in the Black Hills Forest Plan. The management areas in the Jasper Fire Value Recovery Project area are both Category 5 areas.

Category 5:

These areas are primarily forested ecosystems that are managed through a full range of management options to meet a variety of ecological and human needs. Ecological conditions will be maintained, while emphasizing selected biological structures and compositions considering the range of natural variability. These lands often display high levels of investment, use and activity, density of facilities, and evidence of vegetative manipulation. Users expect to see other people and evidence of human activities. Facilities supporting the various resource users are common. Motorized transportation is common.

Intensive management is often necessary to move the system towards the range of natural variability. This management is usually a combination of prescribed fire and timber harvest treatments. These lands would appear similar to natural-appearing landscapes if left to function under natural disturbance processes.

Black Hills National Forest
Land and Resource Management Plan
1997 Revision

1 Purpose and Need

Specifically, the management areas that exist in the Jasper Area are 5.1 (Resource Production Emphasis) and 5.4 (Big Game Winter Range Emphasis). Management Area 5.1 totals 38,546 acres and Management Area 5.4 totals 39,959 acres (See Figure 1-3).

Management Area 5.1

Management Area 5.1 Resource Production Emphasis

Theme: These areas are managed for wood projects, water yield, and forage production, while providing other commercial products, visual quality, diversity of wildlife and a variety of other goods and services. Numerous open roads provide commercial access and roaded recreation opportunities, while closed roads provide non-motorized recreation opportunities.

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According to the Forest Plan, the desired future condition for these areas is a forest, which is largely a mosaic of tree groups of different ages and heights. Ponderosa pine is the most frequently observed tree species. White spruce, aspen and other hardwood species also occur. Few areas show evidence of decadence of old trees. Trees of all ages are present. There is infrequent evidence of insect and disease outbreaks.

Areas with a resource production emphasis are managed primarily for timber products, forage production, and water yield. These areas provide a variety in stand sizes, shape, crown closure, age structure and interspersion. In addition, hardwood shrub communities are either maintained or enhanced in these areas.



Management Area 5.4

Management Area 5.4
Big Game Winter Range Emphasis

Theme: These areas are managed to provide high-quality winter and transitional habitat for deer and elk, high-quality turkey habitat, habitat for other species, and a variety of multiple uses.

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Areas with big game winter range emphasis are usually located in foothill positions or on old wildfire sites where reduced snow depths and often better than average forage conditions provide the habitat sought by deer and elk during the winter. According to the Forest Plan, the desired future condition for these areas is one that provides big game



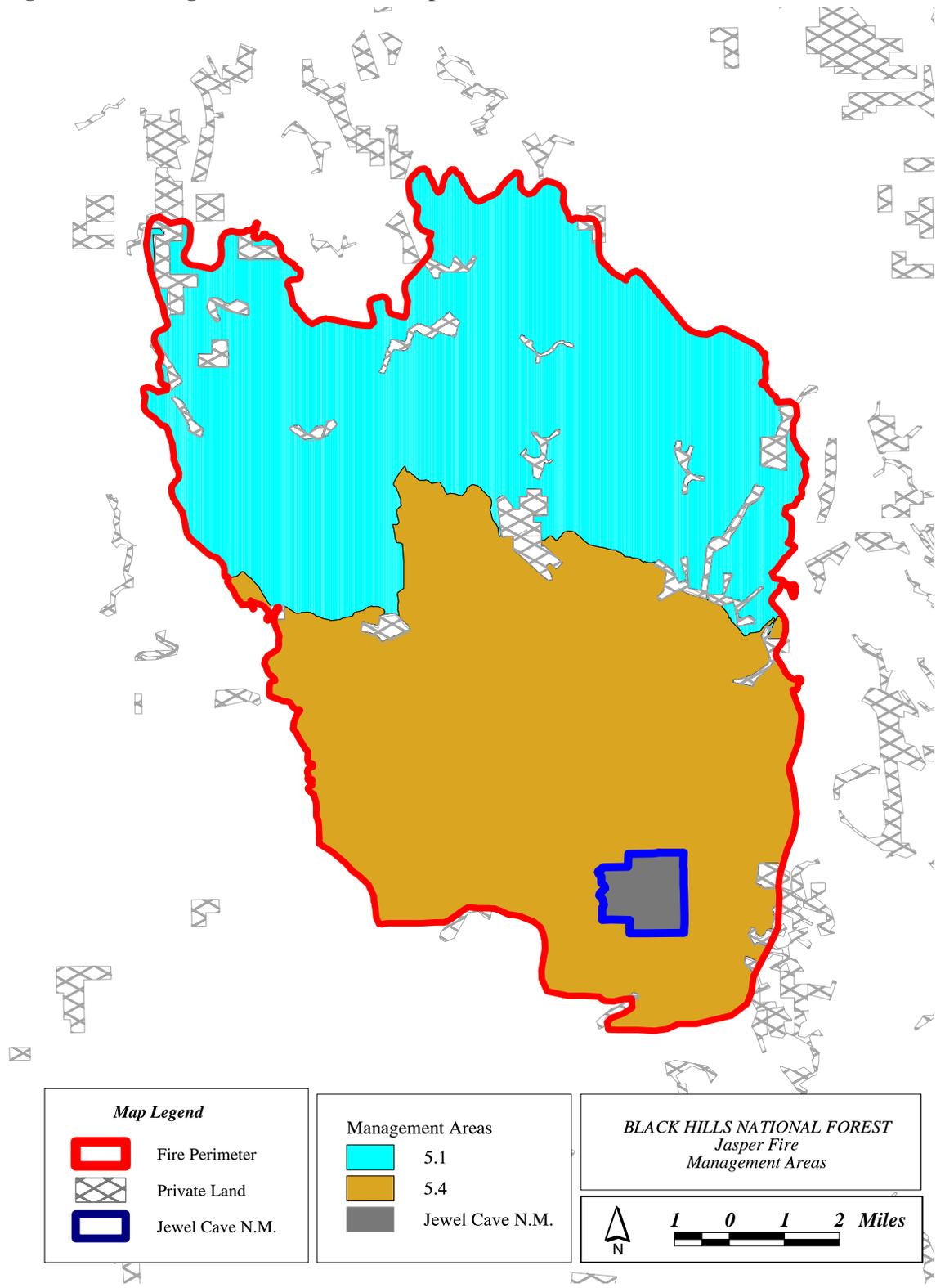
winter range while maintaining healthy plant communities and recreational opportunities. High quality winter habitat is in part maintained by reducing vehicle access to key areas. Management emphasizes a vegetative mosaic, with natural and created openings and diverse sizes and ages of tree stands. Timber harvesting and prescribed burning are the primary management tools used to stimulate browse production and to improve habitat within

these key wildlife areas.

Areas with big game winter range emphasis are managed for wildlife habitat and vegetative diversity through increased forage production and varying tree densities.

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Figure 1-3. Management Areas in the Jasper Fire.



1.3.3 Further Management Direction

Any decision on this proposal will not be inconsistent with the interim direction that was issued as part of the Chief's appeal decision. The latest scientific information included as part of the Phase I analysis has been considered. In addition, any decision made will be consistent with the recent settlement agreement for the Veteran Salvage lawsuit. The amendment to the Revised Forest Plan addresses the needs of certain wildlife species. A brief background on this amendment follows.

The Forest Plan for the Black Hills National Forest was revised in June 1997 when then Regional Forester Elizabeth Estill signed the Record of Decision for the Final EIS for the Revised Forest Plan. That decision was appealed. On October 12, 1999, the Reviewing Officer for the Chief of the Forest Service, James R. Furnish, issued a decision affirming Estill's decision in part. Furnish's decision also identified certain deficiencies in direction in the Revised Plan for species viability and diversity and contained instruction for further actions on these points¹. This decision is hereby incorporated by reference in this analysis.

In November 1999, a lawsuit was filed against the Forest Service by certain parties who had appealed the Revised Forest Plan. This lawsuit directly challenged implementation of the Veteran Salvage Timber Sale, and indirectly challenged a number of other project decisions issued since 1997 under the Revised Forest Plan. A settlement agreement was negotiated and signed in early September 2000. This agreement contained additional protective measures to be applied to implementation of four sold timber sales that lie wholly or partially within the Jasper Fire perimeter². This agreement is hereby incorporated by reference in this analysis

The Phase I Forest Plan amendment is an outgrowth of both the appeal decision on the Revised Forest Plan and the settlement agreement for the Veteran Salvage lawsuit. The Phase I amendment will correct the deficiencies identified in the appeal decision with respect to species viability and diversity to maintain options and allow some project implementation over the next two to five years. During that time a second Forest Plan amendment will complete the re-evaluation of species viability and diversity.

¹ See Decision for Appeals #97-13-00-0085, 0120 and 0125, USDA-Forest Service, James R. Furnish, October 12, 1999, on file at Supervisor's Office for the Black Hills National Forest, Custer, SD.

² See Settlement Agreement and Court Dismissal Order of September 6, 2000, for Civil Action No. 99-N-2173 in the United States District Court for the District of Colorado, on file at Supervisor's Office for the Black Hills National Forest, Custer, SD.

1 Purpose and Need

1.4 Project Overview

1.4.1 Purpose and Need for Action

The underlying need for this action is to implement the Revised Forest Plan and national agency direction (See Appendix A), which establishes direction for the Black Hills National Forest. It guides all natural resource management activities and establishes management standards for lands administered by the Black Hills National Forest (USDA, 1997). The purpose and need for the project is to recover value from the Jasper Fire Area in the form of timber in a timely manner and in a way that protects and enhances other resources in the area. This complies with Goal #3 in the Forest Plan (USDA, 1997) providing for sustained commodity uses in an environmentally acceptable manner.

***National Goals Relevant to Land and Resource Management
(Based on FSM Objective Statements)***

Salvage Sales – 2435.02

- 1. Provide for the removal of damaged or dead timber as soon as practically possible to avoid unnecessary loss of value and volume and to respond to potentially serious catastrophes such as wildfire, windthrow, or hurricane.*
- 2. Manage timber stands at high risk of spreading disease or insect epidemics to prevent volume loss.*
- 3. Manage the use of the salvage sale fund to provide for the rapid, optimum practical use of wood material damaged through natural events such as insects, windstorms, wildfires, hurricanes and tornados.*

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Land and Resource Management Plan
1997 Revision

This project also presents an opportunity to save valuable wildlife habitat within timber sale areas under contract through exchange of burned timber for green timber.

Timber plays an important role in the economic stability of the area. Salvaging timber through viable salvage sales in a cost effective and timely manner will make sawtimber and non-sawtimber material and associated wood products available for local, regional, and national needs. Viability of salvage sales is tied to market conditions, regional indices, and the time sales are offered.

1.4.2 Proposed Action

In order to recover the value of fire-killed timber and accelerate the recovery of the project area, the Black Hills National Forest proposes to salvage approximately 56.2 million board feet (MMBF) on approximately 11,067 acres. No new roads would be constructed, however, approximately 232 miles of roads would be reconditioned within the burn area and approximately 11.5 miles of existing temporary roads would be used. In areas with high and moderate intensity burns only (dead trees) would be harvested, except where incidental green trees need to be removed for access to sites. Potential timber sales would be scheduled for sale in 2001. Chapter 2 discusses the Proposed Action and the alternatives in greater detail.



1.4.3 Decision to be Made

Based on the analysis documented in the FEIS and the planning record, the Forest Supervisor must decide whether or not to recover the value of burned timber in the Jasper Fire area, and if so, in what manner. In addition, the Forest Supervisor may decide to invoke various measures to ensure ecological protection. Monitoring areas (See Section 2.5) have been proposed in the Jasper Fire project area.

1.5 Four-Stage Approach

The Black Hills National Forest is using a staged strategy to address the situation resulting from the Jasper Fire. The strategy includes the following four stages:

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- Stage 1) Emergency rehabilitation actions such as Burned Area Emergency Rehabilitation (BAER) analysis and treatment; this stage was implemented and completed in September, 2000;
- Stage 2) Rapid assessment of rehabilitation/recovery actions and opportunities; this stage was completed in late September with the issuance of the Jasper Rapid Assessment Team Report (J-RAT);
- Stage 3) Analysis of timber recovery actions and opportunities which would be foregone without prompt action (timber salvage); and
- Stage 4) Assessment of rehabilitation/recovery actions and opportunities which are less time dependant (e.g. trail bridge replacement, access management; post-fire grazing allotment management).

This project implements Stage 3 of the strategy. It assesses the opportunities for the recovery of fire-killed trees. The reports from the first two stages of the recovery strategy are incorporated by reference in this EIS and are available at the Hell Canyon Ranger District Office, 330 Mount Rushmore Road, Custer, South Dakota.

1.6 Public Involvement

1.6.1 Scoping

The NEPA scoping process (40 CFR 1501.7) is used to invite public participation, to refine the scope of this project, and to identify preliminary issues to be addressed. The Forest Service sought information, comments, and assistance from Federal, State, and local agencies, and from other groups and individuals potentially interested in or affected by the Proposed Action. The scoping period lasted 30 days ending December 9. The following steps were included in the public scoping process:

PUBLIC MAILING

On October 27, 2000, a scoping document seeking public comment was mailed to approximately 120 groups and individuals who had previously shown interest in Black Hills National Forest projects. There were 26 groups or individuals who responded directly to the scoping document.

NOTICE OF INTENT

On November 9, 2000, a Notice of Intent (NOI) to prepare an EIS was published in the Federal Register. This NOI stipulated a 30-day comment period to end December 9, 2000.

MEETINGS WITH OTHER AGENCIES, ORGANIZATIONS, AND INDIVIDUALS

9/20/00 – Forest leadership met with Rocky Mountain Research Station employees regarding the gathering of scientific information on the Jasper Fire.

9/00 – Forest leadership took representatives from the Black Hills Group, Sierra Club on a tour of the Jasper Fire regarding existing and potential projects in the area.

9/27/00 – Forest personnel took representatives of the tourism and recreation industry on a field tour of the Jasper fire.

10/26/00 – A tribal consultation field trip took place between the Black Hills National Forest Heritage Resource specialists, Hell Canyon Ranger District Sale Administration Staff, and several tribal representatives.

11/17/00 – Forest personnel met with representatives from the South Dakota Department of Game, Fish, and Parks at the burn area.

11/20/00 – Forest leadership met with representatives of the timber industry in Rapid City, SD, regarding potential timber sales in the Jasper fire area.

12/12/00– Forest leadership met with representatives of the timber industry in Custer SD, regarding salvage opportunities in the Jasper area.

12/13/00 – Forest personnel presented the proposed project and alternatives to Native American representatives at a Tribal Consultation Meeting in Rapid City.

2/26/01 – District leadership met with the Mile-high Garden Club about the Jasper Fire.

2/28/01 – Forest Service personnel met with South Dakota Department of Game, Fish, and Parks in Custer, SD regarding future management of the burned area.

PUBLIC REVIEW AND COMMENT ON THE DEIS

Copies of the DEIS and/or summary were mailed to individuals and groups involved in the scoping process for this project (Chapter V lists individuals and groups). The DEIS was available for public comment from December 15, 2000 to February 5, 2001. Approximately 75 comment letters were received on the DEIS. Using comments from these letters, the FEIS was developed (See Appendix D and E).

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This FEIS does not document a decision. Using information in the FEIS and associated planning record, the Forest Supervisor will make a decision based on consideration of the project alternatives and public feedback. This decision will be documented in a Record of Decision (ROD).

This FEIS is being filed with the Environmental Protection Agency and is available to the public.

1.7 Issues

Internal and public responses to the scoping document and Proposed Action were analyzed to define issues. A list of potential issues was developed and considered.

1.7.1 *Significant Issues*

1. VALUE RECOVERY

Concern:

Economically viable timber sales are important to local communities, schools, and county governments. The social and economic well-being of residents and local governments is dependent on employment and revenues generated from timber sales offered by the Forest, however, this action may have environmental impacts. Some are opposed to harvesting timber in burned areas.

Resolution:

All action alternatives attempt to provide economically viable salvage sales. The no action alternative (Alternative A) would not recover value. This EIS will disclose the effects of the action alternatives.

2. HERITAGE RESOURCE PROTECTION

Concern:

Salvage logging should only take place in areas with heritage resource inventory coverage. There are approximately 129 known archeological sites within the Jasper fire perimeter, which will require protection.

Resolution:

Mitigation measures will provide protection of all known archeological sites in all alternatives. Any temporary road construction will take place in areas with heritage resource survey coverage. Temporary roads will be closed when harvest is complete. Implementation of any decision on this project will occur only in inventoried areas where known sites have been evaluated and protected as needed.

3. SENSITIVE SPECIES PROTECTION

Concern:

Leave adequate habitat for cavity dependant species. Two Region 2 sensitive species occur in the Jasper Area. Black-backed woodpecker and Lewis'ss woodpecker are cavity dependant and rely on burn areas with high concentrations of snags.

Resolution:

Alternative C would not include any salvage in areas with structural stage 4C to provide habitat for the black-backed woodpecker. To provide habitat for Lewis'ss woodpecker, 1,290 acres in areas with old growth trees are being avoided.

4. OLD GROWTH STANDS

Concern:

Some commentors did not want salvage in old growth stands

Resolution:

Alternative C avoids most former old growth stands. Only one 53-acre stand is harvested to address visual concerns.

5. SOIL EROSION

Concern:

Measures should be implemented to decrease erosion potential from salvage operations.

Resolution:

Both action alternatives were designed to avoid steep slopes and include other mitigation to help minimize soil erosion.

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1.7.2 Issues Addressed Through Mitigation

1. CAVES

Concern:

Mechanical equipment can damage cave entrances. Harvest operations can disturb hibernating bats or bats with young in caves.

Resolution:

Action alternatives include activity buffers around caves for structural protection and to avoid disturbance to inhabitants of caves.

2. MONTANE GRASSLANDS

Concern:

Montane grasslands need to be protected from potential damage caused by logging and roading activities.

Resolution:

Action alternatives include mitigation for montane grasslands. This proposal would avoid decking and skidding in grassland sites adjacent to activity areas. No new roads would be constructed.

3. DEAD AND DOWN FUEL LOAD RETENTION

Concern:

Need to maintain adequate down woody material for wildlife habitat and natural tree regeneration.

Resolution:

All action alternatives include mitigation to provide dead and down woody material.

4. IMPACT OF ROADS ON SCENIC, RECREATION, ROADLESS, AND OTHER VALUES

Concern:

Disturbance caused by building roads or reconstructing/obliterating existing roads may adversely impact unroaded characteristics, scenic value, wildlife, or fisheries. Adverse impacts may include increased sedimentation, erosion, loss of habitat quality, or reduced scenic quality and recreation opportunity.

Resolution:

No new roads would be constructed under any alternative. The project area includes no inventoried roadless areas nor any unroaded areas of any size that would be disturbed by proposed activities.

5. PRIVATE IMPROVEMENT PROTECTION

Concern:

Protection is needed for private land improvements (e.g. fences where dead trees may fall on them)

Resolution:

Through this project, these improvements will be protected if the areas are within the specified timber cutting units. Other actions will be considered in the following Stage 4 analysis (See Section 1.5).

6. PREVENT INVASION OF NOXIOUS WEEDS

Concern:

Invasion of noxious weeds following the fire could impede the growth of native species of trees, shrubs, and grasses in both the activity area and generally throughout the fire area.

Resolution:

This EIS is dealing only with value recovery in the Jasper area. Effects from salvage operations will be mitigated by monitoring, herbicide application, and seeding. In areas outside activity areas the issue of noxious weeds will be discussed in the following Stage 4 analysis (See Section 1.5).

7. AESTHETICS

Concern:

The burned area is aesthetically displeasing as seen from private lands within the burned area.

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Resolution:

Some areas around private ownership would be harvested under Alternatives B and C. Some additional mitigation measures were applied around private land. Future non-commercial treatments of these areas also would be considered in the Stage 4 analysis (See Section 1.5)

1.7.3 *Issues Outside the Scope of this Project*

1. SMALL TIMBER SALES

Concern:

Provide for small sales (2-5 mmbf) as well as large sales to create opportunities for small operators.

Resolution:

This NEPA document does not state how the timber will be sold. Sale administration will make that determination, however, the Black Hills National Forest is currently planning on offering multiple timber sales, some of which will be small sales. This concern has been presented to the sale administration team.

2. RESTORATION ONLY, NO SALVAGE

Concern:

An alternative should be considered including restoration without salvage.

Resolution:

A No Action alternative will be considered. Restoration is outside the scope of this project. Restoration activities will be considered in the Stage 4 analysis.

3. LAND ALLOCATIONS

Concern:

An alternative should be considered which will designate the Jasper Fire as a RNA, wilderness, bison preserve or other land allocation.

Resolution:

This issue is outside the scope of this project.

4. TRANSFER OWNERSHIP

Concern:

Transfer ownership of the Jasper Fire to Native Americans.

Resolution:

This issue is outside the U.S. Forest Service's jurisdiction.

5. FOREST HARVEST LEVELS

Concern:

The forest harvest levels should be adjusted based on the effects of the Jasper fire.

Resolution:

This issue is a forest planning issue and is therefore outside the scope of this project.

6. SPECIES VIABILITY

Concern:

Effects of the salvage proposal cannot be determined without a species viability analysis on the Forest.

Resolution:

Species viability is a forest planning level issue and is therefore outside the scope of this project. The biological assessment/evaluation for this project considered habitat availability across the Forest.

1.8 Opportunities

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At the time of the Jasper fire there were five active timber sales conducting harvest operations inside the burn area. These sales were halted under provision B8.33 of the timber sale contract that addresses catastrophic damage within sale area boundaries.

Under this provision, changes to harvest units and prescriptions are possible if mutually agreed to by both the Forest Service and the timber sale purchaser. During the re-negotiation of these on-going timber sales under the catastrophic provision, some remaining green stands were identified that are still under contract to be harvested. The purchasers are willing to consider foregoing harvest of the unburned or lightly burned stands within the fire perimeter in exchange for additional dead volume.

Modification for Catastrophe:

In event of Catastrophic Damage, Forest Service, in consultation with Purchaser, shall outline on Sale Area Map:

- a. Any areas of catastrophe-affected live and dead timber meeting Utilization Standards and having designated timber so situated that it should be logged with designated timber*
- b. If needed, any such areas where the damaged undesignated timber can reasonably be logged separately; and*
- c. Areas of affected or unaffected timber which by agreement are to be eliminated from Sale Area. By agreement, Purchaser and Forest Service shall locate and post the boundaries of all such areas as needed.*

In such event, this contract shall be modified to include rates redetermined under B.3.32 and other related revisions as agreed hereunder, such as revision of operating schedule to insure prompt removal of affected timber when necessary to avoid further loss and acceptance of Contract Term Extension period if needed.

2400-6 Timber Sale Contract
B Section Standard Provisions

Preserving green areas within four of the five sales would provide multiple benefits for the northern goshawk, which was the subject of the Chief's appeal decision, the subsequent lawsuit and the settlement agreement and which saw large habitat losses resulting from the Jasper Fire (nine of ten nests and nest stands in the area were destroyed). Assessments thus far show that lightly burned and unburned areas within the

fire can provide valuable foraging areas for goshawks, and with time will develop suitable characteristics as nesting stands within the burned area perimeter. Preserving green trees now can benefit snag-dependent wildlife species (some of which serve as prey for the goshawk) in the future by providing replacements for existing snags most of which will fall within the next 20-30 years and leave a deficit of such habitat. In addition, there is an opportunity to trade burned stands to protect other burned stands of higher value to some wildlife species (e.g. black-backed woodpecker).

This action can also benefit big game by retaining thermal and hiding cover, which is currently very scarce in the area. This proposal presents an opportunity to identify stands of fire-killed trees to be substituted for these green stands still under contract thus preserving this important habitat.

1.9 Planning Record Availability

The Planning Record is a comprehensive project file documenting the EIS development process. It is available to the public under the Freedom of Information Act (FOIA) and can be viewed at the Hell Canyon Ranger District Office, 330 Mount Rushmore Road, Custer, South Dakota, Monday through Friday, 8 a.m. to 4 p.m.

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Chapter 2

Alternatives



2 Alternatives

2.1 Introduction

Chapter 2 describes, in detail, the Proposed Action and the alternatives. The two action alternatives meet the purpose and need to varying degrees. Maps of each alternative considered in detail are included at the end of this chapter (Figures 2-1 and 2-2). Information also provided in this chapter includes a description of:

- The process used to form the alternatives;
- Alternatives considered but eliminated from detailed study, as well as reasons for elimination;
- Alternatives considered in detail;
- Items common to all action alternatives;
- Site-specific mitigation and monitoring plans proposed for the project; and
- Alternative comparison.

The Proposed Action was developed by District and Forest resource specialists using the Hell Canyon District Ranger's specific direction in the Project Initiation Letter. Public scoping began in October 2000, when the scoping letter was mailed to interested groups and individuals and State and Federal agencies for comments. The interdisciplinary team grouped significant issues into clear issue statements (See Chapter 1).

Issues were judged significant based on the geographical distribution (extent), the length of time the issue is likely to be of interest (duration), and the level of interest of conflict generated (intensity). These significant issues (Chapter 1) are used in the environmental analysis in combination with the purpose and need to formulate alternatives, develop mitigation, and monitor effects.

The IDT developed general themes that would best meet the significant issues identified through scoping. These themes were the framework for each alternative. After extensive analysis, the IDT and supporting resource specialists refined the Proposed Action and developed one action alternative to the Proposed Action.

2.2 Alternatives Eliminated from Detailed Study

2.2.1 *Harvest All Merchantable Material*

An alternative was considered proposing harvesting all merchantable material in the Jasper Fire Area.

2 Alternatives

This alternative has been removed from further analysis for the following reasons:

- Complete harvesting of the entire area would not leave sufficient habitat for various wildlife species;
- Complete harvesting would not be economically feasible;
- Harvesting on steep slopes would increase the probability of erosion;
- Surveys have not been completed over the entire area for heritage resources (and could not be surveyed in the time frame discussed); and
- Through discussions with industry, it is clear they would not be able to handle the volume load if the entire area was harvested.

2.2.2 Harvest Tops Only

A second alternative proposed harvesting only the tops of the trees leaving a 25 foot bole standing to meet snag habitat objectives.

This alternative has been removed from further analysis due to concerns for safety of equipment operators inherent in implementing such an alternative. Both action alternatives considered in detail include mitigation for meeting snag habitat objectives.

2.2.3 Bison Preserve

A group of commentors suggested an alternative that would convert the area burned by the Jasper Fire into a bison preserve. This alternative is outside the jurisdiction of the U.S. Forest Service and outside the scope of this analysis. The State of South Dakota has authority for managing populations of wildlife on National Forest System lands in this State. Nothing proposed under this analysis would preclude grazing bison in the burn area in the future should the State of South Dakota decide to pursue that option.

2.2.4 Jasper Fire RNA

A group of commentors suggested that an alternative be considered that would designate the Jasper Fire area as a research natural area (RNA). Designation of RNAs under the Forest Plan is being considered with the Phase II amendment of the Forest Plan. Selection of Alternative A (No Action) under this proposal would preserve the option for future consideration of portions of the burn outside currently active timber sale areas for RNA designation.

2.2.5 Analyze Hazard Tree Removal under the Jasper Fire Rehab Project

A group of commentors requested that the Hazard Tree Removal Project be delayed and analyzed with this EIS. That project was designed to remove dead trees posing safety hazards along roads in the fire area. A project file and categorical exclusion already have been completed for the Hazard Tree Removal Project (signed 11/13/00) in accordance with Section 31.1b of the *Forest Service Handbook 1909.15 – Environmental Policy and Procedure Handbook*. This project falls under Category Number 4, “Repair and maintenance of roads, trails and landline boundaries”. Any cumulative effects of that project are included in this analysis.

2.2.6 *Change or Modify Approved Timber Sales*

A group of commentors requested that an alternative be included that addresses changes and modifications to on-going timber sales needed due to the effects of the Jasper fire. Effects of the fire already have been considered in active timber sale areas. The changed conditions are documented in Supplemental Information Reports (SIRs) prepared for each sale area. The timber sale contracts have been modified based on the SIRs. This analysis includes the cumulative effects of these changes and modifications.

2.2.7 *Reduce logging on other parts of the Forest*

A group of commentors requested that an alternative be included that reduces logging on other parts of the Forest. This alternative is outside the scope of this analysis. The effects of the Jasper Fire on timber harvest levels may be addressed in the Forest Plan Phase II amendment process.

2.2.8 *No new roads including temporary roads*

A group of commentors requested that an alternative be included that builds no new roads including temporary roads. All Action Alternatives include no new construction of any roads. Existing temporary roads may be utilized for access purposes.

2.2.9 *Transfer Forest Management Responsibility to Native Americans*

A group of commentors requested that an alternative be included that transfers forest management responsibility to Native Americans. This alternative is outside the jurisdiction of the Forest Service and would require new legislation by the U. S. Congress.

2.3 Alternatives Considered for Detailed Study

Three alternatives are considered in detail: the No Action, the Proposed Action, and one additional alternative to the Proposed Action. Maps of the action alternatives considered

2 Alternatives

in detail are provided at the end of this chapter (Figures 2-3 and 2-4). Large-scale maps are also available in the project planning record.

2.3.1 No Action (Alternative A)

This alternative is the baseline against which the effects of all other alternatives are measured (40 CFR 1502.14d). Activities already planned for the project area, such as timber sales under previous NEPA decisions, would continue to be implemented. No additional recovery or salvage activities for the project area would be proposed.

Alternatives including the proposed action

In this section agencies shall:

- a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.*
- b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.*
- c) Include reasonable alternatives not within the jurisdiction of the lead agency.*
- d) Include the alternative of no action.*
- e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.*
- f) Include appropriate mitigation measures not already included in the proposed action or alternatives.*

Code of Federal Regulations
40 CFR 1502.14
Revised July 1, 1999

Salvage activities would not occur under this decision. There would be no additional receipts to county governments and no new jobs associated with salvage would be created.

Activities already under permit or contract, or authorized under other NEPA documents, would continue. These include road maintenance, salvage and other timber harvest

within existing timber sales units, and possible reforestation. Livestock grazing would resume at current levels after certain vegetation parameters are met (see Chapter 2, Monitoring).

All snags would be retained. Further opportunity to exchange green volume for dead volume to preserve wildlife habitat would be foregone. Disturbance to soils would be minimized. There would be no changes to aesthetics around private property.

2.3.2 Proposed Action (Alternative B)

The Proposed Action would emphasize value recovery in high volume stands. This is consistent with direction shown in Appendix A of the Forest Plan, National Goals Relevant to Land and Resource Management, and more recently stated in the October 24, 2000 issuance of Section 2435.02 of the Forest Service Manual (listed above). This action would also contribute to achieving Goal 3 of the Forest Plan by providing a commodity, which would benefit local, regional, and national economies and local communities.

The Jasper Fire killed an estimated 239 million board feet of merchantable timber on approximately 59,300 acres. It is estimated that most of this timber should remain merchantable through the end of the summer of 2001. The local timber industry is not capable of harvesting and processing 239 million board feet prior to the wood becoming unusable. Harvesting all of the fire-killed timber will not meet other resource needs and objectives. Therefore a process was undertaken to develop a proposed action that could reasonably be implemented.

This alternative responds to significant issues identified in Chapter 1 (i.e. value, soils) in the following ways and is based on the following criteria:

- Areas of high and moderate burn intensities. Based on findings in the J-RAT report, most or all of the trees are dead (or imminently dead) in these areas.
- Areas outside of existing sale cutting units. The volume inside existing sale cutting units is already committed to the respective timber purchasers. This harvest will be considered under cumulative effects.
- Sites with average slopes no greater than 30%. The average slope listed in the Resource Information System (RIS) database was used; therefore there may be some inclusions within sites that are greater than 30% slope. These small areas would be excluded during harvest unit layout.

2 Alternatives

- Sites with average volumes greater than 4,000 board feet per acre, plus some nearby sites with average volumes greater than 3,000 board feet per acre. This was done to promote economic efficiency.
- Areas with adequate commercial volume near private property. These areas were added to address a concern raised about improving visual quality by removing fire-killed trees.
- Exclude sale units dropped under the settlement agreement.
- Maintain 4 snags/acre of the largest diameter classes, especially greater than 18 inches DBH (diameter at breast height, 4.5 feet from base of tree) available in clumps distributed across the salvaged logged areas. Large diameter snags last longer and provide foraging and nesting habitat for the greatest number of species.
- Heritage resource surveys would be completed within the 5,443 acres that have not been previously surveyed and sites will be protected.

This results, through the proposed action, in harvesting approximately 56.2 million board feet from approximately 11,067 acres. Of that, about 20.2 million board feet on about 3,233 acres would be within existing timber sale area boundaries. Approximately 232 miles of roads would require reconditioning. Approximately 11.5 miles of existing temporary roads would be utilized. All temporary roads would be obliterated and the roadway seeded with native grass species. The proposed action has been labeled Alternative B.

Alternative C

Alternative C is a subset of Alternative B, which also avoids steep slopes and is economically efficient. This alternative was developed, in part, to minimize areas without heritage surveys. It would recover the value of dead timber in high volume stands. This alternative is also consistent with direction shown in Appendix A of the Forest Plan, National Goals Relevant to Land and Resource Management, and more recently stated in the October 24, 2000 issuance of Section 2435.02 of the Forest Service Manual. This action would also contribute to achieving Goal 3 of the Forest Plan by providing commodity, which would benefit local, regional and national economies and local communities.

This alternative would salvage approximately 27.1 million board feet on approximately 5,224 acres. Of that, about 14.9 million board feet on about 2,537 acres would be within existing timber sale area boundaries. Approximately 168 miles of road would require reconditioning within the fire area. Approximately 9.5 miles of existing temporary roads

would be utilized. All temporary roads would be obliterated and the roadway seeded with native grass species. Several areas considered in the proposed action were removed under this alternative. This alternative was designed to respond to significant issues identified in Chapter 1 in the following ways:

- Heritage resource surveys would be completed within the 415 acres that have not been previously surveyed and sites will be protected.
- Areas with a pre-fire structural stage of 4C would be retained for wildlife habitat. These areas generally consist of the size and density of trees most commonly utilized by the black-backed woodpecker.
- Areas with structural stage 5, a timber component of 801 (old growth), and Forest Plan designated late succession sites would be retained for wildlife habitat. These areas with large trees are generally the most common type of habitat utilized by Lewis's woodpecker.
- Of the above areas removed, 103 acres of National Forest adjacent to private land was included in this alternative due to concerns for aesthetics around private land.
- Maintain 17 snags/acre of the largest diameter classes, especially greater than 18 inches DBH available in clumps distributed across the salvaged logged areas. (Large diameter snags last longer and provide foraging and nesting habitat for the greatest number of species).
- Expand the size of black-backed woodpecker nesting habitat stands to 130 acres using adjacent highest tree density stands as priority. This may provide the foraging substrate necessary adjacent to black-backed nest trees and enhance the habitat of the nesting stand.

2.3.3 Information Common to Alternatives B and C

For the purposes of this proposal, only dead trees and those trees expected to die within the first year would be considered for salvage harvest. A dead tree is defined as those trees with no needles remaining, or all of the needles are scorched with no green needles remaining. Trees that are expected to die in the first year are those with more than 75% crown scorch and/or those exhibiting cambium damage on at least 50% of the bole. This will leave all trees likely to survive to provide future habitat for wildlife, visual quality, soil and water stabilization, and natural regeneration opportunities. This is based on recommendations from Forest Health Management staff and the J-RAT report (Black Hills National Forest, 2000). The only green trees expected to be cut are those needed to provide access to site. This would be on an incidental basis only.

2 Alternatives

2.4 Mitigation Measures

The following mitigation measures were developed by the IDT as necessary to address other resource concerns and public concerns. This list is not all inclusive. Measures which were considered “standard operating practices” by the IDT are not identified here. These standard operating practices are required by such documents as the Black Hills National Forest Land and Resource Management Plan and Forest Service Timber Sale Contract. These practices are considered assumed mitigations and are not shown here.

2.4.1 *Timber*

For any action alternative: As much logging slash as practicable will be left on the site to provide a more favorable micro site environment for pine regeneration establishment and to aid in erosion control. To implement this mitigation measure, all tops must be removed from the tree prior to skidding on all slopes greater than 20% irrespective of aspect. On slopes less than 20%, all tops must be removed from the tree prior to skidding on south and west aspects. This mitigation should be applied to a salvage unit as a whole or not at all depending on the predominate slope and aspect within the unit.

Exceptions to this mitigation may need to be made if fuel loadings from logging are anticipated to exceed Forest Plan standards and guidelines. Exceptions may also be needed around private land, for protection of improvements, or along highly traveled roadways to meet concerns for aesthetics. Input from the fire and fuels specialist will need to be considered in implementation.

2.4.2 *Wildlife*

These mitigation measures are consistent with the anticipated Phase I Forest Plan Amendment direction.

Down Wood

In all salvage areas, maintain 4 large logs per acre (greater than 10 inches diameter) totaling 100 linear feet on site. These may be cull logs. These logs should be well distributed through out the salvaged areas.

Goshawks

Restrict harvest operations including felling, skidding, and hauling within ¼ mile of an active goshawk nest from March 15 to August 31.

Raptor Nests

Protect active raptor nest. If raptor nesting sites are identified, those sites will be evaluated by the district biologist on a site specific basis to determine if special requirements are warranted to protect nesting areas.

Bats/Caves

Provide a 500' buffer of no disturbance surrounding known caves.

Protect caves from disturbance if located during harvest operations.

Snails

Protect all known snail colony locations with a 200 foot buffer of no disturbance.

Butterflies

Survey suitable habitat prior to spraying herbicides for noxious weed treatment. If butterflies are located, mitigation options include; biological control, timing of spray applications to reduce interference, changing type of herbicide use to reduce exposure, or total avoidance.

Sensitive Species

A sensitive species located after contract or permit issuance will be appropriately managed by active coordination between permittee, contractor or purchaser, Forest Service line officer, project administrator, and biologist.

Travel management

Close all temp roads and skid trails used for harvest operations. Close all previously closed roads used for harvest operations.

2.4.3 Weeds

An Integrated Weed Management (IWM) program, which implements the following, will be used in all alternatives:

- Prevention of further weed encroachment into uninfested lands

2 Alternatives

- This includes limiting weed seed dispersal, minimizing soil disturbance by motorized equipment, water flow and livestock, and properly managing desirable vegetation.
 - The use of certified weed free mulch, seed, straw, hay and grain products.
 - Information posted in areas of high recreation use, as to what noxious weeds are, and asking users to clean themselves and equipment from noxious weed seeds, before leaving an area.
- Detection and eradication of new introductions

Small-scale infestations generally come from an advancing front of a large-scale infestation. Eradication involves total removal of the weed, including seeds and root material from the area. It generally requires aggressive annual treatments of herbicide, yearly monitoring to ensure removal of all reproductive organs of the weed and seeding of desired vegetation to occupy areas that can become re-infested.

- Containment of large-scale infestations
Restricts further encroachment of large-scale infestations by treating boundaries, for example with herbicides, and the center of the infestation with biological control tools. It protects adjacent uninfested lands.
- Control of large-scale infestations using an integrated approach

A large-scale infestation management program can be successful and is completed in a series of steps taken over time. Areas can be broken down into smaller weed management areas where different objectives and treatment methods can be used.
- Re-vegetation

The establishment of desirable grasses and shrubs through seeding can minimize re-infestation of noxious weeds.

All herbicides will be used in strict accordance with the label instructions and applied by certified applicators. Application records and treatments will remain on file in the District offices for three years as required by the State of South Dakota. All spray rigs and equipment are calibrated for correct application rates.

- Spot treatment application equipment used:
 - Pickups with tanks, injection system and handguns.
 - All Terrain Vehicles with tanks and handguns.
 - Backpack sprayers with spray wand.
 - Hand seeders for granular herbicides.

- Broadcast application equipment used:
 - Pickup with tank and boom.

Landings and skid trails will be seeded with native grasses and shrubs or non-persistent annuals within the salvage area. These species will be beneficial for competition with noxious weeds. The approved seed mix for these areas will be selected from the following species:

- Slender wheatgrass (*Elymus trachycaulus*)
- Western wheatgrass (*Agropyron smithii*)
- Sideoats grama (*Bouteloua curtipendula*)
- Green needlegrass (*Stipa viridula*)
- Mountain brome (*Bromus carinatus*)
- Triticale (*xTriticosecale*)
- Annual rye (*Lolium multiflorum*)
- Lupine (*Lupinus argenteus*)
- Goldenrod (*Solidago spp.*)

Species mixture and quantities may vary based on cost and seed availability.



2.4.4 Recreation

Protect outfitter and guide trails, recreation special uses routes and campsites, snowmobile trails, and utility corridors as protected features in the areas where they are adjacent to, or bisect harvest units.

Salvage operations around utility corridors should be coordinated with the utility companies.

2.4.5 Heritage Resources

Traditional Cultural Properties, National Register of Historic Places eligible and potentially eligible heritage properties, will be protected with a 200 foot buffer. A designation of “no cut” should be established for the above-mentioned areas.

2 Alternatives

Consultation with interested Native American Tribes, American Indians, and other applicable parties will be conducted and documented pursuant to the National Historic Preservation Act of 1966, as amended, and current Section 106 standards, as amended 1999, before a decision to cut in unsurveyed areas.

2.4.6 Hydrology

The following mandatory management requirements would be applied to any of the action alternatives to protect soil and water resources: (1) State of South Dakota Best Management Practices (BMP)(See Appendix C), (2) Best Management Practices contained in 33 CFR 323.4 (a)(6), (3) Forest Plan Standards, and (4) Requirements in the Soil and Water Conservation Practices Handbook.

In addition to the standard management practices described above, slash material would be placed on and adjacent to skid trails and scattered throughout the units. This practice would enhance infiltration and reduce the risk of surface water interception and concentration. It is especially important that this practice be implemented on soil map units CkC, SyaC, SybC, SycE, and VcE. These soil map units are within hydrologic group C and have a higher potential for compaction during wet periods.

Other additional requirements would be:

- No harvest on slopes greater than 30 percent.
- Harvest on slopes 20 to 30 percent would require special attention to avoid concentration of runoff flow, such as, field review by hydrologist as needed and temporary roads on slopes greater than 20 percent would be field reviewed by a hydrologist.
- Skid trails, temporary roads and landings would be seeded.
- Activities would be avoided on soils with mass wasting potential.
- On soils with severe erosion potential, activities would be avoided on slopes greater than 20 percent.
- For soils with severe erosion potential on slopes up to 20 percent, it would be critical not to concentrate flow with the skidding patterns. All skid trails would need slash placed on them and soil compaction must be avoided by operating on dry or frozen ground.
- No harvest operations within 100 feet of riparian areas, springs, or seeps.

- No broadcast application of herbicides within 100 feet of riparian areas, springs, or seeps. Only herbicides EPA approved for use near water will be used.
- Activity slash will be removed from entrenched channels.
- Free standing fuel tanks and/or fuel trucks will be located downhill from sinkholes.

2.4.7 Fire and Fuels

Locate slash piles out of meadows that contribute to waters of the United States. Use a buffer distance designed to keep sediment, ash, and debris out of channels.

2.4.8 Montane Grasslands

No skidding, decking or landing of logs will be permitted within the four montane grasslands within the project area.

For harvest activities, use roads that do not access montane grasslands. When these roads are not available:

- Only haul on existing roads in meadows.
- Hauling on native surfaced two-tracks is restricted to frozen, snow covered or dry conditions. No blade work is to occur on native two tracks to be used within the montane grasslands.
- Seed any two-track roads that were used for salvage only if monitoring determines need to re-vegetate.
- The following seed mix shall be used in montane grasslands. Seed mix must be 100% weed-free. Weed free annuals (such as wheat, oats, triticale) may be used if grasses or forbs that naturally occur on the site are unavailable. Species mixture and quantities may vary based on cost and seed availability:
 - Porcupine grass (*Stipa spartea*)
 - Richardson's needlegrass (*Stipa richardsonii*)
 - Timber oatgrass (*Danthonia intermedia*)
 - Prairie dropseed (*Sporobolus heterolepis*)

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- Monitor salvage areas and haul routes adjacent to montane grasslands for noxious weeds. If noxious weeds are present in these areas, treat immediately with herbicides that are specific to the weed species, or group of weeds present. Monitor effectiveness of control and repeat as needed.

2.4.9 Visuals

Adjacent to private land or along road corridors, slash will be piled and burned. Machine pile during frozen ground conditions, or hand pile.

- Require whole tree harvesting in units adjacent to private lands.
- Pile and burn any slash remaining within 300 feet of private property. Machine pile on frozen ground or hand pile.
- Seed entire harvest units adjacent to private lands with non-persistent annuals and native grasses and shrubs.
- Remove 70 to 90 percent of the activity fuels seen from the road's edge up to a maximum distance of 300 feet. Treat debris within 1 year of harvest completion. This would apply to Highway 16, Mud Springs Road, Antelope Ridge Road, Custer Limestone Road, Ditch Creek Road, and Six Mile Road (FDR 282, 283, 284, 291, and 301 respectively).



2.5 Monitoring Activities

2.5.1 Forest Plan Monitoring and Evaluation

The Forest Plan (Chap. 4) describes the strategy for the Forest's monitoring and evaluation effort. This effort is designed to evaluate the effects of management activities on Forest resources. Monitoring data is used to evaluate the need for changes to the Forest Plan. Specific monitoring and evaluation criteria for any particular resource are found in the Monitoring and Evaluation Implementation Guide. Forest specialists used this guide to develop the monitoring items and methods for the Jasper Fire area. Some of these items will be used for project implementation monitoring. The following Forest Plan Monitoring Items were selected:

Monitoring Item 2: Soil Productivity – Soil erosion, compaction, and disturbance will be monitored through collection of soil samples from harvested and unharvested areas post-harvest. Class A*

Monitoring Item 4, Sub-Item 4d: Monitoring implementation and effectiveness of BMPs, Forest Plan Standards and Guidelines and Watershed Conservation Practices – Implementation and effectiveness of applicable BMPs will be monitored through on-site inspections annually during project implementation. Class B*.

Monitoring Item 7: Species composition and structure – Post-burn cover type and structural stage will be defined for the Jasper burn area using a combination of aerial interpretation, walk-through surveys and Stage II exams, where appropriate. Class A/B*.

Monitoring Item 9: Snag retention – Snag density will be monitored annually based on data collected from permanent snag transects established in the burn. Data from successive years will be used to estimate snag longevity. Class A*.

Monitoring Item 11: Down/dead woody material – The amount of dead down woody material greater than 3" diameter will be estimated immediately post-harvest and in unharvested areas. Methods will be low intensity walk-through surveys using photo series fuel interpretation or transect sampling. Class B*.

Monitoring Item 13: Regeneration – Regeneration surveys will be conducted annually to determine the success of natural regeneration and the need for future plantings. Class A*.

Monitoring Item 19: Noxious weeds – Noxious weeds will be monitored to assess changes in size of known infestations and the occurrence of new areas and/or species of weeds. Monitoring efforts will consist of photo points, written documentation and use of global positioning system (GPS) data gathered on an annual basis. Invasion of montane grasslands by noxious weeds will be monitored under this project. Appropriate treatments will be used as discussed previously in the Mitigation Measures section. Class B*.

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Monitoring Item 20c: Insect and disease evaluations – R2 Forest Health Management will conduct annual ground and aerial surveys for insect and disease activity within and adjacent to the burn area. Damage levels and trends will be determined. Class B*.

Monitoring Item 22: Fuel loading hazard – Treatment units will be assessed for fuel hazard rating following harvest activities. Areas of high hazard fuel profile will be identified and recorded in the RIS database based on walk through surveys. Class B*.

Monitoring Item 23: Fuel treatment – Acres of fuel treatments will be identified using appropriate measurement or mapping techniques. Project acres treated will be recorded in the RIS database. Class A*.

(* - The precision and reliability of each item to be monitored is described as either Class A or Class B. Class A monitoring uses quantitative measures with very good reliability and accuracy. Class B monitoring uses more qualitative methods that provide valuable information but with less reliability and accuracy.)

2.5.2 Region 2 Sensitive Species and Management Indicator Species

In the 1999 Forest Plan Appeal Decision, the Forest was directed to undertake additional monitoring for Sensitive Species. Specifically, the Decision stated “determine whether a need exists to monitor habitat and/or populations of sensitive species within the affected area of proposed projects, and display the rationale for this determination. Where a need is identified, identify monitoring objectives, assumptions, uncertainties, design standards, schedules, and methods. Identify contingencies for adjusting management if monitoring cannot be completed on schedule as designed or if monitoring results indicate that protection and restoration measures do not achieve desired/predicted effects. Increase the precision and reliability of methods by which populations of sensitive species are monitored from Class B to Class, as defined in the Revised Plan (p. IV-3) to more effectively discern species and/or habitat status.”

The Forest has undertaken several tasks to assure that Sensitive species will be adequately protected and addressed in forest planning and project-level analysis. One task included interviewing several experts on various species of wildlife and plants. The Forest contacted and interviewed scientists and individuals having extensive experience with or knowledge of Region 2 Sensitive species found on the Black Hills National Forest. Realizing that any proposed monitoring and subsequent monitoring data would not result in useful information for several years, the Forest was interested in assessing the risks involved with proposed management and practices that would reduce those risks until further information and monitoring data could be obtained. Information from these interviews was used in the analysis for this FEIS.

Another task currently underway is preparation of several written assessments for the Forest's Region 2 Sensitive Species, Management Indicator Species (MIS), and other key species. These written assessments will include information on the current management situation, a review of technical knowledge, and a review of conservation practices including a detailed discussion of accepted monitoring practices. These written assessments will provide a basis for establishing quantitative monitoring protocols for the Region 2 sensitive Species, MIS, and other species of concern.

The Forest has begun to implement direction from the 1999 Appeal Decision and expert interviews. The Forest is in the process of establishing quantifiable monitoring procedures for many of the Region 2 Sensitive Species and Forest MIS. Baseline data is currently being collected and will continue to be collected in 2001. Because written species assessments are currently underway and new information may become available, monitoring strategies for Region 2 Sensitive species and MIS may be changed or adjusted to incorporate new information.

2.5.3 *BMP effectiveness*

The 1999 Appeal Decision also included some additional direction for project level environmental analyses regarding the effectiveness of best management practices. The Decision states:

“ Some of the determination of effect in the (Forest Plan) FEIS were based on the assumption that mitigation measures would offset adverse effects, without providing an analysis of the effectiveness of such measures. In order to ensure that project-level determinations during the interim period are defensible, it is necessary that the effectiveness of BMPs and other measure proposed to reduce or offset adverse effects be addressed.” “Environmental analysis for proposed projects must address the effectiveness of BMPs and other measures proposed to mitigate adverse effects to aquatic and terrestrial species. This analysis should assure that spatial and temporal scale considerations are addressed; and may be satisfied by previous analysis that can be incorporated by reference.”

BMP monitoring on the Forest was completed in 1996, 1997, and 1998. As documented in the Hydrology specialist report – Appendix A, BMPs were implemented and effective for the timber sales that were monitored.

Documented monitoring has shown that BMPs were effective when implemented. Dissmeyer (1994) provides methodologies to monitor BMP effectiveness. This reference also cites several case studies on BMP effectiveness. In general, studies show that if BMPs are implemented they generally are effective.

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The Best Management Practices Evaluation Process is an active BMP effectiveness evaluation program in the Pacific Southwest Region of the Forest Service. This region-wide program was designed to statistically show the implementation and effectiveness of BMPs for all resource areas. The program was started in 1992 and has been summarized and documented over the years. The most recent report is from April 1998. Overall, reviewers found that BMPs are implemented 83 percent of the time and effective for 83 percent of the observations.

As this documentation shows, BMPs generally are effective when implemented. Although the evaluation process was conducted in a different climate regime, these conclusions can be inferred to the Black Hills because of the monitoring that has been completed on the Forest. A carefully designed monitoring program, however, will need to be implemented on the Black Hills National Forest or in the Rocky Mountain Region to provide additional data. This will be addressed a part of the Phase II amendment. Before any statistical conclusions can be reached, several years of data collection will be necessary. For this project, BMP monitoring will be focused primarily on implementation.

2.5.4 Additional Monitoring Opportunities in the Jasper Burn Area

The Jasper Fire created an unprecedented scientific opportunity to observe the re-growth of natural vegetation, ecological succession, and wildlife population response to the fire in the Black Hills. In addition, value recovery activities also provide an opportunity to monitor the effects of salvage harvesting on these same resources. In order to separate the effects of logging from the effects of the fire, some control areas must remain untreated. Three areas have been selected to set aside as “no treatment” areas. They are displayed on the Jasper Monitoring Area Map (Figure 2-5).

The IDT suggested a list of possible monitoring and/or research projects. Some of these projects have been funded through a variety of sources. Others will not be implemented until funding sources are identified.

Funded projects

Since the DEIS was published Congress has authorized additional funding for fire restoration project including research and monitoring. The Forest was successful in obtaining some of that funding for projects associated with the Jasper Fire. The following projects will be funded:

The Rocky Mountain Research Station in conjunction with Colorado State University submitted a proposal to conduct research and monitoring of fire effects on vegetation. This project has been funded for the next five years. The proposal includes the following specific objectives:

- 1) Determine how the arrangement and structure of vegetation may have contributed to and/or reduced the spread and intensity of the Jasper fire.
- 2) Determine how stocking levels may have contributed to fire effects on understory vegetation, microclimates, and soils.
- 3) Determine to what degree the fire will affect populations of mountain pine beetle and other insects, or the introduction and spread of exotic species in the Black Hills ecosystem.
- 4) Determine to what extent natural regeneration can be expected to re-forest burned areas. Species to be monitored include ponderosa pine, aspen, shrubs, grasses and forbs. Occurrence of noxious weeds will also be documented where they occur inside plots.
- 5) Determine how sites can be prioritized for planting, what factors might affect success of reforestation efforts, and what steps can be taken to ensure success.
- 6) Determine if silvicultural practices can be altered to reduce the intensity and/or severity of future fires.
- 7) Determine whether salvage logging effected success of natural regeneration and/or insect populations.

A complete study proposal can be obtained from Wayne Sheppard at the Rocky Mountain Research Station, 240 West Prospect Road, Ft. Collins, CO 80426.

Other funded projects include:

- Monitor effects of fire and salvage operations on known land snail colonies. Known colonies will be fenced. Colonies will be monitored to ensure protection from logging and livestock grazing.
- Monitor the use of the burn area by black-backed and Lewis's woodpeckers. Both salvaged and unsalvaged areas will be surveyed for nests for 3 years post-fire.
- Monitor the use of forage by grazing wildlife versus livestock. Approximately 2-acre fences will be constructed to exclude both wildlife and livestock. Similar sized fences will exclude just livestock. Forage utilization will be measured and compared to determine extent of use between wildlife and livestock. Monitoring will continue for at least 3 years.

Unfunded Projects

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The IDT identified several areas of interest for future monitoring that have not yet been funded. These projects include:

- Monitor caves known to be used extensively by bats for changes due to fire effects and/or salvage logging.
- Monitor post-fire bird diversity in various burn intensity areas where salvage logging occurs and in untreated areas.
- Monitor expansion of aspen clones post-fire especially where salvage logging has occurred.
- Monitor use of known springs and riparian areas for use by amphibians and reptiles including any effects from salvage operations.
- Monitor use of fire-killed trees by bats and other snags dependent species in both logged and unlogged areas.

These opportunities will be pursued through partnerships and cooperative agreements.

2.6 Comparison of Alternatives

This section presents a brief comparison of alternatives, including resource outputs and effects, and management activities. Environmental effects of the alternatives are more fully discussed in Chapter 4. The effects are summarized in Table 2-1 at the end of this chapter.

2.6.1 Consistency with Forest Plan

Alternatives B and C are consistent with resource standards and direction established in the Forest Plan, the Interim Direction issued by the U.S. Forest Service Washington Office and the Settlement Agreement negotiated for the Veteran Salvage Timber Sale. The most recent scientific information supporting the Phase I Amendment has also been considered.

2.6.2 Timber Management

Table 2-1 displays the differences between the two action alternatives for potential harvest volume and possible affected acres. The No Action alternative (Alternative A) would not harvest any volume.

Alternative A would provide no timber supply other than what is taking place already. Alternatives B and C would provide 56.2 mmbf and 27.1 mmbf respectively.

Alternative A would not contribute to achieving Forest Plan Goal #3 nor the related national goal as stated in FSM 2435.02 since no harvest would occur. Alternative B would contribute best to meeting these goals since it would recover the most volume. Alternative C would contribute to these goals but 48 percent less than Alternative B.

2.6.3 Wildlife Habitat

For most species, the Jasper fire was the most significant effect to their habitat. Loss of cover, dense pine canopy and habitat associated with mature forested seral stages will be detrimental to species that are dependent on these types of habitat. The Jasper fire reduced the seral stages to grass/forb throughout most of the high and moderate intensity burn area. The composition of the species that utilize the area will change. Big game and small mammals will flourish in the long term. Cavity dependent species will flourish in the short term but will eventually decline again in the long term.

Value recovery operations would not change the seral stage in high and moderate burn intensity burn areas. The biggest effect of value recovery efforts for wildlife would be the loss of large diameter snags and large diameter downed wood. This loss would affect most cavity dependent species, small mammals, amphibians and other species that require standing or down, dead and decaying wood.

Effects to short term availability of down wood can be partially mitigated by leaving some down logs in harvested units as discussed in the Mitigation Measures. Slash left in units will also add to the accumulation of dead wood and soil humus for snails and small mammals. The effects to the short term availability of snags can be partially mitigated as well. As discussed in the Mitigation Measures, leaving some of the largest diameter dead trees in each harvest unit will meet Forest Plan interim direction. This will also help improve post-harvest distribution of snags. However, snag habitat will be available at reduced levels due to value recovery operations and most snags will be provided in areas outside cutting units.

Alternative A would allow natural processes following a stand replacing fire to proceed. The tops of large diameter snags would break off in 1 to 6 years leaving large broken topped snags on the landscape for 20 to 30 years following the fire. The large snags are essential to maintaining populations of Lewis' and black-backed woodpeckers. In addition to these broken tops, smaller diameter snags would fall in 2 to 10 years providing dead wood debris for amphibians and small mammals. Grass/dead trees structure will dominate the landscape for about 30 to 40 years. There is a minimal amount of post-fire black-backed woodpecker nesting habitat that would support an

2 Alternatives

eruption of this species in the Jasper fire area. Use of the area is possible by black-backed woodpeckers, but other factors may play into use of marginal nesting habitat such as lack of availability in areas outside of the burn.

Alternative B would emphasize value recovery operations in high volume stands. For logged areas, most of the large diameter snags will be harvested, decreasing the use of these areas considerably by Lewis's and black-backed woodpeckers in the short term. Long term effects in these harvested areas would decrease the availability of dead wood debris for amphibians and small mammals which will decrease the use of these areas but not significantly. For the remainder of the area that is not treated, natural decay process as indicated in Alternative A would continue.

Alternative C would emphasize value recovery operations in high volume stands that have been surveyed for heritage resources. Most 3C (sapling/pole) and 4C (mature) stands would not be treated in this alternative, maintaining most black-backed woodpecker nesting habitat. For logged areas effects would be similar as indicated in Alternative B but at a smaller scale. There would be more habitat for Lewis's woodpecker than under alternative B but less than Alternative A. Effects of the harvest would decrease the availability of dead wood debris for amphibians and small mammals. However, regenerating vegetation will provide cover for these species within 5 years. Effects to these species are not significant. For the remainder of the area that is not treated, natural decay processes as indicated in Alternative A would continue.

Alternatives B and C also provide an opportunity to conserve green trees within existing timber sale areas in the burn by identifying stands of fire-killed trees to exchange for green trees currently under contract. These green stands would provide needed cover for big game, foraging and future nesting habitat for goshawks and future snag replacements for cavity dependant species.

Threatened and Endangered Species

The only threatened or Endangered species known to occur within the project area is the bald eagle. No direct, indirect, or cumulative effects are expected to bald eagles.

2.6.4 Noxious Weeds

Under the No Action alternative, noxious weeds that are present will tend to flourish due to the removal of competing vegetation, increased sunlight, and fertilization effects of the fire. There is also a potential for new invasive species not presently found to colonize the area. A 30% increase in noxious weed infestations is expected in high burn intensity portions of the fire area, a 20% increase in the moderate intensity burn areas, and a 10% increase in the lightly burned areas.

Alternatives B and C are expected to decrease the expansion of weeds due to seeding proposed as mitigation in harvest units. Alternative B would treat more acres with mitigation than Alternative C, therefore this alternative would be most beneficial in suppressing noxious weeds. In all unharvested areas, weeds are expected to increase as discussed for Alternative A.

2.6.5 Recreation/Special Uses

There would be little or no impact expected from any of the proposed alternatives on developed recreation, dispersed recreation, and recreation special uses.

This would be little or no impact expected from any of the proposed alternatives on utility lines (power and communications) in the area.

2.6.6 Heritage Resources

Of the 11,067 acres that are being considered under Alternative B, approximately half of the acres have been previously surveyed for heritage resources. Compliance with Section 106 of the National Historic Preservation Act would be completed prior to any surface disturbance if this alternative is selected. Mitigation and avoidance will protect eligible sites. Of the 5,224 acres that are being considered under Alternative C, approximately 4,809 acres have been surveyed. Compliance with Section 106 will also be completed for Alternative C, if it is selected, and sites will be protected.

Mitigation measures developed in conjunction with the State Historic Preservation Officer and Native American tribes to protect significant or potentially significant sites will be applied in both action alternatives. No adverse impacts are expected from implementation of either of the action alternatives.

2.6.7 Range Resources

Alternative B would provide the maximum opportunity to remove woody material through timber harvesting, and allow vegetation that is normally associated with meadows or openings to become established. Alternative C, which treats less acres, would remove less material and the No Action alternative would not remove any material.

2.6.8 Hydrology/Soils

Alternative B would have the most potential to impact the soil and water resource because it treats the most area, 11,067 acres. Alternative C would be in the middle, with

2 Alternatives

5,224 acres of proposed activities. Alternative A would not provide any additional activity-related impacts to the soil and water resource since this is the no action alternative. Any potential impacts to the soil and water resource, from Alternatives B or C, would be minimized by project design and implementation of the BMPs (See Appendix C).

2.6.9 Fire and Fuels

Alternative B would harvest the most acres thereby reducing fuel loadings. Areas of higher fuel loadings burn more intensely and are harder to control. Blocked roads inhibit access for fire control activities. Alternative C would treat less acres and Alternative A treats no acres. Alternative B would therefore have the greatest positive impact on fire and fuels.

2.6.10 Montane Grasslands

Marriot (2000) recognized that exotic species invasions pose a threat to both structural and species diversity in plant communities. These species could reduce the ability of montane grasslands to recover from fire, drought, grazing or other stresses in the future. Noxious weeds are expected to increase in response to the fire. Mitigation measures are included to avoid or mitigate additional disturbances from harvest operations. With implementation of these measures, no effects are expected to montane grasslands from any alternative.

2.6.11 Visuals

The No Action alternative would result in a gradual change in the landscape as trees fall and accumulate on the ground. The public has diverse opinions about the scenic quality of post-fire landscapes, with many groups desiring management to move the forest quickly towards the pre-fire scenic condition.

Activities in the action alternatives would be evident for the first decade, during that time a Low Scenic Integrity will be achieved. After the first decade, a natural appearance would evolve and the scenic integrity would begin to improve.

Table 2-1. Comparison of Outputs and Effects

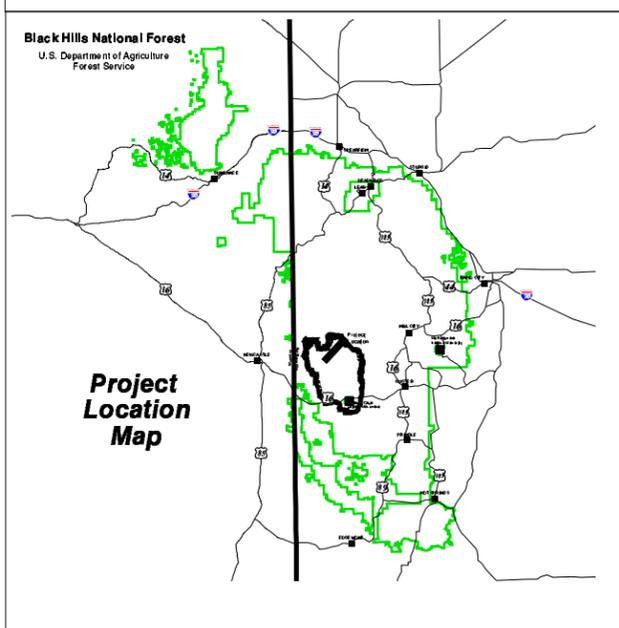
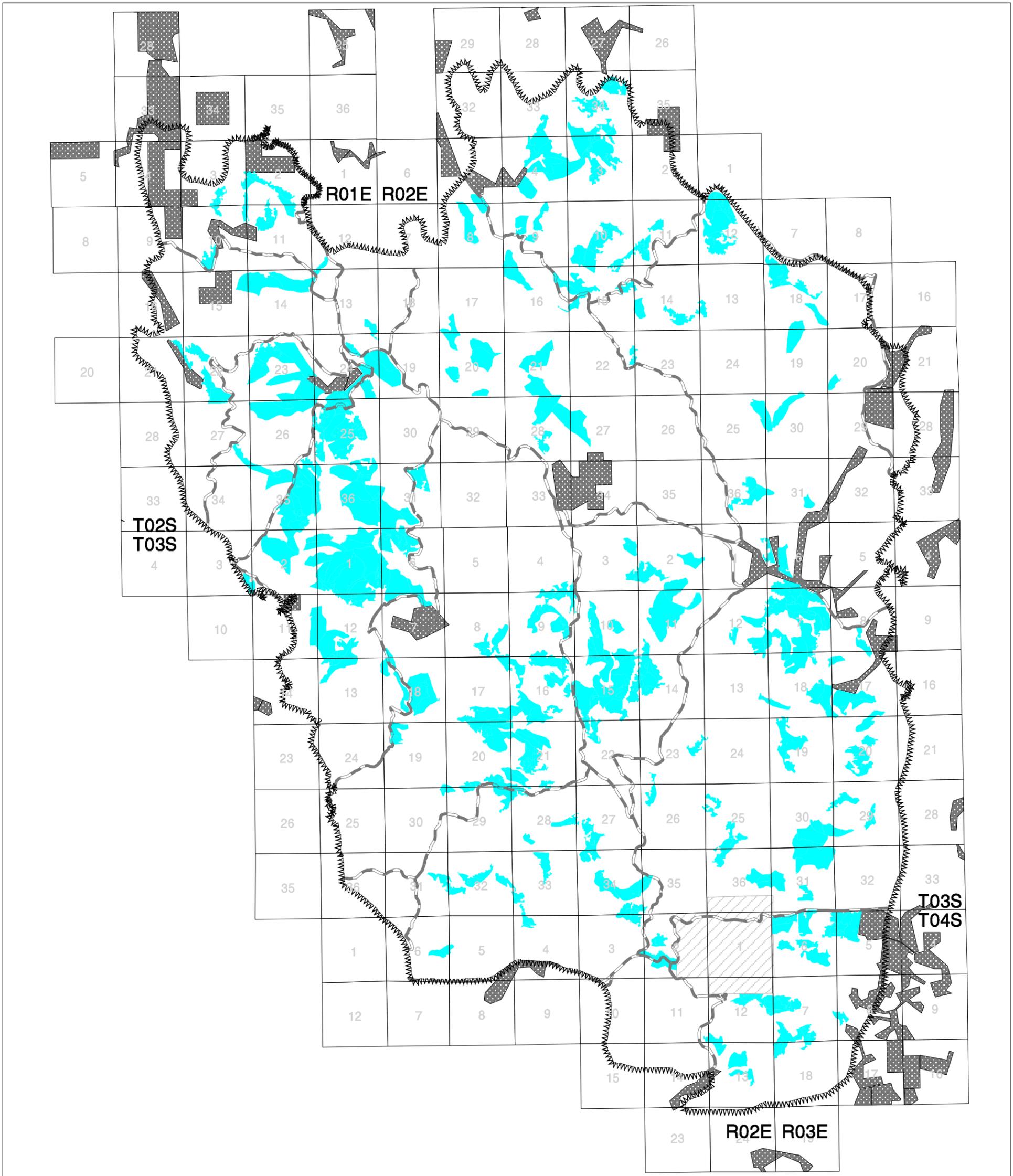
	ALT A	ALT B	ALT C
Timber Management			
Acres of Harvest	0	11,067	5,224
Merchantable Timber Harvest (mmbf)	0	56.2	27.1
Merchantable Timber Retained (live and dead, mmbf)	331.4	275.2	304.3
Economics			
Estimated Revenue (\$)	0	\$1.86 Million	\$0.95 Million
Payments to Counties (\$)	0	\$0.46 Million	\$0.24 Million
Present Net Value	N/A	\$1.18 Million	\$0.62 Million
Transportation			
Miles of New Construction	0	0	0
Miles of Reconditioning	0	232	168
Miles of Existing Temporary Roads Used	0	11.5	9.5
Wildlife Habitat			
Lewis’s Woodpecker Nesting Habitat Retained (Acres)	9,903	3,297	6,372
Black-backed Woodpecker Nesting Habitat Retained (Acres)	929	433	828
MIS and Sensitive Snag Dependant Species	No Effects	Highest Effects	Moderate Effects
Other MIS and Sensitive Species	No Effects	No Effects	No Effects
Diversity			
Old Growth – Acres Harvested	0	306	53
Montane Grasslands	No Effects	No Effects	No Effects
Noxious Weeds			
Acres of Noxious Weeds Expected	18,015	14,995	15,593
Recreation			
Effects on Recreational Use	No Effect	No Effect	No Effect
Heritage Resources			
Effects of Heritage Resources	No Effect	No Effect	No Effect
Acres Requiring Additional Surveys	0	5,443	415
Range Resources			
Forage Production	Lowest	Highest	Moderate
Watershed			
Stream Sediment	No Effect	No Effect	No Effect

2 Alternatives

	ALT A	ALT B	ALT C
Soils			
Risk of Soil Erosion	Moderate	Moderate	Moderate
Harvest on Soils with Severe Erosion Potential (Acres)	0	0	0
Harvest on Soils with Mass Wasting Potential (Acres)	0	0	0
Fire and Fuels			
Future Fuel Loads	Highest	Lowest	Moderate
Aesthetics			
Visual Quality Around Private Land	Impaired	Best	Moderate
Insects			
Risk of Green Tree Mortality	Highest	Moderate	Moderate

2.7 Preferred Alternative

Alternative B has been recommended to the Responsible Official (Forest Supervisor) as the preferred alternative.

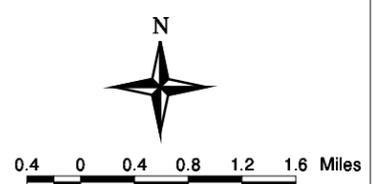


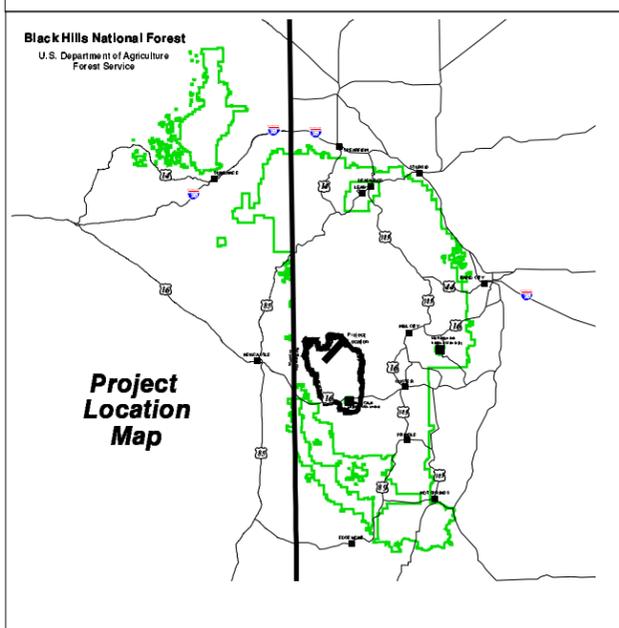
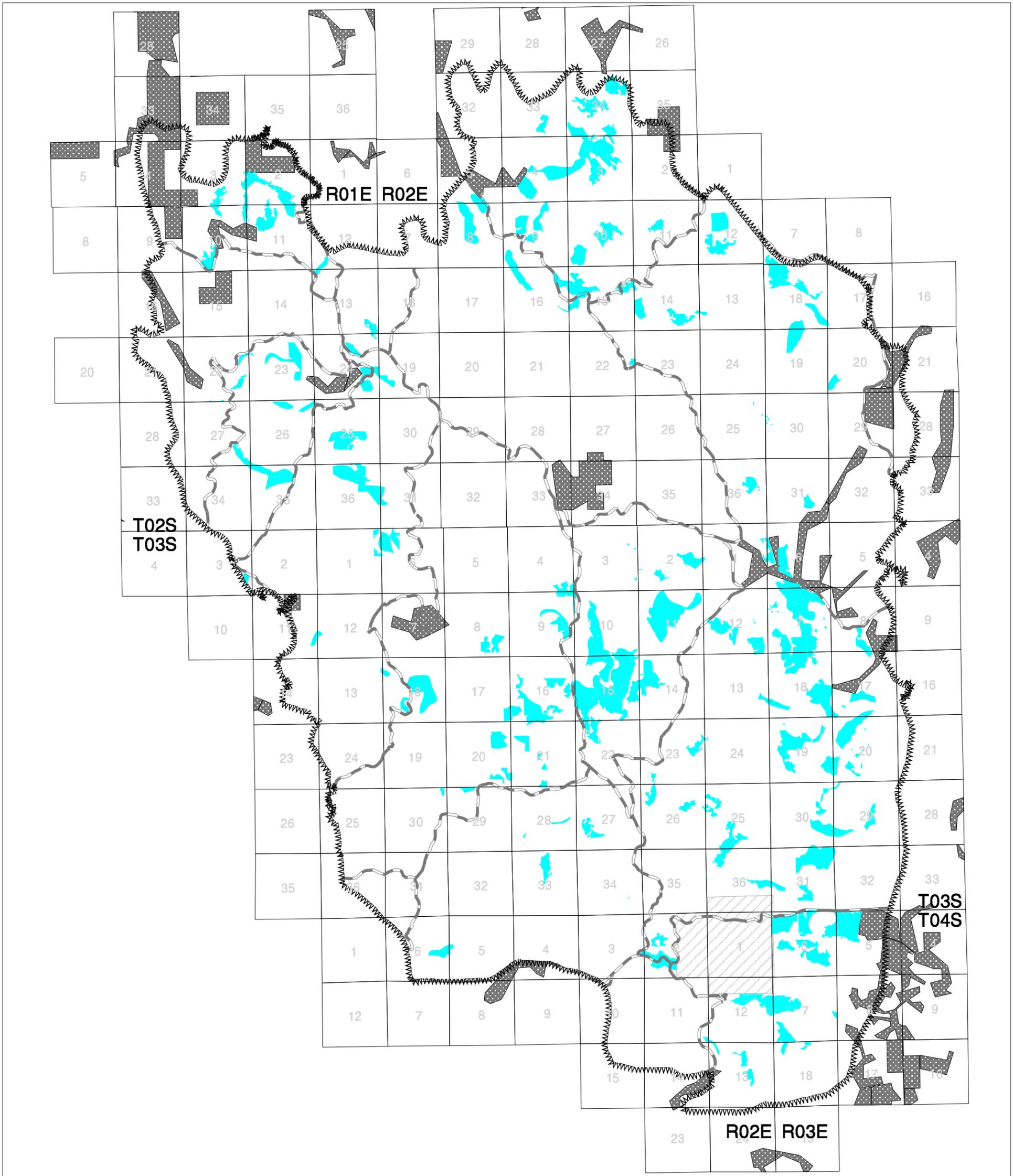
LEGEND

-  Fire Boundary
-  Main Roads
-  Proposed Treatment Units
-  Private
-  Jewel Cave NM
-  Public Land Survey System

Jasper Value Recovery

Figure 2-1
Treatment Units
Alternative B



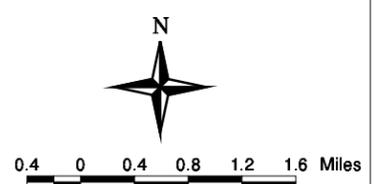


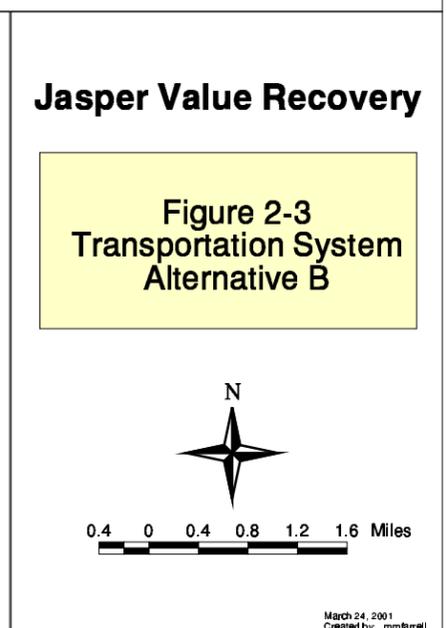
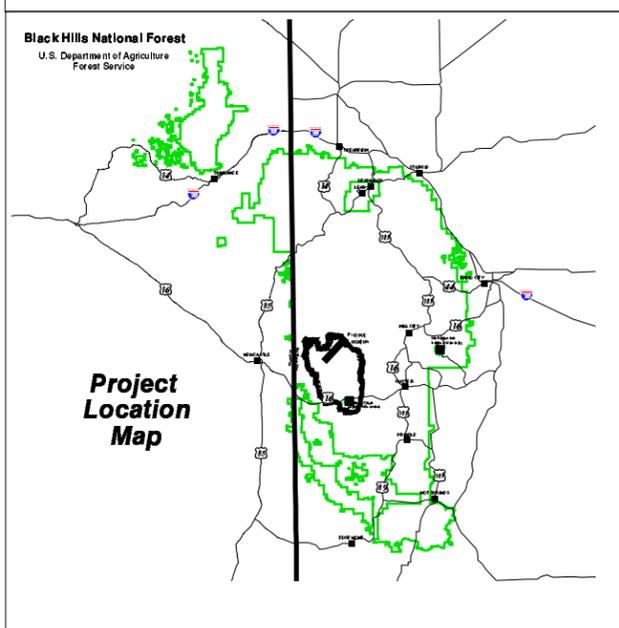
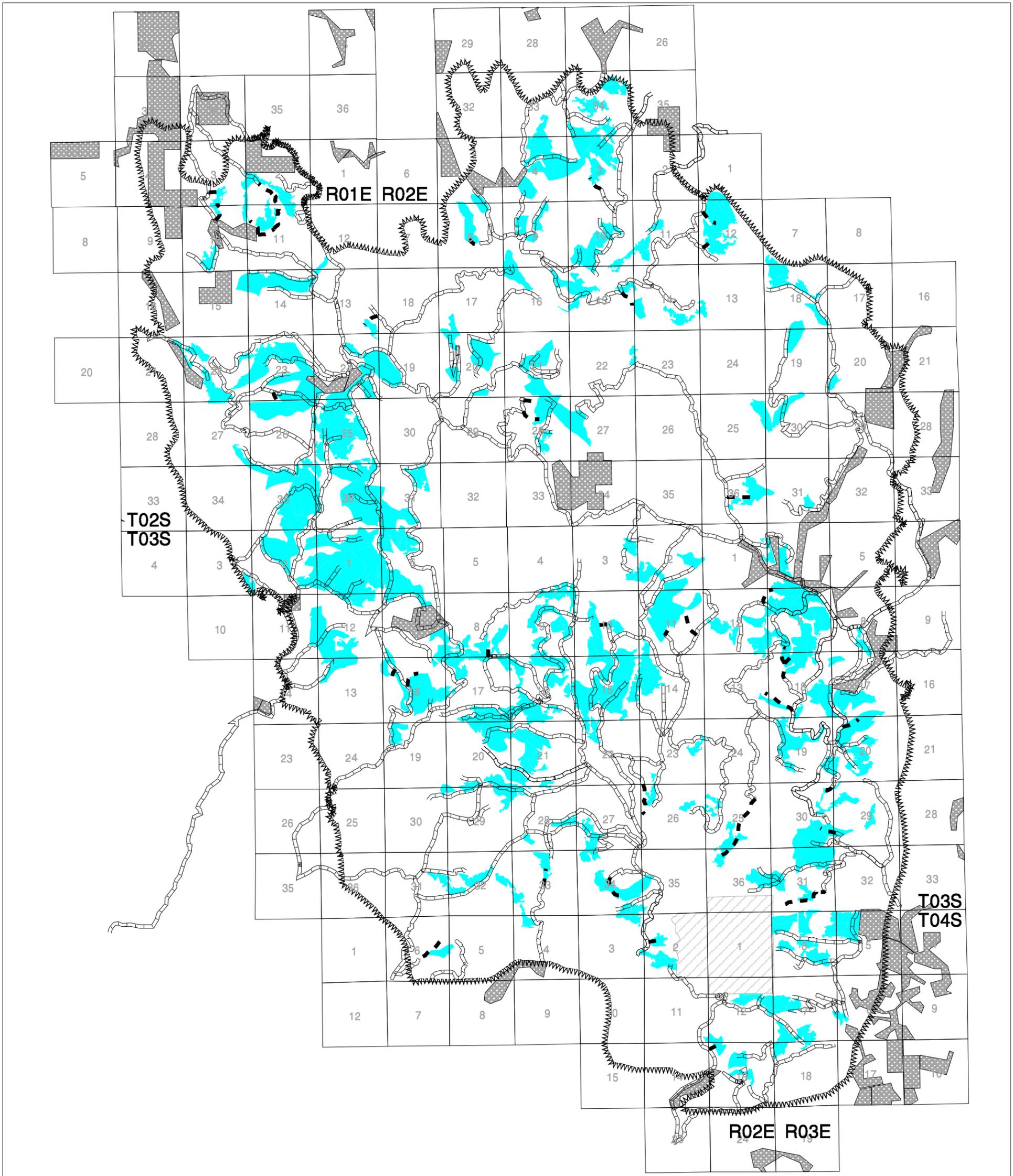
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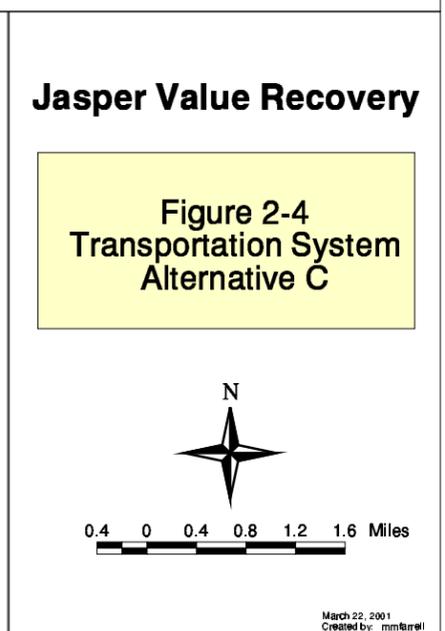
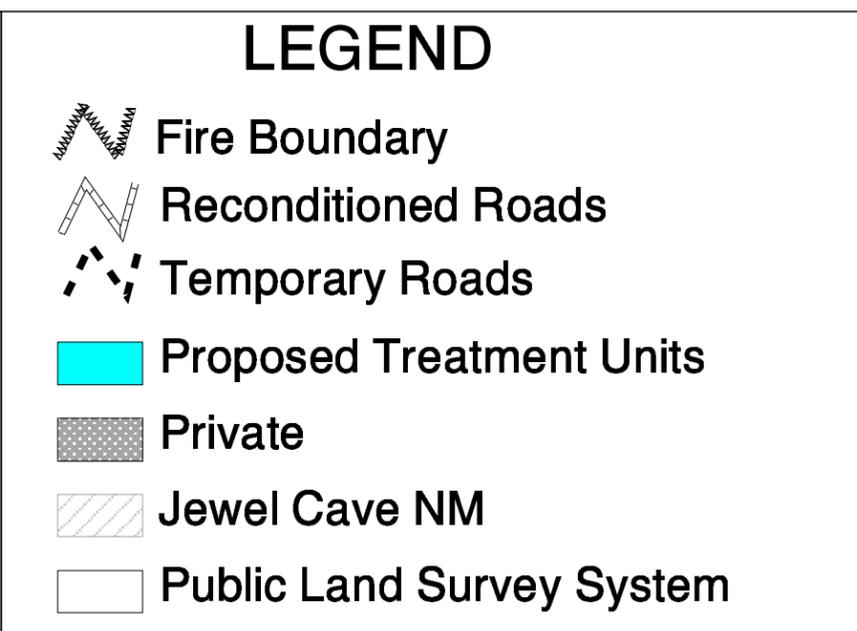
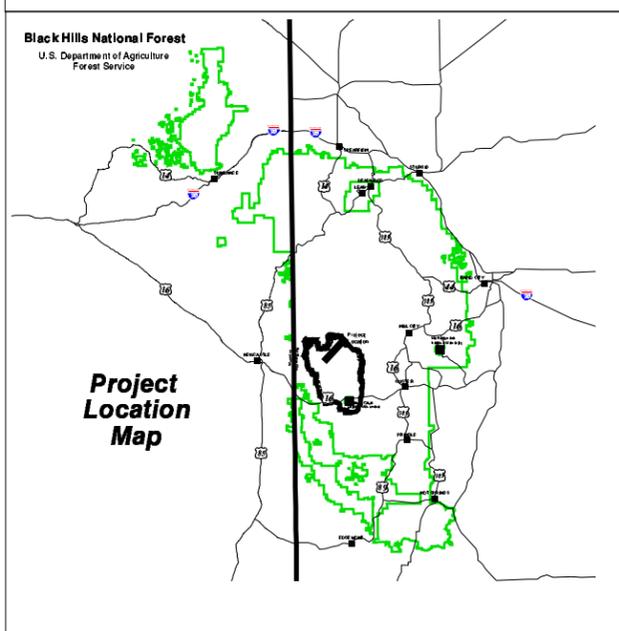
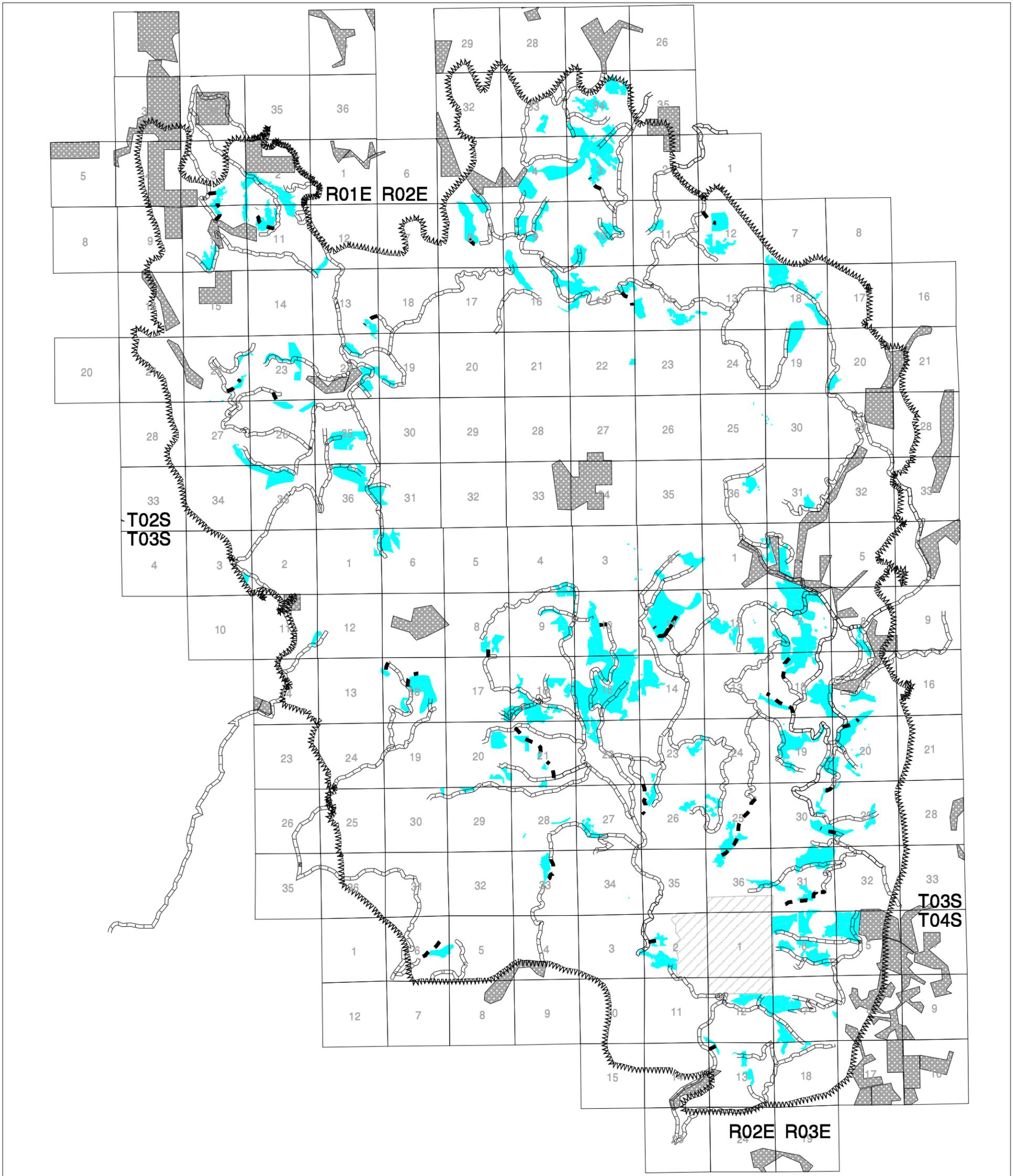
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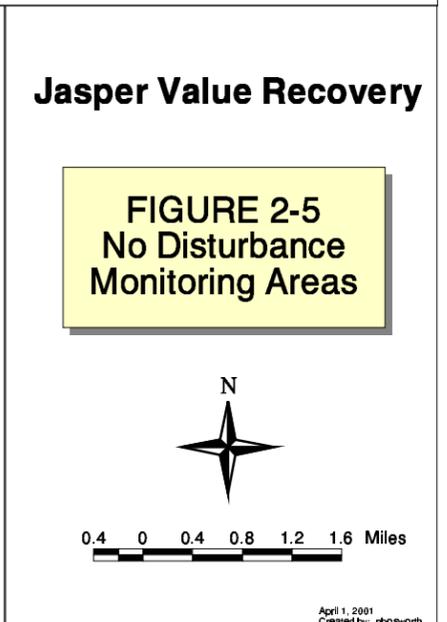
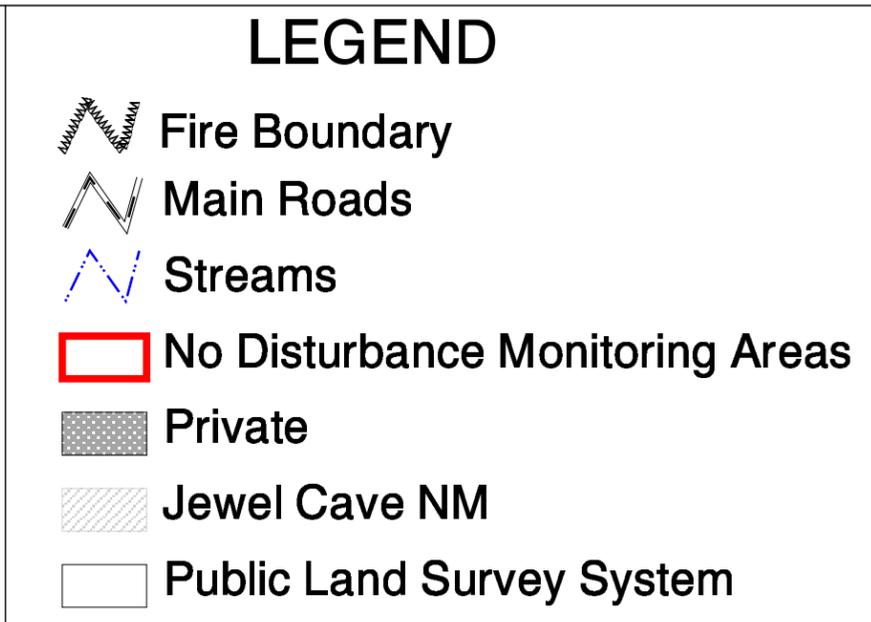
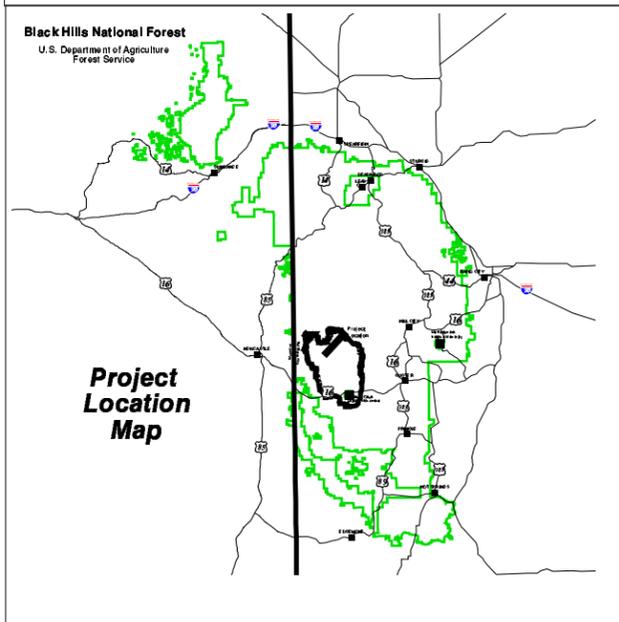
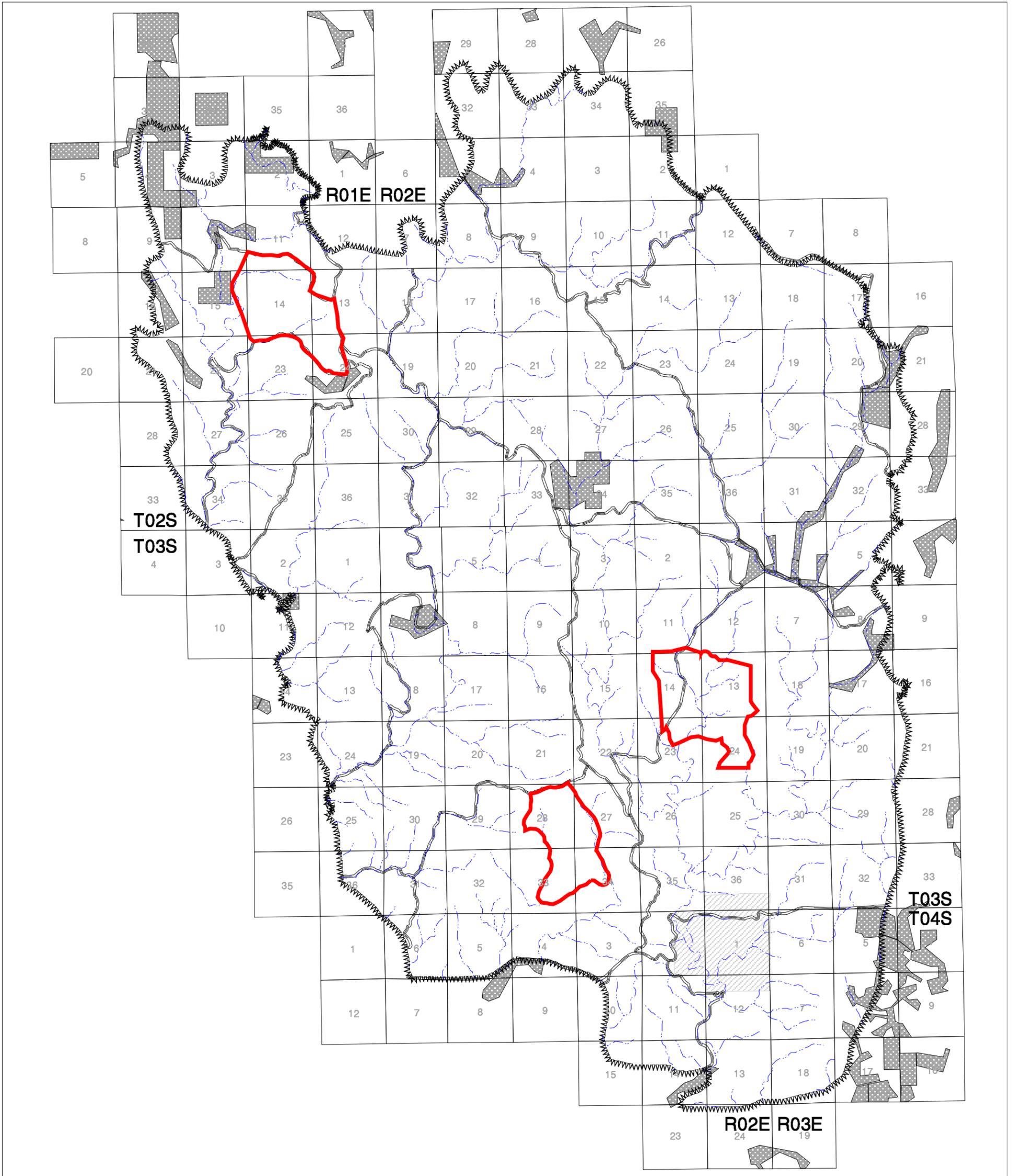
Jasper Value Recovery

Figure 2-2
Treatment Units
Alternative C









Chapter 3

Affected Environment



3 Affected Environment

3.1 Introduction

This chapter examines the existing environment in the Jasper Fire Value Recovery Project area that might be affected by implementation of the action alternatives. It describes the current conditions against which environmental effects can be evaluated and from which progress toward the desired future condition of the resource, trends related to its status, and relevant characteristics that might be affected by the alternatives can be tracked. The following resources are discussed:

- Timber Management
- Wildlife Habitat
- Noxious Weeds
- Recreation/Special Uses
- Heritage Resources
- Range Resources
- Hydrology/Soils
- Fire and Fuels
- Montane Grasslands
- Visuals
- Air Quality
- Roads

3.2 Historic Range of Variability

In the past, fire has played a major role in the Black Hills ecosystem. These fires in general behaved differently from the Jasper Fire. Fires in most ponderosa pine ecosystems including the Black Hills were frequent, low intensity fires. However, there is evidence that Black Hills ponderosa pine also burned with some larger, stand-replacing fires (Parrish et al. 1996). Fires contributed to the ecology of the Hills by maintaining meadows, regenerating grasses and shrubs, and creating patches of high-density snags across the landscape. However, the Jasper Fire is by far the largest Black Hills fire in recorded history, suggesting that it may be outside the historic range of variability.

3.3 Timber Management

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3.3.1 Introduction

The area within the Jasper Fire perimeter was in the suitable timber base and has been managed for many years. The area was characterized by a mosaic of size and age classes.

The Jasper Fire killed an estimated 239 mmbf of merchantable timber on approximately 59,300 acres. Most of this timber should remain merchantable through the end of the summer, 2001. Hence the need for urgency in an effort to recover as much value as possible in an environmentally acceptable manner.

A detailed survey of post-fire stand conditions in the burn area has not been completed and is not needed for the purposes of the value recovery effort. Most of the fire area has stand and inventory information reflecting the pre-fire conditions in the Forest's Resource Information System (RIS) database. Where information was lacking, averages were calculated using data from similar sites within the fire and those averages were used to supplement missing data. Approximately 38% of the area burned with high intensity. Approximately 31% of the area burned with moderate intensity and 24% burned with low intensity. The remaining 7% burned with an intensity that was unclassified. Additional mortality can be expected for a number of years due to insects, disease and environmental damage to weakened trees.

3.3.2 Affected Environment

Possible insects that would attack trees in the fire area

The insects that could be possible mortality agents in areas affected by fire can be broken into two classes, bark beetles and woodborers. Both have different feeding habits and will behave differently depending on the amount of fire damage on trees. In general, the probability of one or both of these insect groups will infest a fire-damaged tree increases with the amount of fire damage. When the cambium becomes nearly or completely consumed the probability declines, as the tree no longer becomes a suitable host. At this point (i.e., greater than 90% of the cambium is damaged), however, fire directly kills the tree.

Bark beetles

Bark beetles are the most important class of tree killing insects across the West. In the Black Hills there are a number of bark beetles that attack ponderosa pine. Bark beetles feed on the phloem of their host tree. For bark beetles to complete development successfully, the phloem must be moist enough to sustain them through their life cycle. Trees that have had significant cambial destruction by fire will not be suitable hosts for bark beetles.

The most important bark beetle infesting ponderosa pine is the mountain pine beetle, *Dendroctonus ponderosae*. Mountain pine beetle has one generation per year, with its

main flight and new attack period being early August. When populations of mountain pine beetle are high enough, they can attack and kill green, healthy trees. At low populations, mountain pine beetle typically attacks stressed or damaged trees, such as lightning struck trees. While it is true that mountain pine beetle does use stressed trees during low populations, it does not preferentially attack fire damaged trees. This is in contrast to some of its close relatives such as Douglas-fir beetle. This does not mean that mountain pine beetle will not attack trees that are moderately scorched and have suitable phloem resources remaining. Generally speaking, fire damaged trees will not cause the start of a mountain pine beetle outbreak; however, mountain pine beetle could very well attack fire damaged trees if beetles are already present in the area.

The second most important bark beetle in the Black Hills are *Ips* species. There are a number of *Ips* species in the Black Hills that attack both pine and spruce. *Ips* beetles are typically far less aggressive than mountain pine beetle. However, *Ips* has from 3-4 generations per year. There can be flight periods and new attacks anytime from April through late September, depending on weather. They usually use damaged or stressed trees or larger pieces of slash as host material. They can build up in this material and attack surrounding green standing trees. Like mountain pine beetle, *Ips* host material must have enough phloem that is still moist to complete their development. Trees that have complete cambium destruction will not be suitable hosts. Fire scorched trees that still have suitable phloem remaining are frequently attacked by *Ips*.

Of all the insects that may be factors following the fire, *Ips* has the potential to cause the most damage. There is a very good chance that *Ips* will kill trees that are highly stressed from fire scorch. Observational data from this year indicate that there is already a high population present across the forest, perhaps caused by the snow breakage that was present and provided ample material for brood production. There is also a chance that surrounding green stands that did not receive any fire damage could have tree mortality caused by *Ips* if they build enough of a population in nearby fire damaged trees.

The third bark beetle that could be of importance is red turpentine beetle, *Dendroctonus valens*. Red turpentine beetle is found throughout the Black Hills attacking pine and occasionally spruce. This beetle typically has one generation per year; however, their flight period is very extensive, with adult beetles flying for most of the summer months. The red turpentine beetle is usually of little concern. It is typically found attacking highly stressed trees in campgrounds, around houses and even fresh cut stumps. Red turpentine beetle also is frequently found attacking fire-injured trees. Trees that would have survived fire damage may be attacked and killed by red turpentine beetle. Red turpentine beetle may build up enough in fire-damaged trees so that they can emerge and attack nearby green trees. Generally, these attacks are not enough to kill these trees. It is doubtful that red turpentine beetle will build to “epidemic” proportions that would be of concern to nearby standing green trees.

Wood borers

3 Affected Environment



The other group of insects that typically follows fire events is the woodborers. Woodborers are a large group that is made up of beetle in the families Cerambycidae and Buprestidae. Woodborers are common residents of the Black Hills where they typically live in fire scorched, injured, dying and recently felled trees. The woodborers generally have one generation per year in the Black Hills; however, they have a long flight period. Adults are active throughout the summer. Although they

spend the bulk of their time burrowing through the heartwood, these insects do need a small amount of cambial moisture for egg laying, so trees that were completely charred may be too desiccated for wood borers.

Woodborers are not going to build up in fire damaged trees and attack standing green trees. They will only attack heavily damaged, or dead trees. There is no chance of an “outbreak” of woodborers in live trees. The greatest concern with woodborers would be in areas that have been killed or heavily damaged by the fire where salvage logging is likely. Woodborers cause a much greater level of defect in lumber than do the bark beetles because they spend the bulk of their life tunneling through the heartwood of their host. Wood borers are plentiful in the Black Hills and will locate suitable material rapidly, so to minimize defect and degrade in fire damaged or killed areas, salvage operations should begin to take place within the first 6 months following the fire to minimize defects caused by wood borers.

Tree mortality caused by fire

The above listed insects have the potential to cause delayed mortality in post fire situations. There is also the problem of quantifying what trees will die due to direct fire effects. Determining which trees will live and die due to fire effects is a difficult task.

Ponderosa pine has been recorded as surviving with as much as 90% crown scorch, however, much less scorch can easily kill trees. The Jasper Fire occurred at a moderately good time for tree survival, late in the summer. Many of the trees may have already been in the process of setting buds for the winter and therefore may be somewhat protected. However, this fire also occurred at a time of very hot ambient air temperatures, which would have already caused the temperature of plant tissues to be high. It also occurred at a time when there had been no moisture for a long period, meaning the trees were already in a somewhat stressed condition.

Some general guidelines for determining future tree mortality are:

1. 50% or more crown scorch.
2. 50% or more of the bole circumference charred at the root collar. Charring that is hot enough to kill the cambium generally causes pitch streaming. Trees with 50% of the bole circumference blackened and streaming pitch will likely die.
3. Scorch heights up to 25 feet.
4. Burned out stump holes within 3 feet of the tree. These will generally produce enough heat to kill a significant portion of the roots.
5. Any signs of insect activity (boring holes, frass, boring dust) indicate a tree is going to die.

Of these, the percent crown scorch may be the easiest and most reliable one to use in evaluating trees as to whether they will live or die. How much tree mortality will be increased will depend on a number of factors. Adequate moisture in the near future and next spring may help increase survival, while continued dry conditions will likely kill additional fire damaged trees that might have survived.

3.4 Wildlife Habitat

3.4.1 Introduction

The Jasper Fire greatly altered wildlife habitat conditions. An aerial view of the pre-fire forest was a nearly continuous forest canopy dotted with small openings and meadows. Now the view is reversed. The forest canopy was mostly destroyed leaving a vast opening with scattered islands of green trees remaining. Thousands of acres of snags were created.

Wildlife species found in the burn area prior to the fire were typical of the western Black Hills. Major game species include white-tailed deer, elk, mule deer, and Merriam's turkey. Non-game species include red squirrel, porcupine, coyote, bobcat, great-horned owl, western tanager, red-breasted nuthatch, mountain lion, and a variety of small mammals and birds. Threatened, Endangered, and Sensitive (TES) species known to occur include bald eagle, northern goshawk, black-backed woodpecker, and Lewis's woodpecker. All of these species are native to the Black Hills and have evolved in a fire dominated ecosystem.

Timber value recovery operations affect only a few of the wildlife species and habitat components in the burn area. Harvest operations can affect the amount of snags and down woody debris needed by some Management Indicator Species (MIS) and TES species. Noise and disturbance due to operations could affect nearby nesting goshawks or

3 Affected Environment

hibernating bats. Ground disturbance could affect cave structures or snail colonies. Harvest of dead trees will not affect goals or objectives associated with vertical diversity, thermal cover, cover along roads, forage production, grass/forb structural stage, late succession conditions, turkey roost sites, or green forested habitat for most MIS and TES species. Therefore this report will address only those habitats and species likely to be affected by the proposed project.

MIS listed in the Forest Plan and selected for this project are black-backed woodpecker, northern goshawk, Townsend's big-eared bat and fringe-tailed bat. In addition, Lewis's woodpecker was selected because it is a snag-dependent species strongly associated with burned habitats in the Black Hills. The Lewis's woodpecker and black-backed woodpecker are at two ends of a habitat continuum. Black-backed woodpeckers prefer denser stands of smaller dead trees while Lewis's woodpeckers prefer more open stands of larger diameter dead trees. The majority of other cavity dependent species fall between these two species on this continuum.

Additionally, bald eagle, white-tailed deer, mule deer, elk, Merriam's turkey, and mountain lion are known to exist in the burn area. These species will be discussed briefly although no effects to these species are expected.

Other species of concern include certain species of land snails listed in Frest 1999.

3.4.2 *Affected Environment*

Snags

The Jasper Fire created thousands of snags, most of which are case hardened. Due to the structure of the existing forest, there are many places in the fire that have open, large individual snags which will benefit such species as the Lewis's woodpecker. In other areas, where there were large blocks of mature, closed canopy trees, there are now large diameter snags that are clumped together. Conditions that left numerous large snags per acre benefit such species as the black-backed woodpeckers. Not all of the snags will be available immediately to primary excavators due to the ability of a particular species to excavate hard wood versus softwood. Secondary cavity-nesters will not colonize the burned area until primary cavity excavators have created sufficient cavities.

The Chief's interim direction identified minimum snag numbers to be maintained across ponderosa pine landscapes to provide for the needs of snag-dependent species as discussed previously. Other tree species are not planned for harvest in any action alternative.

Five active timber sales were affected by the fire, with cutting units wholly or partially burned. These sales were halted and re-negotiated with the purchasers to address the

catastrophic changes due to the fire. As a result of these negotiations, green trees in some harvest units will not be harvested and additional burned volume in harvest units was added. All commercial quality wood will be removed from the cutting units. Provisions were made for retaining adequate snags to meet the interim direction in areas outside of harvest units. As a result of these negotiations, an estimated 46.6 mmbf of dead timber is currently being harvested on about 12,276 acres within the fire perimeter.

Dead trees were deemed a safety hazard along highways and arterial and collector roads throughout the burn. A project was initiated to remove commercial size snags (greater than 8 inches DBH) adjacent to 96 miles (1,398 acres) of arterial, collector and local roads. Cumulatively, the above projects have removed large diameter snags from about 13,674 acres.

Down Wood

Dead wood on the ground provides important habitat for many birds, small mammals, insects, and even large mammals. Large dead logs provide food, cover and shelter for small mammals. Dead woody debris also provides habitat for amphibians, reptiles (e.g. the Black Hills red-bellied snake), and invertebrates along with fungi. Dead wood associated with grass/forbs is used as cover for natal areas by big game and cover for small game. Fire both destroys and creates woody debris. However, large downed logs are not abundant immediately post-fire. Woody debris is created when the trees killed by the fire eventually fall. This takes up to 20 years. Downed wood created by fire decays more slowly due to case hardening from the fire. During field reconnaissance, very little downed wood survived the fire. Most stumps are now burned-out holes. The intensity of the firestorm and subsequent heat created conditions in which most of the large downed wood was consumed. Species that had previously used down wood are now exposed to predators. These species' use of the area will decline in the short term but will return over time as snags fall to the forest floor.

The current Forest Plan direction for down wood is to retain an average of at least 50 linear feet per acre of coarse woody debris with a minimum diameter of 10 inches where materials are available. As discussed above it is likely that few of the high and moderate intensity burned areas currently meet this objective. Many of the lightly burned areas may still provide this amount of downed wood.

As larger diameter snags (>10" DBH) gradually fall to the ground over the next 20-30 years the amount of down wood will increase. The size of this material depends on the pre-fire forest conditions. Based on pre-fire stand data, there were about 49,123 acres that had trees greater than 10" DBH. This is about 62% of the ponderosa pine (72,770 acres) within the burn. Many of these trees are now snags. As these snags fall they provide large down logs. Areas lacking large diameter snags will not provide large down material for at least another 100 years, as the new forest grows long enough to reach this size class, die

3 Affected Environment

and fall. In areas where the fire did not burn intensely, trees will die and fall at a slower rates and provide down logs over a longer timeframe.

Goshawk Nest Stands

Goshawks are considered a generalist species, mostly associated with mature forested communities. They prefer to nest in dense mature stands with relatively open understory. They forage in a variety of forest conditions including edge of meadows and openings. However, they do not readily use very open habitats. Most high and moderate intensity burn areas (71%) are no longer suitable nesting habitat for goshawks (Squires and Reynolds, 1997). Preferred foraging habitat is mostly in forest cover types but have they have been documented in open habitats where perches are available.

There were ten active or historic goshawk nest stands within the fire perimeter. These stands were distributed throughout the burn area. Only one stand was unaffected by the fire.

Although this species is a generalist, high canopy closure is one of the most uniform habitat characteristics of goshawk nest stands throughout research literature. However, some populations of goshawks use open forests with a pair selecting the largest live tree available in a given area. It is unknown at this time whether the goshawk pairs using the area prior to the burn, will maintain their territory boundaries by selecting areas where a few green trees remain, or if there will be adequate foraging opportunities in the fire area (Squires and Reynolds, 1997). However, based on research literature, it is not anticipated that these previous goshawk territories will be re-established as breeding territories for a long time. In addition, dead trees will not provide nesting habitat for this species (Squires and Reynolds, 1997). The remaining nine stands are not likely to become potential goshawk nesting habitat for at least another 100 years.

Old Growth/Late Succession

There was a public issue regarding the harvest of old growth particularly those stands designated in the Revised Forest Plan for late succession. These stands that sustained moderate to high intensity burns have lost most of the values for which old growth is considered important. They no longer serve the same ecological function. However, they did contain large diameter trees that are now large diameter snags. These structures are important for a variety of snag-dependent species as discussed elsewhere in this document.

There were 158 acres with good old growth characteristics identified in the fire area prior to the burn. There were also 1,970 acres that had been identified for old growth

management under the original forest plan. In addition, there were 1,343 acres of stands designated for late successional forest management under the Revised Forest Plan.

Many of these identified old growth stands were burned.

Caves

There are eleven known caves in the Jasper Fire area. Jewel Cave, managed by the National Park Service, is considered one of the largest caves in the United States. The other caves are located on National Forest land.

Five of the caves on National Forest were visited post-fire. Of these five, only one cave had experienced low fire intensity, with most of the vegetation structure above ground intact. The area surrounding the other four caves experienced high to moderate fire intensity, with most of

the vegetation structure removed by fire. One of the caves was surveyed for damage in the interior. This cave had a smoky smell but bats were observed in the cave. There was no indication the interior had suffered any damage from the fire. Most of the caves are very close to roads and are more visible from the road due to loss of vegetation.



Three additional caves were located in Lemming timber sale by the marking crew. A review of the pictures of these caves indicated that they could be used as hibernacula or maternity roosts by Townsend's big-eared bats. The visibility of the caves and non-restricted access will increase human disturbance and vandalism. Based on the field reconnaissance, it is estimated that any caves that are located within high to moderate intensity burn areas will be the most affected by the fire. Loss of vegetation, depending on the cave entrance, will most likely affect the airflow patterns, temperature and humidity of the cave microclimate. This change could impact the ability of the cave to provide adequate maternity and hibernacula roost characteristics.

Bats

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There are eleven species of bats that are found in the Black Hills National Forest (Tigner and Aney 1994) of which four are considered species of concern (R2 and State listed). Ten species utilize caves and mines as part of their life cycle.

Ten species of bats in the Black Hills are dependent on snags for a portion of their life cycle. Bats that utilized snags for roosting and nesting will have plenty of habitat available in the burn area. Although most forest dwelling bats depend on tree foliage and bark, the fire has created other useful habitat such as loose bark, abandoned hollows of woodpeckers and other naturally formed cavities. Most forest dwelling bats prefer more open areas for foraging on insects. Although there is no specific research regarding bats and their use of stand replacing fire areas, it can be assumed based on research in clearcuts (Erickson and West 1996), that

insectivorous bats will use high and moderate intensity burn areas for foraging. The areas surrounding the fire that still have mature green trees with decaying snags may still provide roosting and maternity habitat.

Two bat species, fringe-tailed bat and silver-haired bat, are known to use large diameter snags for maternity roosts and day roosts (Mattson 1994).

Woodpeckers

The areas of the Jasper Fire that burned at moderate to high intensity, resulting in nearly 100% tree mortality, present a unique opportunity for populations of a number of cavity-dependent species in the Black Hills, in particular the Lewis's woodpecker and the black-backed woodpecker. Both species are considered U.S. Forest Service, Region 2 sensitive species.

Lewis's Woodpecker

Lewis's woodpeckers begin colonizing large burned areas within a year after a fire, and become fairly abundant within three to four years. Burned areas provide both nesting and foraging habitat (Expert Interview Summary, 2000). This species is less adapted for excavations in case hardened snags and usually relies on more specialized excavators (e.g. northern flicker) and/or more decayed trees for nesting. As trees regenerate (approximately 25 years), this species begins leaving the area and become less common mostly due to lack of suitable nest trees and the fly-catching behavior of this species.

Based on Saab and Dudley (1998), Lewis's require moderately dense stands (dead) for nesting (pre-burn Structural Stage 4B), with large diameter trees (14 inches to 20 inches DBH, 19 inches average), which are at least 80 acres in size. Based on Saab and Dudley (1998), Lewis's require moderately dense stands for nesting (pre-burn Structural Stage 4B), with large diameter trees (14 inches to 20 inches DBH, 19 inches average), which are at least 80 acres in size. Between insect outbreak or fire events, populations of Lewis's persist at low densities in moderate open canopy late succession forest with large diameter trees for nesting. The mean distance between Lewis's nests is 480 m (Saab, personal Communication, 2000). Lewis's woodpeckers are semi-colonial and therefore connectivity between individual nest stands is important.

Foraging habitat for Lewis's is more open canopy areas with abundant free-living (not wood-boring) insect populations, nuts and large snags. This species very rarely drills for food but uses snags and other locations for perches when hawking insects. In addition, snags are preferred foraging substrates for gleaning and storage of food caches (Tobalske1997). Although Lewis's utilize salvaged logged areas for foraging (Saab and Dudley 1998), preferred foraging habitat is the same as nesting habitat (Personal Communications Saab 2000). This species prefers partially salvaged areas with 17 snags per acre, greater than 9 inch DBH, retained in clumps across the landscape. Based on this recommendation, snag mitigation was developed for Alternative C.

Black-backed Woodpecker

The black-backed woodpecker also reaches highest abundance in large areas where insects are prolific (e.g., stand replacing burns and beetle-killed areas) and start colonizing in the first year after an event. Highest abundance usually occurs during the first ten years after a fire or insect outbreak. This species is highly specialized to create cavities for foraging and nesting and often excavates nest in sapwood; consequently, prefers dead conifers for the thicker sapwood. It utilizes both large (14 inches to 20 inches DBH) and small (9 inches to 14 inches DBH) diameter snags. In order to persist on the landscape between such events, the forest matrix must include large stands (greater than 1,000 acres) of late succession forest or large trees. These green areas provide suitable nesting and foraging that maintain a low woodpecker density until an insect outbreak; storm event or fire promotes the species to higher abundance (Expert Interview Summary, 2000). During these periods between events, the black-backed is considered to be very rare in the Black Hills, as it is across most of its range in the United States. Management recommendations in burned ponderosa pine and Douglas fir forest (Saab and Dudley, 1998) and maintenance of lower montane forest in the Interior Columbia River Basin (Wisdom et al, 2000) conservation of selected forest stands greater than 1000 acres where post fire salvage logging is planned, retain snags in clumps and retain 208 to 332 snags of greater than 9 inches DBH (Dixon and Saab, 2000). Suitable nesting habitat for black-backed woodpeckers in burned areas is provided by pre-burn structural stages 3C, 4C, and 5, with 9 inches to 20 inches DBH trees (16 inches DBH average, and are 80

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to 130 acres in size (Saab and Dudley 1998). The mean distance between black-backed woodpeckers nest is 890 meters (Saab personal Communication, 2000).

Foraging habitat for the black-backed is in more closed canopy areas, with abundant wood boring insect populations (large snags and large downed wood). This species mostly pecks and drills for larvae of wood-boring beetles (Dixon and Saab, 2000). Black-backed woodpeckers do not utilize salvaged logged areas for foraging, which may be attributed to non-predatory territoriality between species. Preferred foraging habitat for the black-backed woodpecker is the same as their nesting habitat (personal Communications Saab, 2000) but they will utilize moderate canopy areas. In addition, burned edges are as important as the burn interior for wood-borer outbreaks and thus for the black-backed woodpecker (Dixon and Saab, 2000). Black-backed woodpeckers tend to utilize trees that succumb to insects along the fire edges in the years following the fire.

Both of these woodpecker species persist at low densities in habitats that are less than optimum (sink habitats) between fire and insect events (Hutto 1995, Dixon and Saab 2000, Tobalske 1997). Such events provide abundant, optimum nesting and foraging habitats (source habitats) for at least 20 years, allowing populations to increase, and allowing genetic exchange among individuals essential to maintaining a viable population. Intensive management of the Black Hills to reduce the risk of insect outbreaks, combined with decades of fire suppression, has not allowed the type of stochastic events that produce optimum source habitat for these species. Additionally, the Lewis's woodpecker and the black-backed woodpecker are at two ends of a habitat continuum, with regard to diameters and densities of snags optimum source habitats; the majority of other cavity dependent species fall between these two species on this continuum (Saab and Dudley, 1998).

Although approximately 83,510 acres were burned during the Jasper Fire, it must be recognized that stands possessing appropriate diameters and densities to provide suitable nesting habitat for these species are fairly limited throughout the area. This fairly limited habitat is a result of pre-fire forest management (lack of large diameter trees greater than 14 inches and stand densities). Based on the above, some areas of the Jasper Fire that burned at moderate to high intensity will provide "source" nesting habitats for Lewis's and black-backed woodpeckers (Villard and Schieck 1997). Stands with appropriate densities and diameters will provide suitable nesting habitat, while other stands will provide foraging habitat. For the Lewis's woodpecker, foraging habitat could include partially logged areas.

Northern Saw-whet Owl

The Northern saw-whet owl was brought up in a comment on the DEIS regarding the effects of the proposal on this species. This owl is not considered a R2 Sensitive Species or listed as endangered. This species is mostly nocturnal and nest in existing woodpecker cavities (usually those of the northern flicker) but will nest in nest boxes (Cannings

1993). This species forages along forest openings and will utilize large openings if perches are available. These owls favors late successional habitat for breeding, which is lacking in the Jasper Fire area. However, it's use of woodpecker cavities and it's foraging behavior indicate it could the use of the fire area.

Deer and Elk

There are currently 39,959 National Forest acres within the Jasper fire area with a big game winter range management emphasis. This Management Area (5.4) includes an objective of providing big game thermal cover on 20 percent of the forested area. Prior to the fire, there were approximately 3,703 acres of thermal cover (based upon RIS queries of ponderosa pine stands with greater than 70 percent canopy closure) or 9 percent of the forested portion of the management area. As a result of the fire there are now 135 acres of thermal cover, or less than one percent of the forested portions of the 5.4 Management Area within the Jasper fire.

The Jasper fire consumed a majority of the forage used by big game animals throughout the fire area. Grasses as well as forbs and woody plants were consumed on approximately 80-90 percent of the area. Some of the more mesic sites, such as riparian areas, aspen stands and large meadows throughout the burned area maintained some residual forage. There were also some patches of green trees that were spared by the fire. Some of these patches are still under contract to be harvested. These remaining green stands provide some of the only cover in these areas.

The 5.4 Management Areas have a Forest Plan objective to provide forage on at least 20 percent of the planning units. Stands that provide forage include structural stages 1, 3A, and 4A. Prior to the fire there were approximately 18,731 acres of forage producing structure, or 47 percent of the 5.4 Management Area within the Jasper fire area. Post fire estimates indicate that there are now 36,878 acres of forage producing structure accounting for approximately 92 percent of the 5.4 Management Areas within the Jasper fire area.

In Management Area 5.1, the Forest Plan emphasis is on resource production emphasis such as wood products, water yield and forage production. There is approximately 38,546 acres of this management area within the Jasper Fire perimeter. There is little management direction for management of big game except for maintaining habitat effectiveness. Most of this management area is regarded as summer habitat for big game. Post-fire habitat effectiveness does not meet Forest Plan standards and guidelines.

The potential disturbance of local populations of big game animals has increased due to the fire (Millsbaugh 1995). Elk are especially susceptible to disturbance. There are 508 miles of road within the perimeter of the fire, or about 4 miles of road per square mile of land, which further decrease habitat effectiveness (Perry and Overly 1977, Lyon 1983). Hiding cover between roads was lost in many areas. Although few animals remain in the

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burn this winter, many are likely to return to their home ranges this spring as re-growth of grasses and shrubs begins. Value recovery operations have the potential to increase disturbance to these animals. Some animals may be displaced during harvest operations. However, animals have ample other areas to move to that are not being harvested. Disturbance would be of short duration since harvest operations under this proposal are expected to be completed by September, 2001. Currently there is an area closure to public use of motorized vehicles in the burn except on designated main roads. This will help reduce disturbance to big game while closure is in effect.

Merriam's turkey

Turkeys were common in the Jasper fire area prior to the burn. They use a variety of forested habitats and meadows including large, branchy trees for night roosts, dense pine stands for cover, and large down logs for nest sites. They feed on a variety of insects, seeds, and berries but pine seed is a staple food item in the Black Hills.

The fire killed many roost trees and left few dense pine stands for protection from the elements or predators. Although many snags remain, turkeys prefer live trees for roosts when available. Most suitable nesting habitat was destroyed. However, pine cones opened by the fire shed abundant seed on the charred ground making foraging easy for turkeys. Many turkeys were seen feeding in the burn prior to snowfall especially near remaining cover patches. However, the birds commonly migrate to areas with little or no snow during winter farther south than the burn area.

Mountain lion

Mountain lions were known to inhabit the Jasper Fire area. In fact one radio-collared lion was killed in the fire. Another has been seen on the perimeter of the burn this fall. Lions are far-ranging predators that feed on deer and other smaller mammals. They typically den on cliffs and in caves along canyon walls. They will use open as well as forested habitats. Prey availability often dictates their occurrence. The greatest effect of the fire on mountain lions was to alter deer and elk habitat. The lions will follow these prey species.

Snails

Based on the report Land Snail Survey of the Black Hills National Forest, South Dakota and Wyoming (Frest and Johannes Draft Report August 7, 2000), there are seven locations in the Jasper Fire where sensitive snails were found. Most of these sites were along limestone outcrops with high moisture microclimates due to slope, aspect, vegetation, and presence of seeps or springs, and were somewhat undisturbed by grazing livestock. Of the seven known snail colonies, most have experienced high to moderate intensity burn conditions from the Jasper Fire.

In the report, land snails were absent from areas with recent severe forest fires. Frest and Johannes indicate that land snails are generally able to tolerate light burns. However, intense fire such as the Jasper fire effectively sterilizes the area of land snails. Stand replacing fires in other part of the United States have completely extirpated land snail colonies, even those in the vicinity of springs.

Two of the known sites were visited in the field post-fire. Most of the area surrounding these two snail colony locations had experienced moderate to high intensity burn. No sensitive snails were located at the time due to dry conditions of exposed rock outcrop and drought conditions. It is assumed that the snails may have retreated to moister conditions in the rock face and below ground prior to the fire. Small islands of unburned vegetation have persisted around the colony locations. If snails persist in these areas through the winter, in the short term, they may not survive the change in microclimate caused by the fire's effect on vegetation surrounding the colonies. However, in the long term, hydrological conditions within the colony's habitat may also improve where seeps and springs and aspen/birch groves expand due to increased water runoff. Although snail movement by itself is very slow, their small size allows some passive dispersal by wind, heavy rains and snow melt and may provide a means for snail colonies to disperse to more favorable habitat. Monitoring of these snail colonies will be important in determining the fire's long-term effects to these populations.

Butterflies

There are two sensitive butterfly species that inhabit the Black Hills area. These two species are the tawny crescent and the regal fritillary butterflies. The tawny crescent butterfly, known to occur in the Jasper area prior to the fire, is primarily associated with riparian areas, and mesic sites (Royer and Marrone 1992). Regal fritillary butterflies are associated with open prairie habitats. These species lay their eggs on vegetation, tawny crescent prefers asters and the regal fritillary prefers to lay eggs near violets.

The Jasper fire mainly burned in forested portions of the area, and to a lesser extent burned in riparian areas, and meadows. The fire was likely responsible for the destruction of egg masses located within the burn area. The Jasper fire, however, will likely increase the vegetative diversity in the area, thus increasing the potential habitat for each of these butterfly species.

Amphibians and Reptiles

There are several species of reptiles and amphibians, which occur in the Black Hills (Fischer et al. 1999, Petersen 1974, Thompson and Backlund). Reptiles include several species of snakes, which use rocks, logs, burrows and vegetation for cover. They feed on insects and small mammals. While some reptiles may have escaped the fire in underground burrows and rock crevices, others may have perished as down logs and

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snags burned. In intensively and moderately burned areas of the fire little or no cover remains for these species making them susceptible to predation. Additionally most of their normal prey base has been lost. Populations of reptiles are likely to decline for two to three years until vegetation and down wood from falling snags accumulate again. Re-colonization will likely occur from adjacent unburned or lightly burned areas.

Amphibians are generally associated with aquatic or riparian habitats, which are very limited in the burn area. Most riparian and aquatic areas were not burned. Some springs were known to support populations of northern leopard frogs and/or tiger salamanders. Chorus frogs are common throughout the area in the spring in ephemeral ponds and puddles. Aquatic and riparian habitats may expand due to increased water flow overland resulting from the loss of trees (reduction of evapotranspiration). Additional springs may appear.

3.4.3 Threatened, Endangered, and Sensitive Species

The list of Threatened, Endangered, or Proposed species for the Black Hills was confirmed by the U.S. Fish and Wildlife Service, December 5, 2000. List for the Black Hills includes the bald eagle, the American burying beetle, and the black-footed ferret. The black-tailed prairie dog has been identified as a Candidate Species. The only one of these species known or likely to occur in the project area is the bald eagle.

The bald eagle inhabits the Black Hills as a winter transient (Petersen 1993). Eagles are commonly seen in the early winter feeding on roadside carrion and gut piles left by hunters. Small mammals and birds are also prey. These birds continue to migrate farther south as the winter progresses. They are not known to nest in the Black Hills nor are there any known roost trees in the burn area.

It is unlikely the fire had much effect on eagles' use of the area. Road kill along Highway 16 is still abundant. Small mammals will be more visible in the burn but probably less abundant. Eagles will likely move through the area as in the past.

The revised Forest Plan contains a list of sensitive species for the Black Hills National Forest. The species from that list that may occur in the Jasper Fire area was compiled from field reconnaissance, both before and after the fire. In addition, sensitive plant inventories, South Dakota Natural Heritage Database (SDNHP 1999), habitat maps included in the Forest Plan, and literature reviews were used to identify species and effects for this analysis.

The Jasper Fire area contains suitable habitat for the following species:

- Merlin
- Black Hills red-bellied snake
- Northern leopard frog

- Pygmy nuthatch
- Black-backed woodpecker
- Northern three-toed woodpecker
- Lewis's woodpecker
- Upland sandpiper
- Loggerhead shrike
- Tiger salamander
- Pale milk snake
- Tawny Crescent Butterfly
- Fringed-tailed bat
- Townsend's big-eared bat

Due to the grassland conditions created by the fire, there may be suitable habitat for the following species:

- Black-tailed prairie dog
- Western burrowing owl
- Swift fox

3.5 Noxious Weeds

3.5.1 Introduction

Primary concerns for the introduction and spread of noxious weeds in the analysis area lie in the high/unclassified and moderate burn intensity areas. The canopy cover no longer exists and vegetation that once protected the soil is no longer available. This leaves a vast amount of land open for new infestation from seed sources that have lain dormant for decades waiting for growing conditions to turn favorable. The low intensity burn areas should have enough root systems left in grasses and shrubs for areas to come back naturally, and noxious weed infestations within these areas will also remain, but will at least have some competition.

3.5.2 Affected Environment

Noxious weeds were starting to actively grow in areas within Jasper just days after areas cooled down. Fortunately, early frosts and snowfall kept weeds that did sprout from producing seed. Some species actively growing include Canada thistle (*Cirsium arvense*), leafy spurge (*Euphorbia esula L.*) and houndstongue (*Cynoglossum officinale*).

Many locations contain large and small-scale infestations of a variety of thistles, the most common being Canada thistle and musk thistle (*Carduus nutans*). Other noxious weeds

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such as Houndstongue, common mullein (*Verbascum tapers L.*), common tansy (*Tanacetum Vulgare L.*), spotted knapweed (*Centaurea maculosa Lam.*), leafy spurge, yellow toadflax (*Linaria vulgaris Mill.*) and sulphur cinquefoil (*Potentilla recta L.*) are commonly found in the Black Hills, and may also be treated when found. Non-natives not listed above, could possibly be found since vegetation and canopy cover that was present is no longer there.

There are two areas of some small-scale infestations of spotted knapweed that have been effectively treated within the last 5 years. Treatment with Tordon/2,4-D has effectively eradicated this weed on one area within three years. Leafy spurge is located in isolated patches in four locations. Leafy spurge infestations have responded well to both chemical (Tordon and 2,4-D) and biological controls. Thistle infestations have shown good response within five years to herbicide and biological controls. Detailed data may be found in the noxious weed report in the Project File. One site has been effectively controlled within the last 7 years, and the Hell Canyon District is still working on the other locations.

3.6 Recreation/Special Uses

3.6.1 Introduction

Several groups and individuals currently hold recreation special use permits within the burned area. All permits within the burned area have been moved to areas outside of the burn or activities have been postponed for the 2001 season. Permittee's affected by the fire include two hunting guides, three recreation events permits, and one proposed guided horseback ride operation.

There are numerous private land parcels along the perimeter of the Jasper Fire Area and a few isolated parcels within the area. Some parcels have structures that were affected by the fire but the largest impact of the fire is the visual result. Acres of burnt, charred snags are a dramatic change from the previous stands of green ponderosa pine. Some landscapes are a mosaic of color caused by partial burns while others are entirely blackened. Parcels considered for land adjustments (exchange, purchase, etc.) are still very desirable for the reasons identified prior to the fire.

3.6.2 Affected Environment

Developed Recreation

Developed recreation improvements within the analysis area include the 5.5-mile Hell Canyon Trail and 11.5 miles of groomed snowmobile trails.

The Hell Canyon Trail is a non-motorized trail that received low to moderate damage from the Jasper fire. Along this trail soil resources and organic matter remain intact providing conditions for rapid re-growth of forbs and grasses. Hazard trees have currently been removed from the upper trail corridor and work is in progress removing hazard trees along the trail corridor following the two-track road in the canyon bottom. Once hazard tree removal has been accomplished it is expected this trail will be opened to public use.

Approximately 11.5 miles of snowmobile Trails #1 and #2 are located within the analysis area. Eleven miles of these are closed for the 2000 winter season because of the Jasper Fire and associated hazard trees. One-half mile of trail that runs through open meadows is open to provide access to Trail #10.

Dispersed Recreation

Dispersed recreational activities in the analysis area include hiking, horseback riding, driving for pleasure, snowmobiling off trail, hunting, ATV and OHV use on existing two track roads, and dispersed camping. Use of the area occurs primarily during the fall deer and elk, and spring and fall turkey hunting seasons. The burn area is currently closed to public use while hazard trees are being removed from access road corridors.

Recreation Special Uses

Several groups and individuals either currently hold recreation special use permits, or have applied for a permit within the analysis area. Permittee's affected by the fire include two hunting guides, and three recreation events permits.

The two hunting guides authorized, use portions of the Jasper fire area for guided turkey, deer, and elk hunts. A maximum of 350 service days is authorized between these two operations with use typically less than 75 days annually. No campsites are permitted within the analysis area.

The three recreation events permits include: an equestrian endurance ride, a mountain man rendezvous, and a sled dog race. The endurance ride is permitted on approximately 50 miles of old roads and trails entirely within the fire perimeter. This event occurs Memorial Day weekend and is authorized a maximum of 150 service days. A campsite location is located at the junctions of FDR 668 and 281. The mountain Man rendezvous is authorized over Labor Day weekend with a maximum of 200 service days. The sled dog race occurs in January of February of each year and is authorized a maximum of 400 service days. Most of the sled dog trails are outside of the burn area.

In addition, we have been processing an application for a proposed guided horseback ride operation. This guided horseback ride would occur yearly between May and September on 13.0 miles of old roads and trails within the fire perimeter. No campsite locations have been requested and a maximum of 250 service days could be used yearly.

Since the Jasper fire, all recreation special use permits have been moved to areas outside of the burn or activities have been cancelled for the 2001 season.

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Lands and Land Special Uses

The only road easements or road rights of ways within the area are Highway 16 to the State of South Dakota and private land access issued to Custer County in the southeastern part of the area. Both of these roads are currently being used.

Utility corridor easements include power and communication lines. A 69KV power line permit issued to Black Hills Power and Light bisects the area just north of Jewel Cave National Monument for approximately nine miles. Most of the structures and line were destroyed. The company is considering complete abandonment of this line with a decision being made in 2001. Black Hills Electric Cooperative has approximately nine miles of distribution lines servicing private residences and range improvements. These are located near Jewel Cave National Monument in the southern portion of the burn and in the Alkali Springs, Lemming Draw, Upper Hell Canyon areas. They also have a substation located near the Monument. They plan on retiring approximately 1.5 miles of line that crossed Highway 16 near the Monument.

Golden West Telecommunications and RT Communications have primarily underground cable within the fire area. They had approximately 0.5 mile of aboveground line in the Bull Springs, Alkali Springs area that was destroyed.

Mining and Abandoned Mines

There are no active mining operations on National Forest System land within the Jasper Fire Perimeter. There are also no identified abandoned mine operations that are in need of reclamation.

3.7 Heritage Resources

3.7.1 Introduction

Native American aboriginals chose the most opportune camp sites, exploited local native plants and animals, utilized rock quarries to manufacture stone tools, and left their stories inscribed in the face of rocks. Modern Native Americans continue to make traditional use of natural and significant areas in the Black Hills. The historic period brought change with the advent of industrial exploitation and settlement. This is apparent in the large numbers of mineral exploration, mining, milling and logging related archaeological sites that are found. Homesteads and farmsteads flourished and transportation systems expanded to rail lines and improved road systems. Archaeological remnants of these developments and subsequent structures that were constructed during the Civilian Conservation Corps period (1932-1942) still exist in this area.

A complete Level I investigation of the Jasper Fire burn area is currently being researched and compiled to assist in determining how many and what types of previously documented heritage resources are located within the Jasper Fire burn perimeter. This analysis will help determine how future projects and natural erosion will affect these properties. Additionally, the Forest is currently in the process of conducting tribal consultation to assess effects on Traditional Cultural Properties and other culturally sensitive areas within the analysis area.

3.7.2 Affected Environment

Following the Jasper Fire, additional surveys were completed for fireline rehabilitation and hazard tree removal. Additionally, areas within sold sales (outside existing cutting units) were surveyed. Two contracts for heritage resources inside the burn area have identified additional sites.

There are 129 heritage resources properties that have been evaluated as “eligible” or “potentially eligible” to the National Register of Historic Places (NRHP) within the Jasper Fire perimeter. An additional 149 properties evaluated as “not eligible” to the NRHP also are located inside the fire perimeter. Of this total, 142 sites are related to the prehistoric period, 114 sites are historic in age, 19 contain both prehistoric and historic components, and 3 contain unknown temporal affiliations.

Heritage resources, Traditional Cultural Properties, and other culturally significant areas are currently unknown for the 5,443 acres of previously unsurveyed area that is being considered in Alternative B. A review of findings from previous intensive pedestrian surveys indicates that site density ranges roughly between one site per 66 acres and one site per 182 acres (Black Hills National Forest Heritage Resources Overview 1996:1a-3). Heritage resources are not evenly distributed across the landscape: Resource locations are dependant on slope, proximity to water, and proximity to natural resources used by inhabitants of the Black Hills over time. Consequently, these existing site density figures suggest that the potential for previously unknown sites can be as many as 86 new properties.

3.8 Range Resources

3.8.1 Introduction

The Jasper Fire value recovery project includes several livestock grazing allotments. Range vegetation was affected to varying degrees, depending on fire intensity. The fire directly affected 11 grazing allotments and 24 grazing permits.

3 Affected Environment

3.8.2 Affected Environment

In areas of high intensity, most vegetation (including grasses, forbs, and shrubs) was consumed, right down to and in some cases including the duff layer. This was true in meadows and open parks as well as on the ridges. In areas of moderate intensity some residual stubble and litter exist, and vegetation is already beginning to grow again. Areas of low fire intensity are resprouting, and sufficient litter is in place to provide adequate ground cover. Meadows and parks also exist as unburned islands. These meadows evolved under the influence of fire, and the plants will recover quickly given the right moisture conditions.

A summary of the allotments follows:

Table 3-1. Affected Allotments

Allotment	No. Of Permits Affected	Total Permitted Livestock	Total Acres in Allotment	Acres inside Fire Perimeter by Pasture	Affected Pastures	Grazing System
Bull Flats	1	18 c/c	1,461	320	Heinrich Unit	4-Pasture Deferred
Central	2	246 c/c*	15,289	3,315 1,265	Estes Spring Roger's Spring	(2) 2-Pasture Deferred
Darrow	3	243 c/c	15,095	4,112 1,704 700 1,585 1,645 3,342 1,604	Lemming Draw Bear Springs Highland Park Upper Gillette Lower Gillette Cameron Signal Hill	7-Pasture Deferred/Rest
Ditch Creek	1	671 c/c*	17,122	2,468	Cameron	5-Pasture Deferred
Limestone	3	250 c/c	14,4476	5,983 3,920 1,906	Alkali Windmill Bear Mountain	3-Pasture Rest-Rotation
Lithograph	3	319 c/c	16,262	1,668	North	2-Pasture Deferred
Lower Beaver	5	533 c/c*	33,805	5,806 4,993 1,134	Wilson Place Buck Springs Summit Ridge	(3) 2-Pastured Deferred
Murphy	2	154 c/c	7,006	38 156 127	Fox Flat Spring Creek Bear Spring	4-Pasture Deferred
Porcupine	1	334 c/c**	10,040	3,351 3,487 500 726 1,245	North Wolf 1, 2, 3 South Wolf 1, 2 West Hell 1 West Hell 2 Signal South Exchange/ Private***	11- Pasture High-Intensity, Short Duration
Tepee	4	462 c/c	27,649	19,178	Gillette Canyon Dead horse Flats Antelope Ridge	3-Pasture Deferred
Water Draw	Vacant			2,137		

* Includes Private Land Permit.

** Variable Numbers/Variable Season

For grazing allotments wholly contained within the fire, livestock grazing is being deferred in the whole fire area for the 2001 grazing year. Allotment pastures that include less than 10% burned area may be grazed during the 2001 grazing year. Vegetation recovery will be monitored in key grazing areas during the 2001 growing season.

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3.9 Hydrology/Soils

3.9.1 Introduction

Water and soils can be affected, to a greater or lesser degree, by fires. Fires can heat soils to an extent which may produce hydrophobic properties, thereby increasing runoff potential. The loss of vegetation can also increase soil erosion from rainfall. Additionally, loss of vegetation may increase available water due to reduced evapotranspiration (movement of water from the soil, through leaves, to the air).

3.9.2 Affected Environment

The project area is located on the Pahasapa Limestone (cavernous dolomitic limestone) and the Minnelusa Formation (sandstones and dolomites). The area contains a wide variety of landforms including rock outcrops and ridges, steep to very steep hill slopes, rolling hills, and alluvial valleys. Soils are generally shallow (steep slopes) and deep (gentle slopes and alluvial valleys), well drained, and weathered from interbedded limestone, sandstone, and shale. The dominant soil map units that occur in forested areas include CkC, SyaC, SybC, SycE, VKE, SrE, VcE, and VoG. Most of these soil map units are in hydrologic groups B and C, which mean they have moderate to slow infiltration rates when thoroughly wet. Detailed landform and soil descriptions can be found in the Custer and Pennington Counties soil survey (USDA 1990).

Hydrology

Average annual precipitation in the project area is estimated to be 20 inches, based on data from nearby weather stations (Table 3-2). Average precipitation levels may be slightly greater than 20 inches because the project area is located at higher elevations than the weather stations listed in Table 3-2. Approximately 50% of annual precipitation comes during May, June, and July, and almost 75% comes during the five-month period of April through August.

Table 3-2. Monthly precipitation (in) from nearby weather stations

Weather Station	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Average Annual
Custer	0.36	0.56	0.96	1.87	3.08	3.25	3.26	2.04	1.54	0.98	0.57	0.56	19.03
Hill City	0.28	0.54	0.92	2.13	3.30	3.73	3.49	2.05	1.51	0.98	0.58	0.47	19.98
Mt. Rushmore	0.33	0.52	1.03	2.09	3.68	4.08	3.36	1.88	1.61	0.98	0.55	0.50	20.61
Average	0.32	0.54	0.97	2.03	3.35	3.69	3.37	1.99	1.55	0.98	0.57	0.51	19.87

The dominant hydrologic processes of the project area are driven by the surficial geology. In general, the eastern side of the project area is within the Pahasapa Limestone and the western side is within the Minnelusa Formation that contains sandstones and dolomite. Because of the highly permeable nature of the limestone, sandstones and dolomite, perennial surface water is not present, and many of the streams are vegetated and do not display defined bed and banks. This area is generally a ground water recharge zone.

All streams in South Dakota are assigned beneficial uses and associated standards by the South Dakota Department of Environment and Natural Resources. Beneficial uses within and downstream of the project area include irrigation, wildlife propagation, and stock watering. The streams in the project area are tributary to the Cheyenne River, which flows southward in Wyoming, then turns east into South Dakota. Beneficial uses of waters in the Cheyenne basin (inside Wyoming) include propagation of fish and wildlife, agriculture, industry, human consumption, recreation, and scenic values.

Because all the streams in the project area are ephemeral, there is no water quality information. However, the condition and function of these streams is important because they transport sediment, nutrients, and debris to perennial waters downstream.

Peak flows generally occur in response to spring and summer rains. Now that the area has been burned, surface runoff and stream flow are likely to occur more frequently due to higher soil moistures, reduced ground cover, and decreased infiltration. Some streams in the area may change from vegetated to armored due to increased frequencies of stream flow.

3.9.3 Affected Environment

Overall, all the watersheds, except South Fork Castle Creek, are tributary to the Cheyenne River which flows into Angostura Reservoir. South Fork Castle Creek flows into Deerfield Reservoir and eventually into Rapid Creek and Pactola Reservoir.

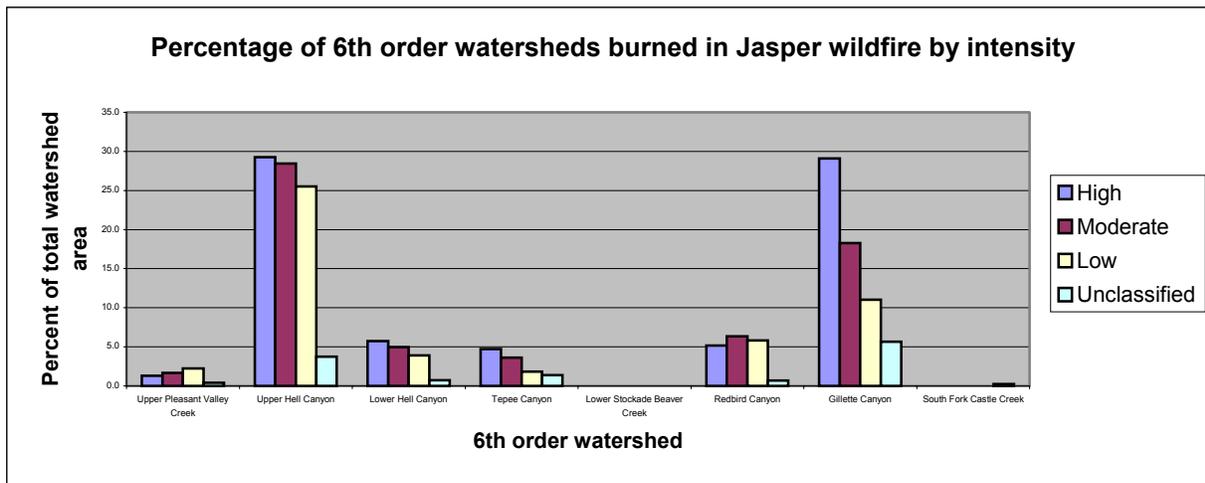
The project area is located within eight 6th level watersheds (Table 3-3). These watersheds generally range in size from 10,000 to 40,000 acres. The percentage of each 6th order watershed that burned under high, moderate, and low intensities is shown in Figure 3-1. In general, only small percentages of the 6th order watersheds were burned in the Jasper wildfire, with exception to the Upper Hell Canyon (87% burned) and Gillette Canyon (64% burned) watersheds. Figure 3-1 summarizes the percentage of each with high, moderate, and low burn intensities. For a more detailed description of the 6th level watersheds, see the JRAT, Soil and Water report.

3 Affected Environment

Table 3-3. 6th order watersheds within the project area

Watershed Name	Watershed Number	Acres	Acres of watershed in a burned condition	Percent of watershed in a burned condition
Upper Pleasant Valley Creek	101201060101	31263	1,758	6%
Upper Hell Canyon	101201070301	34888	30,326	87%
Lower Hell Canyon	101201070302	23590	3,625	15%
Tepee Canyon	101201070303	48197	5,585	12%
Lower Stockade Beaver Creek	101201070402	36718	7	0%
Redbird Canyon	101201070404	52047	9,447	18%
Gillette Canyon	101201070405	51070	32,696	64%
South Fork Castle Creek	101201100104	26680	64	0%

Figure 3-1. Watersheds in the Jasper Area



Wetlands and Floodplains

Wetlands in the fire area have been identified. They are small, isolated areas associated with springs and seeps. Some of them follow drainages for short distances.

The 100-year floodplains have been mapped for the Jasper Fire area. All drainages within the burn area are ephemeral. Flows can occur during heavy rain events. If the rainfall exceeds infiltration rate, water is available for runoff. If enough runoff occurs,

flow or floods can and do occur. Generally precipitation comes gently and stream flows are not expected.

Burned Area Emergency Rehabilitation Team Recommendations

Following the Jasper Fire, a Burned Area Emergency Rehabilitation (BAER) team reviewed possible rehabilitation needs for the area. The BAER authority is relatively narrow in scope. It does not provide for long-term restoration projects nor does it apply to suppression related activity. It does provide for emergency situations where immediate action is required to prevent unacceptable impact to the soil, water, and heritage resources; and to minimize significant threats to life and property. The BAER Team determined that immediate action was not necessary.

3.10 Fire/Fuels

3.10.1 Introduction

The fuel, weather, and site conditions that existed at the start of the Jasper Fire combined to produce a high intensity, fast moving wildfire that quickly made the transition from a ground fire to a plume dominated crown fire. As a result, only minimal amounts of down woody material are left in most areas included in the proposed action. Aerial fuels have been consumed as well. The amount of litter and duff remaining after the fire is highly variable. In areas where the flaming front passed quickly, this layer is relatively intact. In other areas it has been completely removed.

3.10.2 Affected Environment

This situation is already changing as needle cast from scorched trees has started to accumulate on the burn area. Over the next three to five years large amounts of standing dead material will begin to break off and blow down. The Jasper Fire Rapid Assessment Report estimated fuel loadings of 20 to 60 tons per acre in untreated stands once the standing dead falls. Much of this material is greater than 3 inches in diameter and would not greatly contribute to the spread of a wildfire under normal conditions. Under conditions of drought and low fuel moistures however, large diameter fuels would ignite and burn readily and cause control problems for firefighters.

Past experiences with large fires on the Hell Canyon District support the problems associated with fire and fuels in old burns. The Elk Mountain Fire was a 1700 acre wildfire that occurred in 1983. Like Jasper, this was a high intensity crown fire that killed most of the trees within its perimeter. No salvage logging was conducted after the fire. Trees killed by the fire have broken off and blown over and now contribute to the ground fuel load. Lightning caused wildfires are again common in the area with the deadfall from the 1983 fire contributing to their spread – especially during drought years.

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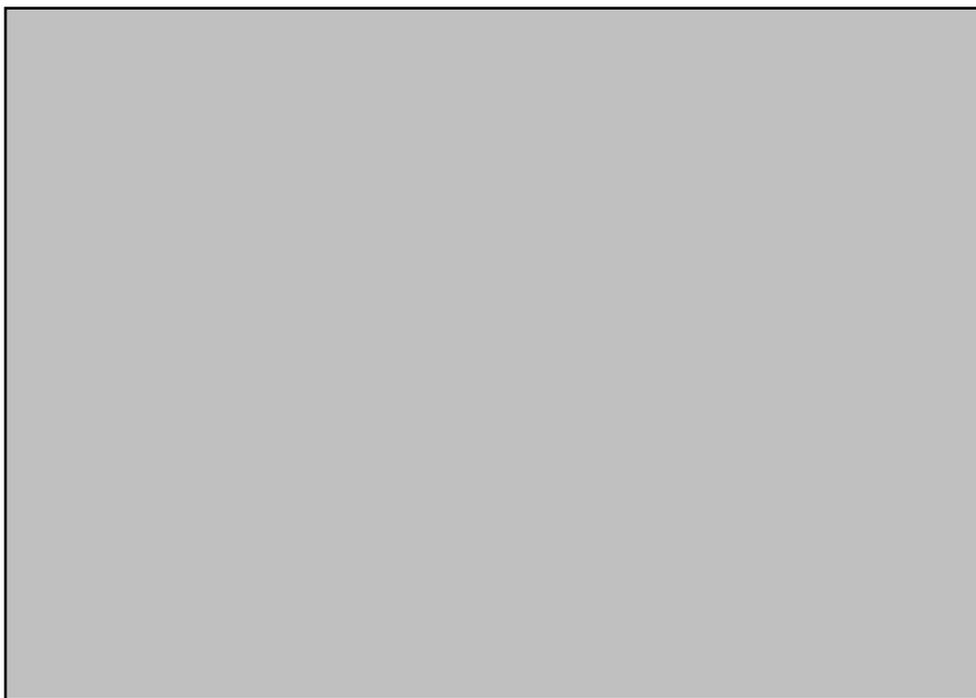
Hazard and Values at Risk

Due to the removal of most ground and aerial fuels within the project area, existing conditions present a low fire hazard. This hazard will gradually increase over the next five to ten years as grasses and other vegetation regenerate, standing dead trees fall, and ground fuel loadings return to natural levels.

Values which would be threatened by an uncontrolled wildfire are also low with the exception of buildings and other improvements on private land. As in other areas of the forest, private parcels which have historically been used for livestock grazing are being subdivided and sold for building lots. Protection of structures from wildfires will continue to be a pressing problem in the project area.

Forest Plan Direction

Forest Plan guidelines for areas with low ratings for risk, value, or hazard include reducing fuels to reduce potential fireline intensity.



3.11 Montane Grasslands

3.11.1 Introduction

Because of the limited distribution of high quality Black Hills montane grasslands protection of the grasslands is of high concern. The habitat characteristics of high quality (rank of AB) Black Hills montane grasslands within the Jasper Fire perimeter, their pre-fire condition, fire effects, post-fire concerns and mitigation are identified here.

Black Hills montane grasslands (*Sporobolus heterolepis* - *Stipa richardsonii* - *Danthonia intermedia* Herbaceous Vegetation) (Marriott *et al.* 1999) are wildflower-rich grasslands with vegetation species combinations that are unique (endemic) to the Black Hills limestone plateau in western SD and northeastern WY, where they generally



occur at elevations above 6000 feet (Marriott 2000). Montane grasslands are characterized by a high diversity of native wildflower species and a unique combination of native grasses (Marriott *et al.* 1999, Marriott 2000). The Black Hills Natural Heritage Program funded a survey of montane grasslands in the Black Hills (Marriott 2000), and the Heritage Program ranked them as G1S1 (globally and state imperiled).

3.11.2 Affected Environment

Hollis Marriott's 1999 survey (Marriott 2000) provides the most detailed description and evaluation of Black Hills montane grasslands to date. The Jasper fire area includes all or parts of four of the seven highest-quality ranked montane grassland sites identified in Marriott's survey, totaling over 1,400 acres. Marriott's report stated that subdivision, road construction, livestock grazing and other developments are threats to these vegetation communities, with subdivision being perhaps the greatest threat at this time. The four grasslands within the Jasper Fire perimeter are:

- Lemming Draw
- Bear Spring Creek
- Gillette Canyon Headwaters

3 Affected Environment

- Upper Gillette Canyon

Fire has certainly played an important role in the historic maintenance of this plant community type. Fire likely helps to maintain the open quality of montane grasslands by reducing woody vegetation, such as snowberry (*Symphoricarpus occidentalis*) and invading ponderosa pine seedlings, provided burning is of high enough intensity to mortally damage these species and improve the competitive ability of the native, fire-adapted grasses and forbs. Although drought stress will be a significant factor in the recovery of the vegetation, those montane grassland areas that burned at sufficient duration and intensity to remove woody competitors will probably benefit from the effects of the burn, provided further direct and indirect stresses are kept to a minimum. The post-fire field observations are summarized from the Jasper Fire Rapid Assessment below.

Lemming Draw

Lemming Draw appeared to have been heavily grazed before the fire and burned areas were patchy throughout, possibly due to grazing effects on fuel levels. In the uplands, tree crowns and ground surface both burned at high intensity. Where vegetation was identifiable, we found the grassland condition frequently dominated by timothy (*Phleum pratense*). Marriott (2000) also listed timothy, as well as Kentucky bluegrass (*Poa pratensis*) and/or smooth brome (*Bromus inermis*) as non-native stand-dominants in these montane grassland sites (Appendix A). Marriott (2000) ranked Lemming Draw as a high quality (AB) montane grassland. Existing roads (have been there for many years), both graveled and native surface occur within this grassland (Marriott 2000).

Bear Spring Creek

This montane grassland area is adjacent to Lemming Draw at the intersection of FR 284 and FR 383. The Bear Spring Creek drainage and high-quality (AB) grassland is mostly within private property north of Forest Road 284. The Bear Spring Creek grassland along FR 284 has reportedly been more heavily utilized than the private portion of the grassland or Lemming Draw (Marriott 2000). The Bear Spring drainage south of FR 284 was surveyed following the fire and revealed a low intensity burn, possibly due to heavy pre-fire utilization by cattle, with shrubs and grass only partially burned along most of the creek bed. Existing roads (have been there for many years), both graveled and native surface occur within this grassland (Marriott 2000).

Gillette Canyon Headwaters

This extensive grassland site was the location of fire suppression dozer line construction on the northeast corner and eastern fire boundary. There was little or no burning of this grassland area, possibly due to heavy pre-fire utilization by cattle throughout, and/or fire suppression activities. The borders of the grassland burned at low intensity along the

forest edge. Existing roads (have been there for many years), both graveled and native surface occur within this grassland (Marriott 2000).

Upper Gillette Canyon

This grassland network was nearly 100% burned over on the western end of the Canyon, with a patchy mosaic in the smaller drainages towards the east. Re-sprouting of grasses and forbs was apparent as early as one week after burning, even where the fire was of higher intensity than other grassland sites. There were observations of resprouting native forbs, such as sticky geranium (*Geranium viscosissimum*) in the central portion of Upper Gillette Canyon. There was also evidence of recent soil disturbance by small mammals (possibly by moles or 13-lined ground squirrels). Existing roads (have been there for many years), both graveled and native surface occur within this grassland (Marriott 2000).

Photos of the above observations can be found in the Jasper Fire Rapid Assessment and file. The four montane grasslands have been mapped (see Alternative Maps, Figures 4-7 and 4-8).

Relationship to a Recent Settlement Agreement

The issue of conservation of montane grasslands was raised during the negotiations to settle the Veteran Salvage lawsuit. The plaintiffs expressed a desire that the “High Quality” sites be protected (as tied to salvage, would be timber harvest activities and road building in and around the grasslands), pending the research natural area review to be done in conjunction with the Phase II Forest Plan amendment process within the next two to three years. The settlement agreement stipulates (on listed sales) that the Forest Service and the timber sale purchasers will work together to protect the values of the grassland sites. The Forest Service and purchasers have met to determine appropriate protective measures. These measures are currently being implemented.

3.12 Visuals

3.12.1 Introduction

The Jasper Fire occurred in the summer of 2000. This fire radically changed the physical condition and appearance of the vegetation on this landscape. In most areas of moderate to high intensity burning, the majority of the green vegetation was killed and is evident as black tree boles on the landscape. The vegetation at ground level went from tan and/or green to black, as the fire moved through; over one to three years this should change completely back to the natural colors, as grasses and forbs re-sprout or re-establish

3 Affected Environment

themselves in the landscape. The textural appearance of the vegetation in the Foreground and Middleground was changed from fine to coarse. In locations the majority of the trees are fire-killed, the vegetation no longer appears as a form on the landscape.

3.12.2 Affected Environment

Vegetation has been altered throughout the area during timber harvest, grazing, and noxious weed eradication efforts.

Timber harvest creates textural changes in the vegetation that are generally evident in the Foreground, and less so in the Middleground (depending upon the level of treatment). Timber harvest can make form changes by creating holes (patches) in the vegetation forms (matrix) on the landscape. Visible effects of past timber harvest activities was limited to textural changes within the Foreground.

Grazing can create textural changes (from coarse to fine) as vegetation is removed. Ranches buildings on private in-holdings, as well as fences and animals across the landscape, provide interest and a sense of place in the history of this landscape.

Some portions of the fire area are currently under timber sale contract. In addition, fire-killed trees along the roads within the fire area, that create a danger to the traveling public, are also being removed. As a result of the loss of vegetation from the fire, logging activities (skid trails, slash, stumps, opening) are more evident.

Timber harvest has included logging roads and skidding trails for access. These roads and trails create lines that can be highly visible in the landscape, due to the removal of vegetation and strong color contrasts. In this area, roads were not highly evident in the landscape. They are more evident now.

3.13 Air Quality

3.13.1 Introduction

Overall air quality is considered excellent. Air quality for the Forest is better than State and Federal standards. Smoke and dust, however, are occasionally trapped by air inversions that hinder their usual dispersal into the atmosphere.

3.13.2 Affected Environment

There are two Federally designated Class I air-quality areas (defined by the Clean Air Act, as amended) in western South Dakota: Wind Cave National Park and Badlands

National Park. The Jasper Fire area is approximately 15 air miles from Wind Cave and approximately 45 miles from Badlands National Park.

3.14 Roads

There are approximately 508 miles of roads within the perimeter of the fire, or about 4 miles of road per square mile of land. Included in this total are 31 miles of arterial roads, 67 miles of collector roads, and 409 miles of local (non-system or two-track) roads.

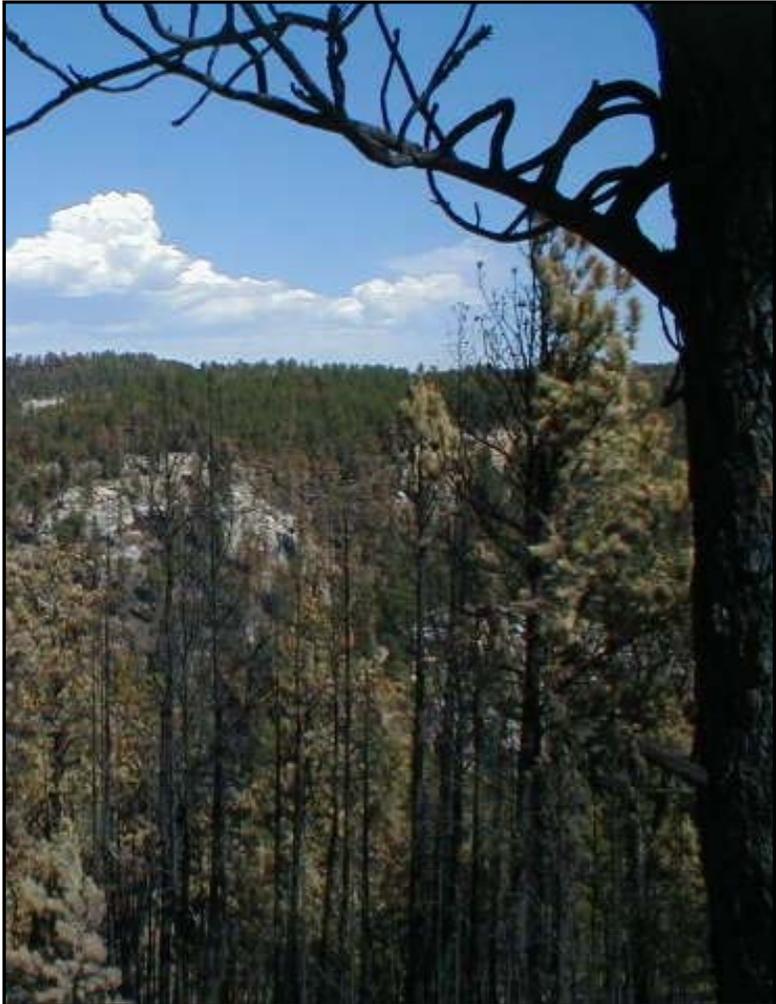
Fire suppression caused minimal damage to roads. Less than 10 miles of road within the perimeter were used as dozer lines, but more than 120 miles of dozer line were constructed off roads. The dozer lines are being re-contoured and slashed in as part of fire suppression rehabilitation currently under way. The roads used as dozer lines need only minor repairs, and will also be fixed as part of the fire suppression rehabilitation. Between 20 and 30 miles of road outside the fire perimeter required minor repair due to heavy use during suppression activities, and routine maintenance will take care of these problems.

There are five active timber sales in the fire area. Road work required for these sales includes one mile of new construction, completed in 1999; 20 miles of reconstruction, under way, mostly completed in 1999 and 2000; 21 miles of reconstruction work not yet started, and 75 miles of pre-use maintenance, partially completed. Two miles of the reconstruction work not yet accomplished involves relocating existing roadbeds out of sensitive soil or water concern areas.

3 Affected Environment

Chapter 4

Environmental Consequences



4 Environmental Consequences

4.1 Introduction

This chapter provides the scientific and analytic basis for the comparison of alternatives presented in Chapter 2. It describes the expected effects on the physical, biological, social, and economic environments associated with implementation of the alternatives. Significant or potentially significant environmental consequences to each resource area are disclosed, including the direct, indirect, and cumulative effects, both beneficial and detrimental. Combinations of effects occurring over time can produce cumulative effects. Effects are quantified where possible, although qualitative discussions are often necessary.

4.1.1 *Incomplete or Unavailable Information*

The analysis for this EIS was prepared using tabular and spatial databases of pre-fire data combined with satellite imagery of fire intensities (low, medium and high) in a GIS environment. Pre-fire data was collected by Forest Service personnel or contractors for other analyses at varying time frames. Satellite imagery of the fire was provided by the Earth Resources Observation Systems (EROS) Data Center in Sioux Falls, South Dakota. This satellite imagery was collected on September 5 after the fire had been contained. However, smoke and cloud cover from the fire obscured small areas preventing total accuracy. The resolution of the image was 30 square meters therefore differences smaller than this were not detected. The result of combining the Forest spatial database with the satellite image produce an area map with many fragments and rough edges. The tabular data on trees and other resources was then associated with each fragment. This methodology is in accordance with FSM 2435.5, Sec. 1(a).

National Environmental Policy Act (NEPA) Compliance

Use existing information to the maximum extent possible and collect new information only where essential. Tier NEPA documentation to existing environmental documents, such as the Forest Plan environmental impact statement (EIS), wherever possible. Incorporate other documentation by reference and use categorical exclusions, where feasible.

FSM 2435.5, Sec. 1(a).
Revised October 24, 2000

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Field reviews were conducted as part of the Jasper Fire Rapid Assessment. Satellite imagery interpretations were field verified. The Forest also has detailed pre-fire analyses from timber sale projects and grazing projects. Information from the above sources was used in determination of effects for this analysis.

Due to the timing of the analysis and the early onset of snow in the fall, additional field review by resource specialists was limited. Field visits were conducted primarily to address specific resource issues or concerns. The harvest units were selected based on criteria explained later in this document. They are represented on the maps as fragmented blocks with rough edges. During actual field delineation of harvest units, the edges of the units will follow natural contours, slopes, soil types, and tree characteristics as described in the EIS. Therefore there may be discrepancies between the acres and volumes listed in this document and the actual acreages and volumes affected.

4.1.2 Analyzing Effects

Environmental consequences are the effects of implementing an alternative on the physical, biological, social, and economic environment. Direct environmental effects are defined as those occurring at the same time and place as the initial cause or action. Indirect effects are those that occur later in time or are spatially removed from the activity but would be significant in the foreseeable future.

In addition to direct and indirect effects, the IDT considered other similar actions occurring within the burn that could have an additive effect on the environment. These effects are called cumulative effects. These have been divided into past, present, and reasonably foreseeable future actions.

4.1.3 Additional Information on Cumulative Effects

Some past, present, and reasonably foreseeable future actions that could have an environmental effect on the area are listed below. More information on how these may affect each resource is discussed in each section.

Past Actions

During the past century, effective fire exclusion has taken place in the Black Hills. This has led to changes in forest stand structure and stand density on the local and landscape level, as well as fuel build-up on the forest floor.

In April 2000, a large snowstorm occurred in the southern Black Hills. The heavy, wet snow and high winds caused tops and limbs to break resulting in an increase in mortality

of trees and high levels of fuels on the forest floor. This storm damage occurred mainly in the southern part of the Jasper Fire area.

In recent years (since 1987) there have been many timber sales in the Jasper area including 24 large sales (greater than 1.0 mmbf). These sales are listed in the project file. A total of approximately 183 mmbf of timber has been harvested in the area from these 24 sales.

Other past actions that took place on a regular basis included:

- Livestock grazing
- Firewood gathering
- Hunting
- Dispersed recreation
- Infrastructure maintenance
- Noxious weed spraying/control

Present Actions

At the time of the Jasper fire there were five active timber sales conducting harvest operations inside the burn area. These sales were halted under provision B8.33 of the timber sale contract that addresses catastrophic damage within sale area boundaries. Harvest prescriptions were adjusted within sale units. These sales now comprise a total of 12,276 acres and 46.6 mmbf of timber. However, some of the harvest areas were not burned or only underburned with most trees surviving. Of the 46.6 mmbf, there is about 11.5 mmbf of green timber within the burn perimeter still under contract to be harvested. The remaining volume is dead trees.

Dead trees are currently being removed along approximately 96 miles of roads where they are considered a safety hazard. This includes U.S. Highway 16, as well as arterial and collector Forest Development Roads. Only trees which have a potential to fall onto the roadways are being removed. It is estimated that 1,398 acres are being affected by this project.

Salvage logging is also being conducted on many private lands within the burn area. There are about 3,726 acres of private lands inside the fire perimeter. However, some of this land is meadow and would not be harvested.

Reasonably Foreseeable Future Actions

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Felling of dead trees is a foreseeable future action along fences, powerlines, and near buildings and survey monuments to prevent damage to these structures. It is most likely that these trees will be left on the ground. In addition, a future restoration document and decision will specifically address regeneration needs, methods, and locations where aggressive regeneration efforts should occur.

Approximately an additional 125 miles of roads may be cleared of hazard trees in the near future affecting approximately 1,750 acres.

Other activities that normally occur in the project area are grazing and recreation. Grazing and special use recreation permits have been suspended for at least one year pending further analysis. Dispersed recreation including OHV use is currently restricted by an area closure. The closure will likely be lifted on some road once hazard trees are removed. Off-road use access will continue to be restricted pending further analysis.

There are several isolated land areas (surrounded by National Forest) in the Jasper fire that are currently on the acquisitions list for the Black Hills National Forest. Land exchanges within the Jasper fire perimeter may take place between the U.S. Forest Service and individual landowners or organizations in the future.

The South Dakota Department of Transportation has a bridge planned to span Hell Canyon on Highway 16A. There may be an effect to the National Forest from additional road building and support members from the bridge itself.

Additional future actions may include:

- Hunting
- Weed spraying/control
- Infrastructure maintenance
- Dispersed recreation
- Firewood gathering

4.2 Timber Management

4.2.1 Value Recovery

Alternative A proposes no additional removal of trees in the Jasper Fire area. Alternative B proposes removing 56.1 mmbf of timber and Alternative C proposes removing 27.1 mmbf of timber.

4.2.2 Regeneration

The Jasper fire killed vegetation on an estimated 59,000 acres of previously forested lands. During the value recovery phase, some effects of site conditions need to be discussed so that future opportunities are not diminished. Regeneration can be accomplished either naturally or by artificial means such as direct seeding or planting. Natural regeneration is the most desirable from an economic standpoint if favorable conditions can be achieved.

Currently much of the areas where complete tree mortality occurred, the high and moderate burn intensities, do not have favorable conditions for the establishment of regeneration. The sites are not sheltered due to a lack of tree canopy and surface soil temperatures, especially on south and west aspects, will become too high for seedling establishment because of the black ash. On north and east aspects, the soil temperatures may not reach temperatures to cause significant seedling mortality.

Salvage harvest operations, conducted properly, will enhance micro site conditions for the establishment of regeneration. Leaving as much logging slash and woody debris on the site as possible will provide small sheltered areas with micro site conditions conducive to pine regeneration establishment and survival. Providing micro site conditions is most critical on south and west facing slopes due to higher soil surface temperatures experienced on these slopes. This can be done by requiring removal of tops from the tree prior to skidding and the slash left well distributed throughout the harvest unit, especially on south and west facing slopes.

Alternative A will not enhance micro site conditions in the short term since no salvage will be done. Over time as the dead trees rot and fall down there will be some shelter provided along the side of fallen logs. This will occur slowly over a 3 to 15 year period.

Alternatives B and C will provide favorable micro site conditions as a result of logging slash on the ground. The downed woody material will be created over a period of a few months and should provide site protection for at least the next 10 years. This will improve opportunities for both natural and artificial regeneration should a future decision determine a need. Alternative B will provide more favorable micro site conditions than Alternative C since Alternative B will salvage harvest more acres than Alternative C.

Cumulative Effects

There are two other actions already underway within the fire perimeter that have been decided through other environmental documents. These activities involve existing timber sales and hazard reduction along roadways.

There are five previously sold timber sales within the project area; Crawford, Lemming, Crooked/Uncle, Dumbuk, and Limestone. In four of these sales, the purchasers have

4 Environmental Consequences

agreed to contract modifications to salvage fire-killed timber inside the existing cutting units. There is green timber within these units the purchasers still have contractual rights to harvest. In the Limestone sale, the contract was modified to include fire-killed timber outside the existing cutting units since only a small part of the sale was inside the fire, a very small portion of the fire is within the sale area boundary, and the decision for the sale was made prior to the current Forest Plan revision. The modifications were done after the Forest Service completed Supplemental Information Reports (SIR's) to each sales' respective environmental document.

The volume being recovered through salvage in the existing timber sale units is estimated to be 46.6 mmbf from about 12,276 acres.

The other activity that is contributing to value recovery is removing hazard trees along identified roadways. A categorical exclusion was completed to allow for cutting and removal of fire-killed or damaged trees that present a hazard by possibly falling on a road. This is resulting in salvage of an estimated 1.6 mmbf from about 1,398 acres.

Future actions could include another road hazard tree project. Trees could be removed from an additional 125 miles of road affecting approximately 1,750 acres.

As stated previously in this section, the timber purchasers still have contractual rights to harvest designated green trees within the existing cutting units. The recommendation of the J-RAT report and this specialist is to limit cutting of green trees within the fire perimeter to only those that must be removed to access salvage harvest sites. The timber purchasers have indicated a willingness to negotiate contract modifications that will substitute dead volume for live volume. This will result in the cutting of fewer live trees, which will help to provide future wildlife habitat, visual quality, soil and water stabilization, and natural regeneration opportunities.

Alternative A will not provide any dead volume that could be substituted for live volume in the existing timber sales. The timber purchasers will then harvest the remaining designated green timber in their cutting units. Alternatives B and C will provide dead volume to substitute for live volume allowing the Forest Service to negotiate contract modifications that will leave green timber the purchasers currently have rights to harvest within existing cutting units inside the fire perimeter.

4.2.3 Insects

Effects of activities on insect population are expected to be as follows:

- The mountain pine beetles would likely remain at current population levels regardless of harvest level because they don't generally use fire-damaged trees.
- Woodborers would increase regardless of harvest level because they will use non-merchantable dead material as well as the merchantable material.
- Red turpentine beetles would increase regardless of harvest levels because they attack partially burned trees which would not be cut.
- *Ips* beetles would most likely increase regardless of harvest level because they use all size classes of dead material. The amount of increase may be affected by the amount of salvage harvest implemented. Removal of dead and dying trees will remove some of the better quality *ips* habitat.

Alternative A has the highest likelihood of increased insects caused mortality, because it leaves the largest amount of dead and dying timber throughout the area. Alternatives B and C reduce this risk by removing some logs as salvage material. The lowest risk of increasing mortality would be under Alternative B where the most aggressive salvage operations would remove the greatest amount of dead and dying timber.

4.3 Wildlife Habitat

Timber value recovery operations affect only a few of the wildlife species and habitat components in the burn area. Harvest operations can affect the amount of snags and down



woody debris needed by some MIS and TES species. Noise and disturbance due to operations could affect nearby nesting goshawks or hibernating bats. Ground disturbance could affect cave structures or snail colonies. Harvest of dead trees will not affect goals or objectives associated with vertical diversity, thermal cover, cover along roads, forage production, grass/forb structural stage, late succession conditions, turkey roost sites, or forested habitat for most MIS and TES species. Therefore this report will address only those habitats and species likely to be affected by the

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proposed project.

Additionally, bald eagle, white-tailed deer, mule deer, elk, Merriam's turkey, and mountain lion are known to exist in the burn area. These species will be discussed briefly although no effects to these species are expected.

Other species of concern include certain species of land snails listed in Frest 1999.

MIS listed in the Forest Plan and selected for this project are black-backed woodpecker, northern goshawk, Townsend's big-eared bat, fringe-tailed myotis. In addition, Lewis's woodpecker was selected because it is a snag-dependent species strongly associated with burned habitats in the Black Hills. It prefers somewhat different habitat conditions from the black-backed woodpecker.

4.3.1 Snags

Snags numbers were averaged across 6th level watersheds based on the following data and/or assumptions. For areas of high and moderate intensity burn outside of on-going timber sales, green tree data that was collected prior to the fire was used to estimate the size and number of standing dead trees. For areas of low intensity burn outside on-going



sales, an estimate of 4 snags/acre was used based on field observations post-fire. For high and moderate intensity burn areas within on-going timber sales, no snags were assumed to be present since no mitigation measures were in place in these units. For low intensity burned stands inside on-going sales, snag density was estimated to be 1 snag/acre. This was the mitigation agreed to under the Settlement Agreement for these sales. Areas along roads where hazard trees have been removed were assumed to have no snags. Areas outside the fire perimeter but inside the watershed boundaries were assumed to have 1 snag/acre. This was based on data collected in the vicinity for several timber sale projects. These numbers were then averaged on an acre-weighted basis across each 6th

level watershed (except that watersheds that were less than 5 % burned were not analyzed).

Based on this analysis, all of the watersheds in the burn area far exceeded these snag density objectives immediately post-fire as shown in Table 4-1 for Alternative A.

Table 4-1. Estimated snags per acre in each watershed by alternative.

Watershed #	Aspect	Alternative A	Alternative B	Alternative C
101201070404	North	8.8	6.3	8.0
101201070404	South	5.0	4.1	4.7
101201070405	North	10.8	6.3	9.6
101201070405	South	10.9	5.6	9.7
101201070501	North	21.0	10.8	17.2
101201070501	South	16.2	10.5	12.3
101201070502	North	6.4	5.3	5.8
101201070502	South	9.1	6.6	7.5
101201070503	North	5.6	3.7	5.1
101201070503	South	8.3	7.2	8.2

Alternative A would retain all remaining large diameter (greater than 10 inches DBH) snags remaining in the burn. These snags would fall gradually over time with most trees on the ground within 20-30 years. This alternative would provide the most snag habitat in the Jasper Fire area in the short term.

Alternative B would remove most large diameter snags from another 11,067 acres. Mitigation measures would leave snags in harvest units to meet the minimum levels required under the Interim Direction (4 large snags/acre). However, it would be at reduced amounts compared to untreated areas. Areas where harvesting would occur, would provide non-commercial size dead trees within the proposed harvest areas. The number of large snags left on the landscape would be fewer than Alternative A. Under Alternative B, snag levels in one watershed (101201070503) would drop below desired levels on north-facing slopes. All other watersheds would meet Interim Direction for overall snag numbers.

Alternative C would remove many large diameter snags from about 5,224 acres. Mitigation measures for this alternative would leave 17 snags/acre to provide the minimum snag density needed for nesting by Lewis’s woodpeckers. This is considerably higher than the Interim Direction level. Areas where harvesting would occur, would provide non-commercial size dead trees within the proposed harvest areas. The number

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of large snags would be fewer than Alternative A but greater than Alternative B. All watersheds would meet Interim Direction for snag numbers.

Interim Direction also stipulates that 25% of these snags should be greater than 20 inches DBH or of the largest diameter class available. For the purposes of this analysis, the assumption was made that none of the watersheds met the goal for 20 inch snags. However, mitigation measures included in either alternative would retain snags from the largest diameter class available. Therefore the largest snags available in all harvest units would be retained for wildlife habitat.

The dead trees left in untreated areas and treated areas would provide snag habitat for the short term and fall over time. Based on research recently completed on the Black Hills (Smith and Lentile 2000), no alternatives are likely to meet the interim direction densities after 30 years including the No Action alternative. After 30 years, snags would only be available in those lightly burned or unburned areas within the fire perimeter. Therefore preserving these green areas is critical to cavity-dependent species in the future. This project could help preserve some of those green areas by identifying dead stands to be traded for green trees still under contract inside the burn.

Cumulative Effects

Large diameter snags are also being removed from 12,276 acres within currently active timber sales. Mitigation measures to preserve some snags have been implemented on some of these sales. Hazard tree removal of large diameter snags is also occurring on approximately 1,398 acres. Cumulatively, under alternative B, snags will be removed from approximately 30% of the burn area. Under Alternative C, most large snags will be removed from approximately 20% of the burn whereas 15% of the snags will be removed for Alternative A.

Finally, it must be recognized that the majority of the fire-killed snags will fall over the next 30 years. At that time, and for several decades thereafter, there will be a great paucity of snags, particularly in the high mortality areas. Snags will not be present in these portions of the landscape until newly regenerated trees become mature and die, likely in 100 to 150 years. The low intensity burn areas will provide snag recruitment and foraging substrates for these species after most of the snags have fallen in the high/moderate burn area. Leaving trees with greater than 25% live crown will retain future snags as well as seed source for future replacement trees.

Additional projects, which may remove snags in the next 1-3 years, include salvage logging on private lands within the burn. Snag removal is also likely adjacent to fences, power-lines, range improvements and survey monuments. An additional 125 miles forest development roads may be cleared of dead trees greater than 8 inches DBH for safety reasons in the next year. This may affect about 1,750 additional acres.

The action alternatives also present an opportunity to exchange dead stands with green stands in existing timber sales. These green stands represent future snag habitat. Preserving green trees now can benefit snag dependant wildlife species in the future by providing replacements for existing snags most of which will fall within the next 20 to 30 years leaving a deficit of habitat.

4.3.2 Down Wood

Overall about 62% of the forested portions of the burn could provide adequate down wood under Alternative A. This is based on the total number of acres inside the burned area that have trees larger than 10 inches DBH.

Value recovery operations have the potential to remove snags needed for large diameter down wood if appropriate mitigation measures are not applied. The five currently active timber sales that were re-negotiated under the catastrophic provision contained mitigation measures to provide down wood in harvested units by leaving cull logs well distributed in the units. Therefore treated areas should continue to provide adequate amounts of down material although those levels will be lower than untreated areas.

For Alternatives B and C, mitigation is recommended to ensure that adequate down wood is retained. (See the Mitigation Measures section of this report for specific recommendations.) Since Alternative B treats more acres than Alternative C, less total down wood would be available in the entire burn area under Alternative B. Alternative C would provide more down wood than Alternative B but less than Alternative A. Alternative A would retain the highest levels of down wood in the burn but all alternatives would meet Forest plan direction for down wood in the short term. In the longer term, intensively burned areas will only provide large down wood until all snags fall and down logs rot away. This may take 50-60 years. After that there will be little large down wood until the new trees begin to die and fall to the ground. This is not likely to begin happening for at least 100 years post-fire. Thus there will be a period of many years where there will be few large down logs within the burn.

Cumulative Effects

Additional future projects, which may decrease future down wood, include salvage logging on private lands within the burn. In most cases private landowners do not leave large down wood for aesthetic and fuel reduction reasons. These areas most likely will be devoid of down wood. In a buffer strip on Forest Service lands adjacent to private property, down wood will likely be piled and burned to address similar concerns.

There were no provisions in the roadside hazard tree removal project (see Snag section previously) to leave down wood along roads. These areas are accessible to fuelwood gatherers and any large logs left are likely to be removed.

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Snag removal to protect fences, power lines, range improvements and survey monuments is likely to occur. Commercial removal of these snags is unlikely due to long timeframes and low volumes. Therefore these snags are expected to remain on the site as down wood.

4.3.3 Goshawks and Goshawk Nest Stands

Value recovery operations are not expected to adversely affect goshawk habitat because only dead trees in moderate and high intensity burn areas will be harvested. No alternatives will reduce available nesting habitat for goshawks. Both action alternatives provide opportunities to trade fire-killed trees for unburned stands within the burn that can provide future nest stands. The No Action alternative will not provide these opportunities to protect future nesting habitat.

The recovery of goshawk foraging and nesting habitat destroyed in the fire will take a very long time. As the burn regenerates, the remaining green areas will be the first to develop into suitable nest stands. Younger regeneration around these stands will provide foraging habitat. Therefore preserving green areas inside the fire perimeter is important to goshawks for the future. This project could help preserve some of those green areas by identifying dead stands to be exchanged for green stands still scheduled for harvest.

A seasonal restriction will apply to any harvest operations within ¼ mile of any active nest site from March 1 to August 31. Therefore no adverse effects are expected from any alternative to goshawks or goshawk habitat.

Cumulative Effects

The most significant cumulative effect to goshawks was the effect of the fire itself, which destroyed thousands of acres of suitable nesting and foraging habitat. Cumulative effects to this species include current active timber sale contracts, which entitle the purchaser to green trees within the burn area. Negotiations with purchasers to maintain the patches of green trees have been completed. Six stands in two separate known goshawk territories were protected. However, there was not sufficient dead volume within two sale areas to trade for all of the unburned stands under contract. Most of these stands will be commercially thinned. Commercial thinning will increase tree growth and provide larger mature trees sooner than if they were not thinned. Thinning will reduce potential nesting habitat for the short-term but will enhance future nesting habitat. In addition, openings created by the fire in some of these stands will regenerate with young seedlings, providing a more diverse stand structure suitable for goshawk prey species.

4.3.4 Old growth/Late Succession Forest

Alternative B would harvest 306 acres that previously were designated for old growth management or had good old growth characteristics.

Alternative C would harvest one designated old growth stand (53 acres) to address visual concerns around private land.

Cumulative Effects

Approximately 90% of Jewel Cave National Monument experienced a moderate to high intensity burn. Much of the ponderosa pine was in old growth condition. There are no plans to harvest timber in Jewel Cave.

No old growth stands are planned for harvest in any of the on-going timber sales. None were affected by hazard tree removal along roads. Since the trees are dead, old growth values won't be further diminished by this action.

4.3.5 Caves

Value recovery operations have the potential to damage cave resources primarily by collapsing karst roofs under the weight of heavy equipment. Noise and vibration from salvage operations may disturb hibernating or roosting bats. Three caves are located near harvest units proposed under either action alternative. None are known to be used as hibernacula or maternity roosts. However, to protect the cave structure and minimize disturbance to these caves, a 500' buffer would be maintained around the cave entrance.

No adverse impacts to caves from value recovery operations are expected under any alternative.

Cumulative Effects

The caves in the Jasper Fire experienced significant human disturbance prior to the fire. Cave enthusiasts know the majority of the caves on the National Forest, the Jasper Cave being the most popular for spelunking. Small caves that are used by the public usually have had entrances modified for access, and campfire rings, debris and damage to the cave walls are present (graffiti and soot). This type of disturbance has the most significant adverse impact on caves.

4.3.6 Bats

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Value recovery operations can affect snag habitat and cave habitat as discussed previously in this report (see Snag and Cave discussions in this report).

4.3.7 Woodpeckers

Information for the effects of the alternatives is based on pre-fire forest conditions collected from stand exam (Stage II) surveys and LANDSAT fire intensity. Ground measurement plots were used to refine the LANDSAT data. Table 4-2 is a comparison of the alternatives in regard to Lewis's and black-backed woodpecker habitat. All standing snags will provide foraging for both species. Some stands that are left untreated but did not fit the analysis criteria may also be available for nesting habitat. The data from Stage II is limited and the following figures may underestimate actual conditions.

Table 4-2. Comparison of Alternatives on Lewis's and black-backed woodpecker habitat.

	Alt. A	Alt. B	Alt. C (acres)
Lewis's Woodpecker			
Good Nesting Habitat ¹	6182 (7%)	1861 (2%)	4289 (5%)
Marginal Nesting Habitat ²	3721 (5%)	1436 (2%)	2093 (3%)
Black-backed Woodpecker			
Nesting/Foraging Habitat ³	929 (1%)	433 (<1%)	828 (<1%)

¹AMD_PC>=40, BA>=60, QMD>=9.0 inches.

²Met any of the Good Nesting Habitat criteria but did not meet all the criteria.

³AMD_PC>=60, BA>=120, QMD>=8.5 inches.

Alternative A provides the most foraging and nesting habitat for Lewis's and black-backed woodpecker with more continuous blocks of moderate canopy habitat that would be beneficial for movement and dispersal for both species. There is a minimal amount of black-backed woodpecker nesting habitat post fire that would support an eruption of this species in the Jasper fire area. Use of the area is possible by black-backed woodpeckers, but other factors may play into use of marginal nesting habitat such as lack of availability in areas outside of the burn.

For the action alternatives, value recovery operations will reduce the available foraging and nesting habitat for Lewis's and black-backed woodpecker. Nesting habitat is more isolated depending on the acres treated. This will limit the use of the area by these species especially where nesting habitat does not meet the minimum requirements. Alternative B provides the lowest amount of foraging and nesting habitat for Lewis's and black-backed woodpeckers. Alternative C provides more foraging and nesting habitat

than Alternative B. For logged areas, most of the large diameter snags will be harvested, decreasing the use of these areas significantly by Lewis's and black-backed woodpeckers.

Cumulative Effects

Cumulative effects regarding the availability of snags for these woodpeckers is previously discussed in the snag section of this chapter.

The Jasper Fire created a large area of suitable habitat for these species that was not available prior to the fire. In addition, mountain pine beetle activity in the Beaver Park area and throughout the forest provides additional areas of suitable habitat. Old growth and wilderness areas also provide suitable habitat. However, adequate nesting habitat may be adversely impacted by active timber sales, fuel wood gathering, and hazard tree removal.

4.3.8 Northern Saw-whet Owl

Effects on the saw-whet owl would be similar to effects on the Lewis's woodpecker under all alternatives.

4.3.9 Deer and Elk

Forest wide standards and guidelines provide for the management of big game through meeting habitat effectiveness requirements when implementing projects. It also establishes specific management direction within most of the Management Area standards and guidelines. Most of those standards and guideline rely on the model HABCAP.

The model HABCAP was not utilized for this project to determine habitat effectiveness. The HABCAP model was designed as a tool, to reflect wildlife response to vegetation composition and structural stage. In addition, the model assumptions are dependent upon the species carrying capacity in terms of the amount of forage available. The model measures the ability of the animal to gather this forage and is modified by cover and roads. The Jasper Fire modified the existing vegetative composition and structural stage, where 71% of the area became structural stage 1 (grass/forb). The remaining 24% were reduced in stand structure and seral stage. With the proposed action, there will not be a change in this vegetation composition and structural stage (Alternative A) and there are no additional permanent roads that will be created to harvest the timber. When there is no change in structure, the model would not reflect a change between alternatives for wildlife. Therefore, this management tool is not effective in determining the effects of to big game for this analysis.

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Habitat effectiveness is defined as the capability of an area to support elk or deer based on forage, cover, open roads, and spatial distribution of the three factors, regardless of the time of year. It is assumed, through the loss of cover, (e.g. spatially, quantity and quality), that habitat effectiveness would not meet Forest Plan standards and guideline as a result of the fire. The proposed action and its alternatives will not further impact habitat effectiveness.

There are currently 39,959 National Forest acres within the Jasper fire area with a big game winter range emphasis. This Management Area (5.4) includes an objective of providing big game thermal cover on 20 percent of the forested area. Prior to the fire, there were approximately 3,703 acres of thermal cover (based upon RIS queries of ponderosa pine stands with greater than 70 percent canopy closure) or 9 percent of the forested portion of the management area. As a result of the fire, there are now 135 acres of thermal cover, or less than one percent of the forested portions of the 5.4 Management Area within the Jasper fire. The proposed action and its alternatives will not decrease thermal cover in the area.

In Management Area 5.1, the Forest Plan emphasis is on resource production emphasis such as wood products, water yield and forage production. There is approximately 38,546 acres of this management area within the Jasper Fire perimeter. There is little management direction for management of big game except for maintaining habitat effectiveness. Most of this management area is regarded as summer habitat for big game. Habitat effectiveness does not meet Forest Plan standards and guidelines in Alternative A. The proposed action and its alternatives will not further impact habitat effectiveness in Management 5.1.

The 5.4 Management Areas have a Forest Plan objective to provide forage on at least 20 percent of the planning units. Stands that provide forage include structural stages 1, 3A, and 4A. Prior to the fire there were approximately 18,731 acres of forage producing structure, or 47 percent of the 5.4 Management Area within the Jasper fire area. Post fire estimates indicate that there are now 36,878 acres of forage producing structure accounting for approximately 92 percent of the 5.4 Management Areas within the Jasper fire area. The proposed action and its alternatives will not impact forage production. Habitat effectiveness does not meet Forest Plan standards and guidelines in Alternative A. The proposed action and its alternatives will not further impact habitat effectiveness in Management 5.4.

The ability to disturb local populations of big game animals has increased due to the fire. Elk especially are susceptible to disturbance. Hiding cover between roads was lost in many areas. There are 508 miles of road within the perimeter of the fire, or about 4 miles of road per square mile of land, which further decrease habitat effectiveness (Perry and Overly 1977, Lyon 1983). Although few animals remain in the burn this winter, many are likely to return to their home ranges this spring as re-growth of grasses and shrubs begins.

Based on current literature, the Jasper Fire area, will likely increase big game numbers due the forage created.

Value recovery operations have the potential to increase disturbance to these animals. Some animals may be displaced during harvest operations. However, animals have ample other areas to move to that are not being harvested. Disturbance will be of short duration since harvest operations under this proposal are expected to be completed by September 2001. Currently there is an area closure to public use of motorized vehicles in the burn except on designated main roads. This will help reduce disturbance to big game while the closure is in effect.

Value recovery operations will not affect cover or forage levels in the burn since only dead trees will be harvested. There will be no direct effects from Alternative A, B, or C to big game forage. Alternatives B and C will reduce the amount of dead/downed wood, that might provide some security for bedding and calving/fawning. Alternative A will not disturb animals affected by lack of cover. Alternative B will create more disturbance over a larger area than Alternative C.

Alternatives B and C would provide an opportunity to preserve some green stands within the burn that are currently included in a timber sale contract and scheduled for harvest. These stands increase edge and provide rare cover patches in very open landscape. Retaining these cover areas is important in making the sudden increase in forage useful to big game animals.

Cumulative Effects

As discussed in the Goshawk section previously, there are some green stands inside the burn that will be treated under on-going timber sale contracts. Cumulative effects of removing green trees in these sales will reduce the amount of green forest cover available to big game animals. However, these effects will be short-term. Commercial thinning of these stands now will create larger diameter stands with crown closure that will provide thermal cover in the future. In areas with more open stands, scarification of the soil by the fire and harvest operations will create a fertile seedbed for pine seedlings. This will promote development of future hiding cover for deer and provide fawning and calving cover for both deer and elk.

Cumulative effects of ongoing sales and proposed harvest may cause additional disturbance for big game animals through the summer of 2001. Due to the lack of cover, normal traffic on the existing road system will create higher disturbance levels than existed before the fire. The forest will make a decision regarding future travel management within the burned area later this year (2001) in a separate document. Additional impacts may include decrease of security due to hunting and loss of cover and loss of secure calving habitat.

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4.3.10 Merriam's turkey

Value recovery operations are not expected to affect turkey habitat since only dead trees will be harvested. As the area re-vegetates, turkeys are expected to return.

Cumulative Effects

No direct, indirect, or cumulative effects are expected.

4.3.11 Mountain lion

Value recovery operations are not expected to affect mountain lions who will likely follow their prey.

Cumulative Effects

No direct, indirect, or cumulative effects are expected.

4.3.12 Snails

Unmitigated value recovery operations could add to disturbance of the seven locations of snail colonies with uncertain effects. Removal of standing dead trees could make the sites warmer and drier adding to the effects of the fire. Removal of these trees also precludes their falling to the ground as down woody debris later slowing the re-accumulation of a duff layer. Heavy duff layers are a characteristic of snail locations.

Mitigation measures are applied that would avoid disturbances to these snail colonies in compliance with the Forest Plan interim direction. These measures would apply to both action alternatives.

Cumulative Effects

The greatest effect to snails and snail habitat resulted from the Jasper Fire. With mitigation measures, no additional cumulative effects are expected. There may be some adverse effects to unknown colonies.

4.3.13 Butterflies

Value recovery operations are not expected to affect butterfly habitat since harvest will not take place in riparian areas or open meadows.

Cumulative Effects

No direct, indirect, or cumulative effects are expected.

4.3.14 Amphibians and Reptiles

Value recovery operations may reduce habitat for reptiles that use down logs. Mitigation measures are recommended that would leave down wood in harvest units to provide this habitat. However, it would be at reduced amounts compared to untreated areas. See the Down Wood section of this report.

Value recovery operations are not expected to affect amphibian habitat since harvest will not take place in riparian areas, springs or seeps. However, runoff from bare soils across the fire area could cause additional sedimentation in riparian areas.

Cumulative Effects

The greatest effect to amphibians and reptiles resulted from the Jasper Fire. With mitigation measures, no additional cumulative effects are expected.

4.3.15 Threatened and Endangered Species

A biological assessment was completed for this project. It was determined that value recovery operations under this proposal will have no effect on bald eagles or their habitat.

Cumulative Effects

No direct, indirect, or cumulative effects are expected.

4.3.16 Sensitive Species

A biological evaluation was completed for this project. A determination of “may adversely impact individuals but not likely result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range-wide” is made for the following species: pygmy nuthatch, black-backed woodpecker, northern three-toed woodpecker, Lewis’s woodpecker, Townsend’s big-eared bat, fringed-tailed bat, tiger salamander, pale milk snake, Black Hills red-bellied snake, northern leopard frog,

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tawny crescent butterfly, and regal fritillary butterfly. A determination of “may beneficially impact” is made for the following species: merlin, western burrowing owl, upland sandpiper, loggerhead shrike, and black-tailed prairie dog.

4.4 Noxious Weeds

Known noxious weed infestations within the fire perimeter will flourish. New invasive species not presently found in the area could become established where there is no longer ground cover.

The greatest increase in noxious weeds is expected to occur in high and unclassified intensity burn areas. Up to a 30 percent increase of weeds would be expected in these areas. The canopy cover that once shaded underlying vegetation is no longer there. The exposed topsoil will provide an excellent seed bed for any non-native species to invade.

A 20 percent increase in coverage of noxious weeds is expected to occur in areas which are classified as moderate intensity. These areas still have some organic litter. The needle cast from dead and dying trees has begun to cover barren soils and vegetative cover was not completely consumed.

A 10 percent increase in coverage of noxious weed is expected to occur in areas which received a low intensity burn. These areas burned with a creeping ground fire that did not remove significant vegetation or duff layers.

Richard Rabern of Weston County Weed and Pest provided original estimates on weed spread. A phone call with an expert from the University of Wyoming on January 31, 2001 confirmed that a 30 percent increase could be expected in high intensity burn areas within the first year, especially in weeds which have a seed pappus. Noxious weeds within the Jasper fire area containing a pappus would include Canada thistle, musk, other thistles, and spotted knapweed. Leafy spurge could increase 12 to 14 percent a year from parent plant, since those seeds contain no pappus. The 30 percent increase in spread will be used as an estimate for this project analysis, since the majority of the inventoried infestations are of the thistle variety.

These estimated percentages, of 30, 20, and 10 percent increase in spread for high, moderate, and low intensity burn areas respectively, apply to areas where no seeding occurs (i.e. non-salvaged areas).

Table 4-3 below, shows burn intensity, acres within burn intensity, acres of known infestations, acres of potential spread (acres of burn intensity minus acres of known infestations), estimated increase of spread, and estimated percent acres of increased spread.

Table 4-3. Weed spread by burn intensity.

Intensity	Ac/Intensity	% Weed Coverage	Estimated Acres
High/Unclassified	37,266 – 788 = 36,478	30%	10,943
Moderate	26,053 – 663 = 25,390	20%	5,078
Low	20,118 – 183 = 19,935	10%	1,994
Total Acres			18,015

Action Alternatives B and C

There are approximately 231 acres of noxious weeds inventoried within proposed salvage sites under Alternative B and 126 acres located within proposed salvage sites under Alternative C. These sites fall in the High/Unclassified and Moderate intensity burn areas.

The Burned Area Emergency Rehabilitation (BAER) report and the Jasper Rapid Assessment Team (JRAT) report stated no seeding was necessary for watershed stabilization due to fire intensity. Seeding which would occur under salvage operations, in both alternatives, would be for re-vegetating areas of disturbance. Despite these recommendations, seeding with grasses and shrubs is the first step in fighting noxious weeds as it provides invaluable competition.

Salvage operations occurring within sites that have noxious weeds would be more likely to accelerate the spread of weeds if operations take place when plants are in the seed stage. Areas south of Highway 16 would probably go to seed first with areas north of Highway 16 going to seed in later months due to higher elevations and cooler temperatures. Seed set will also be dependent on moisture regime and temperatures. Plants tend to mature more quickly when more moisture is received and warmer temperatures occur.

Alternative B

Alternative B would harvest 11,067 acres of National Forest System lands. Within this area, 231 acres have known noxious weed infestations.

Approximately 116 acres of noxious weeds are within 5,307 acres of proposed salvage in the high and unclassified areas (5,191 acres not infested), and 115 acres of noxious weeds are within 5,074 acres of proposed salvage in the moderate burn area (4,959 acres not infested).

Because of present conditions, it is estimated that noxious weeds could possibly increase by 30 percent in the high and unclassified burn areas and 20 percent in the moderate burn areas where no harvest is taking place. In sites proposed for salvage harvest, a 15 percent

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increase in spread of noxious weeds is expected. The reduction in estimated spread is due to seeding of landings and skid trails.

Table 4-4. Weed spread by burn intensity (Alternative B)

Intensity	Ac/Intensity	% Weed Spread	Estimated Acres
High/Unclassified	31,287 non salvaged area	30%	9,386
	5,191 salvaged acres not infested	15%	779
Moderate	20,431 non salvage area	20%	4,086
	4,959 salvage acres not infested	15%	744
Total Acres			14,995

Alternative C

Alternative C consists of 5,224 acres of National Forest System lands. Within this land, 126 acres have known noxious weed infestations.

Approximately 53 acres of noxious weeds are within 2,602 acres of proposed salvage in the high and unclassified areas (2,549 acres not infested), and 73 acres of noxious weeds are within 2,619 acres of proposed salvage in the moderate burn area (2,546 acres not infested).

Because of present conditions, it is estimated that noxious weeds could increase to 30 percent coverage in the high and unclassified burn areas, and 20 percent coverage in the moderate burn areas where no harvest is taking place. In sites proposed for salvage harvest, a 15 percent increase in spread of noxious weeds is expected. The reduction in estimated spread is due to seeding of landings and skid trails.

Table 4-5. Weed spread by burn intensity (Alternative C)

Intensity	Ac/Intensity	% Weed Coverage	Estimated Acres
High/Unclassified	34,199 non salvaged area	30%	10,260
	2,549 salvaged acres not infested	15%	382
Moderate	22,844 non salvage area	20%	4,569
	2,546 salvage acres not infested	15%	382
Total Acres			15,593

Areas currently being salvaged under SIRs for current timber sales, and roads being cleared of hazard trees within the Jasper Fire perimeter activities are being conducted on frozen ground. This should be beneficial, as minimal disturbance to the soil should occur. The seeding taking place on landings and skid trails in areas under the SIRs, will be a benefit when spring thaw takes place and seed will have optimum time to grow.

Monitoring plots proposed by Colorado State University (CSU), will allow for treatment on any new invasive species that may invade, and will allow for a treatment buffer on existing roads in plots.

Under alternatives B and C, application of noxious weed mitigation measures is expected to effectively reduce the effect of salvage harvest activities on the spread and establishment of noxious weed populations within the project area. These measures include application of seeding, herbicide, and biological control agents as warranted within the project area to achieve desired short-term (3 – 5 years) control of noxious weeds (Mitigation Measures, Section 2.4.3.). Based on historical Forest monitoring of timber harvest impacts toward promoting noxious weed invasion, these mitigation measures are expected to be short-term in effect lasting from one to three years without depending on weed densities. Long-term maintenance of these mitigation measures (5-10 years) is needed to fully attain desired control and containment of noxious weed spread in the project area. Toward this end, the Forest will incorporate management of the Jasper project area into the Forest-wide noxious weed management plan.

Environmental effects and the attendant risks of herbicide and biological control application on National Forest System Lands have been documented and approved in the “The Risk Assessment for Herbicide Use In Forest Service Regions 1, 2, 3, 4, and 10 and on Bonneville Power Administration Sites” (USDA 1992). This document has been approved by the Environmental Protection Agency (EPA) as a guiding document for application of these agents on public lands to manage noxious weed population in accordance with Forest Plan direction.

Determinations in the USDA Risk Assessment conclude that application of herbicide and biological control agents in accordance with EPA approved label instructions will produce no adverse environmental impacts to the human/ecological environment. Accordingly, mitigation measures including herbicide/biological control applications for the Jasper Value Recovery Project have been analyzed against the Risk Assessment and found in compliance with application directions and anticipated effects. Accordingly, this analysis and associated herbicide/biological control agent prescriptions have been incorporated in this analysis by reference. Detailed information regarding the effectiveness of these herbicides on the Hell Canyon and Mystic Ranger District is included in the project file.

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Cumulative Effects

Cumulative Effects are the “added” incremental impacts of implementing the proposed project with other past, present, and reasonably future foreseeable projects/actions within the analysis area. As proposed, implementation of Alternatives B and C will have no added impacts toward increasing the spread and establishment of noxious weeds in the project area. Moreover, implementation of these alternatives is expected to reduce impacts of past/present projects and actions within the area that have increased noxious weed invasion. These projects include timber sales implemented in and adjacent to the project area during the past decade. Implementation of proposed noxious weed mitigation in alternatives B and C will reduce the spread and establishment of noxious weeds from on-going salvage activities adjacent to the project area.

Under Alternative A (No Action), increased spread and establishment of existing noxious weed populations is expected to occur in absence of management. Implementation of the Jasper Value Recovery Project provides a management opportunity to mitigate and contain these predicted increases. As a result, selection of alternative A is expected to result in an incremental increase in noxious weeds as a result of the Jasper wildfire incident and the influence of past/present timber management.

Under all alternatives, timber salvage occurring on private lands will have an effect on weeds on National Forest System lands, from a standpoint of whether or not private individuals plan to seed or treat any infestations that exist on their land. If individuals are making an effort to treat private lands, the Districts need to treat National Forest System lands adjacent to private properties in a joint effort, as well as working with Custer and Pennington County Weed and Pest offices.

4.5 Recreation/Special Uses

Recreation Special Uses

There is little or no impact expected from any of the proposed alternatives on developed recreation, dispersed recreation, and recreation special uses. Value recovery harvest operations would be a short-term typically lasting one year or less. Harvest operations would occur during the 2000 season while the trails and areas are closed to public use.

Outfitter and guide trails, recreation special uses routes and campsites, and snowmobile trails, will be shown as protected features in the areas where they are adjacent to, or bisect harvest units. This will ensure that trail marking is maintained and that slash is not left behind in these areas.

There is little or no impact expected from any of the proposed alternatives on utility lines (power and communications) in the area. Alternative B proposes activity adjacent to approximately 1.0 mile of power line. Alternative C proposes activity adjacent to 3/8 mile of power line. The removal of trees in harvest units will complement the clearing of the utility line corridors. All the communication lines are underground and will not be impacted.

Cumulative Effects

The greatest impact to recreation, lands and special uses were the effects of the fire itself. Due to the fire, there is currently an area closure in place for all public access. No cumulative effects are expected from harvest operations.

4.6 Heritage Resources

All eligible or potentially eligible prehistoric, historic, traditional cultural or sacred properties will be protected through the implementation of mitigation measures, the compliance process that is mandated by Section 106 of the National Historic Preservation Act, and all recommendations outlined in the heritage resource reports.

Alternative A (no action): This alternative proposes no action; therefore, there will be no effect to heritage properties.

Alternative B: There will be no effect from this alternative providing that all eligible, potentially eligible, Traditional Cultural Properties, and culturally significant areas are avoided or have mitigations developed in consultation with the State Historic Preservation Office and Native American Tribes. Compliance will be completed and protection measures will be in place for all known sites within the areas currently surveyed and the additional 5,443 acres yet to be surveyed.

Alternative C: This alternative will analyze 4,809 acres that have been previously surveyed with heritage inventories. There will be no effect to known sites on these 4,809 acres. All eligible, potentially eligible, Traditional Cultural Properties, and culturally significant areas will be avoided or have mitigations developed in consultation with the State Historic Preservation Office, Native American Tribes. Compliance will be completed and protection measures will be in place for all known sites within the areas currently surveyed and the additional 415 acres yet to be surveyed.

Timber management will result in various degrees of soil disturbance. Timber harvesting, skid trails, temporary road use, landings, “yarding” of timber, and piling and disposal of slash piles can adversely affect unidentified heritage resources. In comparing the alternatives, Alternative B would disturb the greatest number of acres, followed by

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Alternative C. Alternative A would result in no ground disturbance. As the amount of potential ground disturbance increases the potential for disturbance and adverse effect to unidentified heritage resources also increases.

Under Alternatives B and C, disturbance to heritage resources will be minimized through identification and avoidance or mitigation measures. The Forest will comply with Section 106 of the National Historic Preservation Act under each alternative.

Effects on Heritage Resources from Roads

Unidentified heritage resources can be adversely affected by road construction and reconstruction. Adverse effects also occur under certain conditions through use of temporary roads and road maintenance activities. Effects to heritage resources are of particular concern where two-track roads are subject to maintenance and use as temporary roads. In most cases mitigation measures which use barrier cloth and additional fill material can reduce damage to heritage resources.

Alternative B would result in the greatest number of miles of road and hence have the greatest potential to affect heritage resources, followed by Alternative C. Alternative A would result in no potential to effect heritage resources.

Under each alternative disturbance to heritage resources would be minimized through identification and avoidance or mitigation measures. The Forest would comply with Section 106 of the National Historic Preservation Act under each alternative.

Cumulative Effects

The most recent cumulative effect to heritage resources was from the 83,510-acre Jasper Wildfire that occurred in August and September of 2000. A total of 100 miles (160.93 kilometers) of bulldozer line, hand line, staging areas, and supply drop points represent the disturbances caused by suppression efforts on the Jasper fire. General guidelines call for either mechanical or hand rehabilitation of bulldozer fire-lines depending on the significance of an individual property. The Forest has recommended that seven of these newly discovered sites exhibit high potential for research and public benefit and should be considered eligible for nomination to the NRHP.

A total of 68 previously recorded eligible and potentially eligible heritage properties were located within the Jasper Fire perimeter during the research for the fire suppression project. An estimated 149 additional sites, evaluated as not eligible for the NRHP, are also located within the fire impact area. The eligible and potentially eligible sites were field inspected for direct fire and fire suppression impacts.

Two prehistoric sites were impacted by construction of fireline with bulldozers. The impact was not severe and hand rehabilitation of the fireline is recommended. There were no other sites impacted by suppression activities.

Fourteen sites were exposed to high levels of fire intensity. Historic properties containing wood features were severely impacted. Open surface scatters of lithic material were also altered in varying degrees by high fire intensity. Eight sites were exposed to moderate levels of fire intensity while 13 sites were exposed to low levels of fire intensity.

Initial site inspections indicate the fire was generally of high intensity and low duration. It is possible that buried components were not heavily impacted unless burning stumps and roots were present. None of the impacted properties were submitted to the BAER team as an emergency stabilization need, although stability of several sites are of long-term management concern.

4.7 Range Resources

Impacts to the range resource are mainly centered around changes in forage amount and quality resulting from the fire. The proposed action will not have a direct affect to the range resource.



An indirect effect will be the amount of down material left from the value recovery process. It is anticipated that down woody material will accumulate in the high/moderate burned areas. This may become an actual physical barrier to livestock entering these areas and also may inhibit vegetation recovery. The removal of a portion of the burned material in the recovery process will help to clear these areas and encourage re-vegetation by species, which are favored by livestock.

Alternative A

This alternative will not have a direct affect to the range resource. Alternative A would result in the highest levels of down woody material. Natural re-vegetation would

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probably occur quickly since trees would not fall immediately. However, access for livestock to this forage would decrease over time.

An indirect effect may be the lost opportunity to remove woody material from the high/moderate areas and thus losing the potential for increased forage that would be available to livestock.

Alternative B

Alternative B is preferred for the range resource due to this opportunity to remove woody material and allow vegetation that is normally associated with meadows or openings to become established quickly. It would also remove future down material allowing more access for livestock and ensuring better livestock distribution.

The value recovery process also provides an opportunity to clear trees around existing improvements.

Fences, water developments, and pipelines are present in the areas being proposed to log. Many of these developments were damaged during the fire, but will need to be protected during logging activities.

Alternative C

Alternative C will have similar effects as Alternative B but to a lesser degree. Since fewer acres will be harvested, there will be more down wood than Alternative B and less than Alternative A.

Cumulative Effects

The fire itself has had the greatest affect on the range resource. Fire frequency and intensity has in the past shaped the Black Hills landscape into a mosaic of meadows and savannah type forests. Thus, it is anticipated that the quality and quantity of the forage will increase for a period of time. This increase in forage is transitory in nature though as seedlings become established and the canopy closes. As the canopy closes the species mix will change to a shade tolerant mix that is not as desirable to livestock.

Removal of hazard trees along roads, fence lines, etc. will allow better access for livestock and permittees.

4.8 Hydrology/Soils

Proposed actions that have the potential to affect hydrologic function, erosion, and downstream water quality include 11,067 acres of salvage logging for Alternative B and 5,224 acres of salvage logging for Alternative C and associated temporary roading. The GIS analysis of the proposed units have identified some sites that may have some potential to adversely affect hydrologic function, erosion and downstream water quality.

Small portions of proposed harvest units are located on soils with severe erosion potential and/or mass wasting potential. To assure that adverse affects do not occur, these areas will be avoided during timber sale unit layout.

Direct/Indirect Effects: Salvage logging of dead timber will not affect evapotranspiration. Surface runoff may be affected in localized areas due to disturbance associated with tractor skidding and landing. However, this effect can be mitigated by implementing applicable Best Management Practices (See Appendix C), which include proper layout and design of skid trails and landings. In post-fire environments, roads generally have the largest potential to intercept and concentrate surface runoff. Skid trails also have this potential, but to a lesser extent because they do not have cut and fill slopes and generally follow the contour of the landscape. These conclusions are based on research summarized by Melver and Starr (2000).

The fire will affect soil and ground water recharge. One affect is that there will be more water available. Where the fire killed the trees, the trees will not be using the water that it used to, because there will be no evapotranspiration in the dead trees. This water will be available and this would have an effect on soil and ground water recharge. Another effect that is negative is that the fire can decrease the infiltration capacity. In the high and moderate intense burned areas, most of the organic material was removed. The organic material used to absorb the water and allow it to infiltrate. With the organic material consumed by the fire, there is nothing to absorb the water and this water may runoff into a stream channel instead of being absorbed and available for soil or ground water recharge on site. Once the water is in the channel, it again is available to ground water recharge in recharge zones. However, if there is a lot of water in the channel, it may exceed the ground water recharge abilities and continue as streamflow. Mitigation measures would be in place to remove all activity slash from all entrenched channels. Another negative effect is that the ash can seal areas, reducing the infiltration capacity, again reducing the water available for soil and ground water recharge. All of this is dependent upon how the precipitation comes. If it comes slow and gentle, more will infiltrate and be available for soil and ground water recharge. As the intensity of the precipitation increases, more will runoff. The negative effects will be reduced over time, as the watersheds recover with new vegetation and the organic material rebuilds on the soil surface.

Salvage logging will not have an affect on ground water recharge, providing Best Management Practices and mitigating measures are followed.

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Cumulative Effects: Cumulative effects are analyzed for each of the 6th level watersheds that overlap the project area (Tables 4-6 through 4-11). Past and present land uses within the watersheds include timber harvest, roads, livestock grazing, recreation and private land. As discussed in Chapter 3, the Jasper wildfire burned approximately 83,510 acres. Five timber sales are currently active in the area (Dumbuk, Crawford, Lemming, Limestone, and Uncle), roadside salvage will be occurring and private land salvage will also occur. The project area is heavily roaded, and some of the roads in the area are poorly located and not maintained. Several roads are located within narrow valley bottoms within and adjacent to stream courses. The condition of these roads will be improved prior to and during project implementation, which will reduce the potential of adverse effects. Several roads do not have proper stream crossing structures, such as culverts or fords. These will be installed prior to use.

Cumulative effects will be displayed by 6th level watershed. Lower Stockade Beaver Creek and South Fork Castle Creek will not be displayed because of the small portion of the watershed, 7 and 64 acres respectively, located within the project area and there are no proposed actions located in these watersheds. The display will be grouped by past, past-present-future, current and proposed actions.

Past actions within the watershed include primarily timber sales (commercial) and timber stand improvement (pre-commercial) and the Jasper Fire. These activities or events affect the watersheds when they occur and the watersheds recover over time.

Past-present-future actions refer to impacts that have occurred, are occurring and will continue to occur within the watershed. These include grazing, private land ownership and roads. These activities are ongoing and have the potential to continually impact the watershed. Grazing allotments cover the entire watersheds. As displayed in the tables 4-6 through 4-11 there are several allotments within each watershed. These allotments are broken down into pastures and the pastures are grazed on a rotation. The entire watershed is not grazed at one time and grazing occurs during the summer and fall rotating between the pastures of the allotments. However, grazing by wildlife species such as elk and deer can occur throughout the watershed at any time of the year and can have an impact of watershed condition. Actions on private land could affect the watershed. These are usually unpredictable and the Forest Service usually has no control over them. Roads are a permanent part of the landscape and have the most potential to adversely affect the watershed if they are not properly placed or constructed.

Current actions are activities that are currently occurring within the watersheds or are planned for the immediate future. These include current timber sales under contract, potential salvage of private land and roadside salvage. These are actions that will most likely occur or are occurring within the watershed and have the potential to impact the watersheds.

Cumulative effects on the six watersheds included within the project area are varied. In looking at all the activities within the watersheds, (Tables 4-6 through 4-11) there are only two watersheds that have a lot of activities within the watersheds having large potential impacts on the watersheds. These are Upper Hell Canyon and Gillette Canyon. Upper Hell Canyon has 87 percent of its watershed within the fire perimeter (58 percent high and moderate intensity), 28 percent of the watershed being affected by current actions and up to 10 percent being affected by this proposed action. Gillette Canyon has 64 percent of its watershed within the fire perimeter (47 percent high and moderate intensity), nine percent of the watershed being affected by current actions and up to 11 percent being affected by this proposed action. The potential impacts on these two watersheds will be minimized or prevented by project design, implementing standard BMPs (See Appendix C) and operating on slopes less than 30 percent.

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Table 4-6. Activities within Watershed 101201060101 for Cumulative Effects.

Upper Pleasant Valley Watershed – 101201060101 – 31,263 ac.				
Past Actions				
Timber Harvest				
Decade	Acres Of Commercial Activities	Acres Of Pre-Commercial Activities	Total Acres	% Of Watershed
1980s	586	372	958	3%
1990s	1556	545	2101	7%
Jasper Fire				
Acres within Watershed				% Of Watershed
1728				6%
Past, Present and Future Actions				
Grazing				
Allotment	Allotment Acres	Acres of Allotment within Watershed	Percent of Allotment within Watershed	
French Creek	14085	3631	26%	
Limestone	20596	4415	21%	
Bull Flats	11750	11735	100%	
Water Draw	8656	1051	12%	
Pleasant Valley	36568	4183	11%	
South Custer	19140	6247	33%	
Ownership				
Acres Private Land				% Of Watershed
7104				22%
Roads				
Miles Of Road	Acres Of Road			% Of Watershed
162.8	296			1%
Current Actions				
Timber Sales				
Acres Of Units				% Of Watershed
182				1%
Private Salvage				
Acres Of Possible Salvage				% Of Watershed
241				1%
Roadside Salvage				
Acres Of Salvage				% Of Watershed
41				<1%
Proposed Action				
Salvage				
	Acres Of Proposed Salvage			% Of Watershed
Alternative B	37			<1%
Alternative C	25			<1%

Table 4-7. Activities within Watershed 101201070301 for Cumulative Effects.

Upper Hell Canyon – 101201070301 – 34,888 acres				
Past Actions				
Timber Harvest				
Decade	Acres Of Commercial Activities	Acres Of Pre-Commercial Activities	Total Acres	% Of Watershed
1980s	82	208	290	1%
1990s	824	955	1779	5%
Jasper Fire				
Acres within Watershed				% Of Watershed
30326				87%
Past, Present and Future Actions				
Grazing				
Allotment	Allotment Acres	Acres of Allotment within Watershed	Percent of Allotment within Watershed	
Spring Creek	10400	0	0%	
Murphy	6451	923	14%	
Darrow	15296	9372	61%	
Junction	3943	337	9%	
Porcupine	10040	3658	36%	
Tenderfoot	16255	1	0%	
Limestone	20596	14754	72%	
Tepee	27818	3898	14%	
Lithograph	17064	37	0%	
Water Draw	8656	696	8%	
Ownership				
Acres Private Land				% Of Watershed
1576				5%
Roads				
Miles Of Road	Acres Of Road			% Of Watershed
177.8	331			1%
Current Actions				
Timber Sales				
Acres Of Units				% Of Watershed
8461				24%
Private Salvage				
Acres Of Possible Salvage				% Of Watershed
1167				3%
Roadside Salvage				
Acres Of Salvage				% Of Watershed
204				1%
Proposed Action				
Salvage				
	Acres Of Proposed Salvage			% Of Watershed
Alternative B	3543			10%
Alternative C	2595			7%

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Table 4-8. Activities within Watershed 101201070302 for Cumulative Effects.

Lower Hell Canyon – 101201070302 – 23,590 acres				
Past Actions				
Timber Harvest				
Decade	Acres Of Commercial Activities	Acres Of Pre-Commercial Activities	Total Acres	% Of Watershed
1980s	81	208	289	1%
1990s	823	955	1778	8%
Jasper Fire				
Acres within Watershed				% Of Watershed
3625				15%
Past, Present and Future Actions				
Grazing				
Allotment	Allotment Acres	Acres of Allotment within Watershed	Percent of Allotment within Watershed	
Bull Flats	11750	15	0%	
Lithograph	17064	3752	22%	
Hell Canyon	8656	6713	78%	
Elk Mountain	18842	9852	52%	
Ownership				
Acres Private Land				% Of Watershed
3769				16%
Roads				
Miles Of Road	Acres Of Road			% Of Watershed
99.4	185			1%
Current Actions				
Timber Sales				
Acres Of Units				% Of Watershed
0				0%
Private Salvage				
Acres Of Possible Salvage				% Of Watershed
10				<1%
Roadside Salvage				
Acres Of Salvage				% Of Watershed
168				1%
Proposed Action				
Salvage				
	Acres Of Proposed Salvage			% Of Watershed
Alternative B	335			1%
Alternative C	237			1%

Table 4-9. Activities within Watershed 101201070303 for Cumulative Effects.

Tepee Canyon – 101201070303 – 48,197 acres				
Past Actions				
Timber Harvest				
Decade	Acres Of Commercial Activities	Acres Of Pre-Commercial Activities	Total Acres	% Of Watershed
1980s	0	1557	1557	3%
1990s	1106	617	1723	4%
Jasper Fire				
Acres within Watershed				% Of Watershed
5585				12%
Past, Present and Future Actions				
Grazing				
Allotment	Allotment Acres	Acres of Allotment within Watershed	Percent of Allotment within Watershed	
Tepee	27818	5062	18%	
Lithograph	17064	13254	78%	
Hell Canyon	18842	405	2%	
Elk Mountain	24708	5373	22%	
Ownership				
Acres Private Land				% Of Watershed
25200				52%
Roads				
Miles Of Road	Acres Of Road			% Of Watershed
107.5	200			1%
Current Actions				
Timber Sales				
Acres Of Units				% Of Watershed
0				0%
Private Salvage				
Acres Of Possible Salvage				% Of Watershed
11				<1%
Roadside Salvage				
Acres Of Salvage				% Of Watershed
51				<1%
Proposed Action				
Salvage				
	Acres Of Proposed Salvage			% Of Watershed
Alternative B	390			1%
Alternative C	97			<1%

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Table 4-10. Activities within Watershed 101201070404 for Cumulative Effects.

Redbird Canyon – 101201070404 – 52,047 acres				
Past Actions				
Timber Harvest				
Decade	Acres Of Commercial Activities	Acres Of Pre-Commercial Activities	Total Acres	% Of Watershed
1980s	181	64	245	<1%
1990s	464	23	487	1%
Jasper Fire				
Acres within Watershed				% Of Watershed
9447				18%
Past, Present and Future Actions				
Grazing				
Allotment	Allotment Acres	Acres of Allotment within Watershed	Percent of Allotment within Watershed	
Crows Nest Upper Beaver	41157	12159	30%	
Ditch Creek	16638	2472	15%	
Central	16496	14272	87%	
Lower Beaver	33856	20279	60%	
Tepee	27818	1368	5%	
Ownership				
Acres Private Land				% Of Watershed
6643				13%
Roads				
Miles Of Road	Acres Of Road			% Of Watershed
235.9	439			1%
Current Actions				
Timber Sales				
Acres Of Units				% Of Watershed
3483				7%
Private Salvage				
Acres Of Possible Salvage				% Of Watershed
989				2%
Roadside Salvage				
Acres Of Salvage				% Of Watershed
225				<1%
Proposed Action				
Salvage				
	Acres Of Proposed Salvage			% Of Watershed
Alternative B	1058			2%
Alternative C	426			1%

Table 4-11. Activities within Watershed 101201070405 for Cumulative Effects.

Gillette Canyon – 101201070405 – 51,070 acres				
Past Actions				
Timber Harvest				
Decade	Acres Of Commercial Activities	Acres Of Pre-Commercial Activities	Total Acres	% Of Watershed
1980s	2957	15	2972	6%
1990s	7	958	965	2%
Jasper Fire				
Acres within Watershed				% Of Watershed
32696				64%
Past, Present and Future Actions				
Grazing				
Allotment	Allotment Acres	Acres of Allotment within Watershed	Percent of Allotment within Watershed	
Ditch Creek	16638	4485	27%	
Central	16496	2132	13%	
Murphy	6451	1733	27%	
Darrow	15296	5920	39%	
Porcupine	10040	6382	64%	
Lower Beaver	33856	6737	20%	
Tepee	27818	17489	63%	
Lithograph	17064	21	0%	
Elk Mountain	24708	1085	4%	
Ownership				
Acres Private Land				% Of Watershed
5837				11%
Roads				
Miles Of Road	Acres Of Road			% Of Watershed
229.9	428			1%
Current Actions				
Timber Sales				
Acres Of Units				% Of Watershed
3560				7%
Private Salvage				
Acres Of Possible Salvage				% Of Watershed
347				1%
Roadside Salvage				
Acres Of Salvage				% Of Watershed
708				1%
Proposed Action				
Salvage				
	Acres Of Proposed Salvage			% Of Watershed
Alternative B	5781			11%
Alternative C	1841			4%

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4.8.1 *Wetlands and Floodplains*

Mitigation measures are included to avoid harvest activities in wetlands associated with springs and seeps. No effects are expected to wetlands.

No harvest activities are taking place within 100-year floodplains. Some roads exist within these floodplains. No additional effects are expected.

4.8.2 *Water Quality*

Because all the streams in the project area are ephemeral, the only potential effect the proposed action could have on water quality (downstream) would be sedimentation.

As stated in the hydrology section, the surface runoff patterns may be affected in localized areas due to soil disturbance associated with tractor skidding. This would create the potential for erosion and sediment routing to stream channels. However, this potential effect can be easily minimized or prevented by implementing standard BMPs (See Appendix C). All salvage logging units are located on slopes less than 30 percent on category B and C soils, so erosion potential would be relatively low. In addition to the standard BMPs (See Appendix C), slash material would be placed on and adjacent to skid trails and scattered through out the units to enhance water infiltration, reduce compaction, and minimize surface runoff and associated erosion. Implementation of this project is not expected to affect downstream water quality in the short or long term.

Cumulative Effects

Because all the streams in the project area are ephemeral, cumulative effects are not expected. Improvement of existing roads prior to and during project implementation would reduce the risk of accelerated erosion and sedimentation from a heavy rainfall event. However, some existing culverts may not be large enough to handle additional expected flows due to lack of vegetation from the fire.

4.9 Fire/Fuels

Each alternative for the proposed action will have different effects on the fuels and wildfire environment. Several factors are common among alternatives however. The risk of wildfire ignitions would not be affected by any of the proposed alternatives. In harvest units, logging methods would have a significant impact on post harvest fuel loadings. Logging methods would leave most of the activity fuels lopped and scattered on the unit.

Requiring whole tree skidding is a viable way of reducing fuel loadings in harvest units adjacent to private land.

In areas where few or no needles remain on the trees to be harvested, any piles of slash yarded to the landing may be difficult to burn and may require higher than normal treatment costs.

Alternative A (No Action)

By not harvesting any merchantable timber within the burn area this alternative would maximize the accumulation of ground fuels over time. All standing dead trees would contribute to ground fuel loadings in the long term. Areas of high fuel loadings will burn more intensely, especially under drought conditions and wildfires will be more difficult to control.

This alternative will also result in more roads and trails being blocked by fallen timber. This will limit access for fire suppression crews and further hinder control operations.

Alternative B (Proposed Action)

This alternative maximizes both acres treated and volume removed. In doing so it will have the greatest impact on reducing the continuity of ground fuels over the long term. Severity and intensity of future fires will be reduced in harvested areas and access will be better maintained for fire suppression and other management activities.

Alternative C

This alternative represents the middle ground between alternatives A and B in terms of ground fuel loading, fuel continuity, future fire severity, and access difficulty for suppression forces.

Cumulative Effects

The fuel treatments included in the proposed action and alternatives would affect approximately 30% of the entire Jasper Fire area. No cumulative effects on climate, air quality, social factors, or on site resources are expected from these treatments. Fuel loadings may exceed Forest Plan Standards on individual sites in unsalvaged areas, but these should not be contiguous over large areas of the burn. The need for further fuel treatments in unsalvaged areas will need to be addressed in future planning documents.

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4.10 Montane Grasslands

Timber sales adjacent to montane grasslands within the fire area are identified on the Jasper Fire Montane Grasslands Maps (Figures 4-7 and 4-8). Lemming, Uncle and Dumbuk timber sales have timber harvest units adjacent to the montane grasslands. Under Alternative A, (No Action), there would be no salvage in units outside of what is to occur in already existing sales. Alternative B proposes the most salvage units for treatments and Alternative C contains fewer units for salvage of burned trees. Both Alternatives B and C contain salvage units that lie adjacent to the montane grasslands.

The Black Hills National Forest made the decision to implement negotiated mitigation and avoidance negotiated as part of the Veteran Salvage Settlement Agreement. This mitigation is also included in this proposal (See Chapter 2).



With implementation of the mitigation no new effects from the salvage activities are expected to

occur to the grasslands in either of the action alternatives. Some of the existing roads within the grasslands would receive use during the salvage activities.

Cumulative Effects

Historically, montane grasslands were sites for roads, primarily due to the ease of road building. Many of the roads are native surface and do not have a road prism. Many of these long existing roads occurred as someone drove in an area, and others saw the tracks and drove along the same track, creating the now existing two-track road. These primarily occurred in grassland meadows due simply to the easier driving and lack of barriers than is found in forested areas. Grasslands in general within the Black Hills historically were and continue to be desired as areas to be held in private ownership (i.e. high grazing values, fire protection for building sites). Other historical and current activities taking place include recreational activities and livestock use. Timber harvest has occurred on lands adjacent to some of the land area described as high quality montane grassland within this analysis area in private ownership. As stated above, montane grasslands have been impacted this season on multiple levels: Jasper fire (varying intensities in different montane grasslands which could have enhanced some

areas), a very dry growing season and resulting heavy utilization by both cattle and wildlife. Protection of montane grasslands from post-fire threats will likely be included in other forest resource protection and recovery initiatives such as: further noxious weed monitoring and treatments, continued re-vegetation efforts, and grazing management and monitoring.

With implementation of the mitigation listed in Chapter 1, no new effects from the salvage activities are expected to occur to the grasslands in either of the action alternatives. Some of the existing roads within the grasslands will receive use during the salvage activities.

4.11 Visuals

No Action Alternative

Standing fire-killed trees will deteriorate and fall to the forest floor before new vegetation has an opportunity to replace them. When looking at the landscape, a gradual change will be evident. As the trees begin to fall, holes will appear among the standing dead forest. This will increase over time until the landscape will appear as open hillsides with isolated patches of fire-killed trees. As trees fall, the amount of tree boles and limbs on the forest floor will increase. Where this occurs quickly, the strong vertical lines of the standing fire-killed trees will be dominated by the stronger horizontal lines of the criss-crossed tree boles laying on the forest floor. Eventually all the trees will come down, the rate is dependent upon numerous natural factors (ie- wind events, root decay, insect activity, snow events, case hardening of the boles by the fire, etc.). Over time seeds will be scattered across the landscape (wind, birds & animals, etc) and seedlings will sprout. The rate of decay of the down trees (before they are no longer evident) is variable depending upon their size and weather conditions. The rate of re-vegetation with new trees will be slow and patchy. As time goes by, the landscape will generally appear open, with isolated standing fire-killed trees and patches of young green trees. Eventually a forest will again cover the landscape.

Effects Common To All Action Alternatives

Short Term Effects

Roads will be more evident in this landscape, as there will be limited vegetation to hide their existing location. Soil disturbance from road re-construction and skid trails will also be readily visible until grasses, shrubs, and trees re-vegetate these disturbed areas.

Where logging does occur, small un-merchantable fire-killed trees, will be knocked to the ground by logging and skidding activities. Slash created within these cutting areas will

4 Environmental Consequences

be placed on skid trails and crushed, as well as scattered. This slash will be evident for upwards of ten years after it is placed on the ground.

Soil displacement will be evident where a skidding logging system is used (except in frozen conditions, which are not expected during these activities). Soil displacement can create color contrasts that are often highly visible for upwards of five years, or until re-vegetated. Due to the color contrast, the location of these skid trails can be highly visible on steep slopes, and appears as un-natural lines in the landscape when viewed from the distant Foreground or Middleground.

In areas adjacent to private land where non-merchantable trees are cut down, piled, and burned, the negative appearance of slash will be removed quickly and large openings may be created (depending upon amount of management activity). However, this can quickly move the area toward a natural open hillside appearance, depending upon levels of soil disturbance and noxious weed propagation.

Long Term Effects

From the Middleground and distant Foreground, where logging occurs, the remaining fire-killed forest will have small openings wherever a large tree was taken out and the surrounding stand falls to the ground. As a result the forest “fabric” will have a “moth-eaten” appearance. As time goes by, these openings will increase in size as more trees deteriorate and fall. As a result of the logging, fewer standing fire-killed large trees (snags) will be evident on the landscape beyond 10-20 years than the no action alternative. Natural regeneration (and planting if utilized) will start to be dominant in the landscape. Patches of trees will begin to dominate the landscape. As a ratio of 1/3 trees to 2/3 of opening is re-established, the forest will regain a natural appearance.

Cumulative Effects

Scattered slash will be more evident initially under action alternatives than under the No Action. As a result of past removal of large trees, and additional removal within this project, the area will move towards an open condition more quickly (as the smaller trees will deteriorate and fall more quickly than the larger trees) than under the no action alternative. The duration of time when the landscape is in an open condition will be longer than the no action alternative – due to the removal of large fire-killed trees that would have been standing during this succession back to a green forest. We can expect large openings to dominate the landscape during this time.

4.12 Air Quality

The only expected impacts from harvest activities would be road dust from roads used for log hauling. No dust is expected when roads are snow covered. As weather warms and

dries, more dust can be expected. These impacts will be short term, lasting through summer, 2001.

Cumulative Effects

The Forest Plan analysis found that there would be no change in air quality under any of the alternatives.

4.13 Roads

To harvest the proposed units in Alternative B will require ??? miles of road reconditioning within the fire area and approximately 31 miles of road reconditioning outside of the fire area. Alternative B will also require the use of approximately 11.5 miles of existing temporary roads. All temporary roads would be obliterated and the roadway seeded with grass species.

To harvest the proposed units in Alternative C will require 168.4 miles of road reconditioning within the fire area and approximately 18.4 miles of road reconditioning outside of the fire area. Alternative C will also require the use of approximately 9.5 miles of existing temporary roads. All temporary roads would be obliterated and the roadway seeded with grass species.

Reconditioning of existing roads will consist of reshaping the road surface, cleaning drainage structures, and cleaning and repairing cattle guards. The purpose of reconditioning is to bring the roadway back to its original condition.

Temporary roads will be existing two-track roads. No additional road work will be done prior to use. These roads must be identified as temporary roads on timber sale maps so that purchasers can be required to close them after use. This will help reduce the amount of open two-track roads. Open road density will remain the same or be slightly lower for the immediate future.

At the present time the burn area is closed to all motorized vehicles use except for those specially authorized to enter the area. A decision regarding future travel restrictions will be made under another environmental analysis later in 2001. Decisions on the location, type, amount, and season of motorized use will be made at that time. Consideration will be given to big game disturbance, overall road density, opportunities to eliminate roads, and reduce overall road density.

Cumulative Effects

4 Environmental Consequences

Rainstorm events that increase runoff may tax the drainage structures on existing roads. The BAER report did not identify this as an immediate concern, but additional evaluation of long-term needs will help determine if there is a need for additional or improved drainage features.

Timber salvage and associated log haul would probably need to use County roads that normally have load restrictions during spring breakup. This may limit some haul opportunities. Timber sale contract road maintenance provisions would cover most road needs for salvage operations. Some minor reconstruction work may be needed.

4.14 Economics

A financial/economic efficiency analysis was conducted for this project. The objective of the analysis was to compare the costs and revenues associated with implementation of the alternatives. There are costs, benefits and revenues for activities occurring in the project area that are not included in this analysis, such as recreation management, Christmas trees and fuelwood. These are not included because they occur across the ranger districts and Forest and they are not directly related to the proposal. The selected alternative will not significantly change these other items.

This EIS presents two action alternatives for recovering values of burned timber in the analysis area over the next 1-2 years. The financial analysis includes only those actions connected to the harvest treatments that would occur over this time period. The only benefits included in the analysis were the volume of timber harvested by alternative.

The proposed action and alternatives described in the EIS comply with the Forest Plan and the economic assumptions upon which it is based. Any future project proposals will be supported by a separate environmental analysis including an economic analysis.

Table 4-12 displays the economic measures for the alternatives.

Table 4-12 - Financial Returns by Alternative

	Alternative A	Alternative B	Alternative C
Present Net Value	NA	\$1,181,254.60	\$620,861.00
Benefit/Cost Ratio	NA	2.74	2.90

Both action alternatives have revenue/cost ratios of greater than 2.5. The main factors leading to the differences between the action alternatives is the volume harvested. The No Action Alternative (Alternative A) has no revenue resulting from timber harvest and no direct costs, thus a benefit/cost ratio is not applicable.

The results above differ from those displayed in the Draft EIS. In that document the present net values (PNVs) were negative, and the benefit/cost ratios were less than one for both action alternatives. There are several reasons why the current figures differ from those in the DEIS.

First, several major cost items in the DEIS including sale preparation and administration were based on estimates. Since that time the Forest has developed more accurate data based on experienced costs of preparing and administering sales similar in nature to those proposed under this project. Thus the cost figures used in this analysis are more accurate representations for the work involved. These lower costs have significantly affected the outcome of the efficiency analysis.

The sale administration costs also dropped somewhat, based on costs experienced during administration of sales similar in nature since the DEIS was issued. The drop in these costs was less than that for sale preparation but contributed to the overall drop in costs and the resulting change in the analysis. The sale administration cost used here reflects a full-time on-site presence to ensure that appropriate mitigations are applied.

It was found that several costs were inappropriately included in the DEIS analysis. The costs of temporary road construction, and road maintenance, are normally calculated as part of the appraisal and thus are included in the stumpage rates. By including them in this analysis they were double counted. This error has been eliminated in this analysis.

Supporting data can be found in the project file.

4 Environmental Consequences

4.15 Probable Environmental Effects That Cannot Be Avoided

4.15.1 Wildlife

There will be a long-term decrease in woodpecker habitat under all alternatives. There will be a short-term decrease in woodpecker habitat under Alternative B, and to a lesser degree, Alternative C.

4.15.2 Recreation

There would be a short-term displacement of recreation opportunities from the project area with Alternatives B and C.

4.15.3 Fire and Fuels

There would be a short-term increase in fire hazard under Alternative B and to a lesser degree, under Alternative C. There would be a long term increase in fire hazard under Alternative A and to a lesser degree, Alternatives B and C.

4.15.4 Visuals

Some evidence of logging activities, slash and stumps, would be apparent to those walking and driving through the project area with Alternatives B and C.

4.16 Irreversible and Irretrievable Commitments of Resources

4.16.1 Timber

There would be an irretrievable loss of wood fiber with all alternatives. The greatest loss would occur with Alternative A. The least loss would occur with Alternative B.

4.16.2 Wildlife

There will be a long-term decrease in snags under all alternatives. There will be a short-term decrease in snags under Alternative B, and to a lesser degree, Alternative C.

4.17 Specifically Required Disclosures

4.17.1 Silvicultural Findings

The following findings of fact pursuant to NFMA and other applicable laws, regulations, and manual direction are made (See Silviculturist Report in Project File):

- 1) Soil, slope or other watershed conditions will not be irreversibly damaged.
- 2) There is no requirement to regenerate stands within five years following salvage harvesting. 36 CFR 219.27 (c)(3) requires “the technology and knowledge exists to adequately restock the lands within 5 years after final harvest.” The same paragraph goes on to define final harvest as clearcutting, final overstory removal, seed tree removal, or selection cutting. Forest Service Manual (FSM) 2471.32 defines salvage cutting as an intermediate cut and not a regeneration or final harvest method.
- 3) There is no requirement that salvage harvest occur only on suitable lands. 36 CFR 219.27 (c)(1) states salvage sales are exempted from the requirement to harvest timber only from lands classified as suited for timber production.
- 4) The requirement for stands to have generally reached culmination of mean annual increment (CMAI) prior to harvest does not apply to salvage harvest. The Forest and Rangeland Renewable Resources Planning Act of 1974 (16 USC 1600), Section 6, (m) exempts salvage harvesting of stands that are substantially damaged by fire or are in imminent danger from insect attack from the CMAI requirement. 36 CFR 219.16 (a)(1)(iii) and Forest Service Handbook FSH 2409.13 Timber Resource Planning Handbook (WO Amendment 2409.13-92-1) reiterates and reinforces this exemption.
- 5) Implementation of salvage harvesting in the Jasper Fire will result in openings greater than 40 acres and this is not contrary to law or regulation. 36 CFR 219.27 (d)(iii) states the limits outlined earlier in the same section shall not apply to the size of areas harvested as a result of natural catastrophic condition such as fire.

4.17.2 Floodplains and Wetlands

4 Environmental Consequences

None of the alternatives propose construction or harvest that would affect floodplain and wetland areas. Floodplains and wetlands would be protected through mitigation measures.

4.17.3 Threatened and Endangered Species

There would be no adverse effects on Threatened, Endangered, or Proposed species. The effects on Threatened, Endangered, or Proposed species are analyzed in Chapter 4.

4.17.4 Prime Rangeland, Farmland, and Forest Land

All alternatives are in keeping with the intent of Secretary of Agriculture memorandum 1827 for prime land. The project area does not contain any prime farmland or rangeland. “Prime” forestland does not apply to lands within the National Forest System Lands. In all alternatives, National Forest System Lands would be managed with a sensitivity to the effects on adjacent lands.

4.17.5 Social Groups

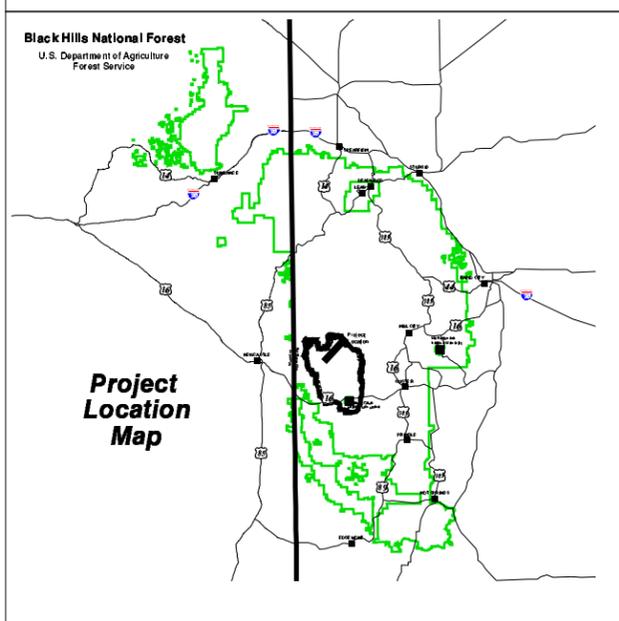
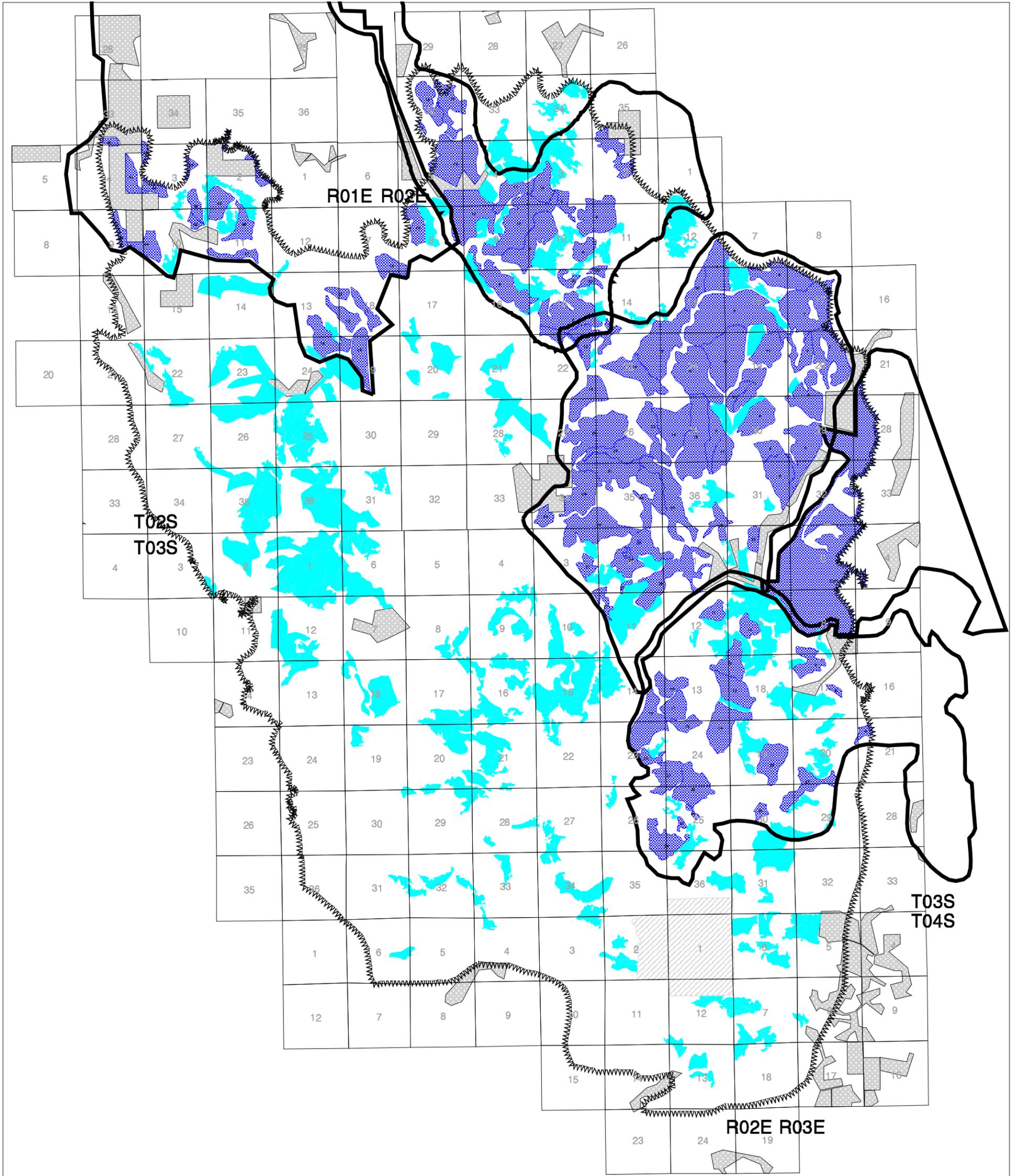
The alternatives do not differ from one another in their effects on minorities, Native Americans, women, or the civil liberties of any American citizen. Any significant cultural properties identified by Native American groups will be protected.

4.17.6 Energy Requirements and Conservation Potential of Alternatives

With relation to national and global petroleum reserves, the energy consumption associated with the individual alternatives, as well as the differences between alternatives, is insignificant.

4.18 Relationship Between Short-Term Use and Long-Term Productivity

Actions under Alternatives B and C employ measures to protect soil productivity. There would no decrease in long-term soil productivity as a result of implementation of any of the action alternatives.



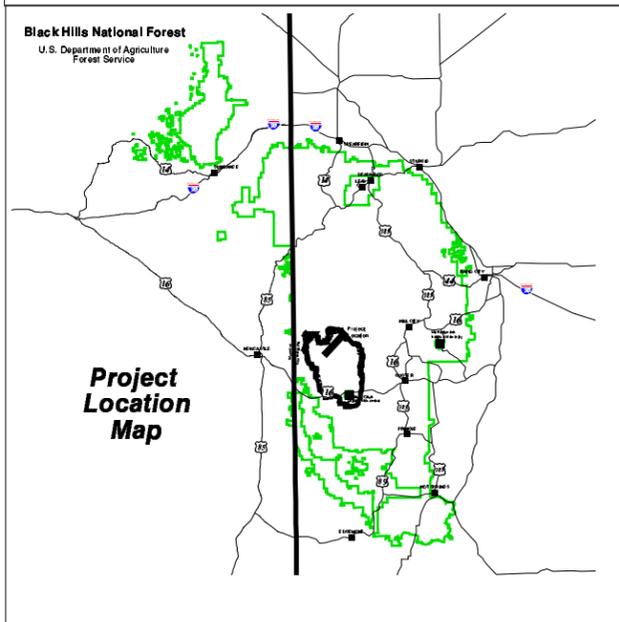
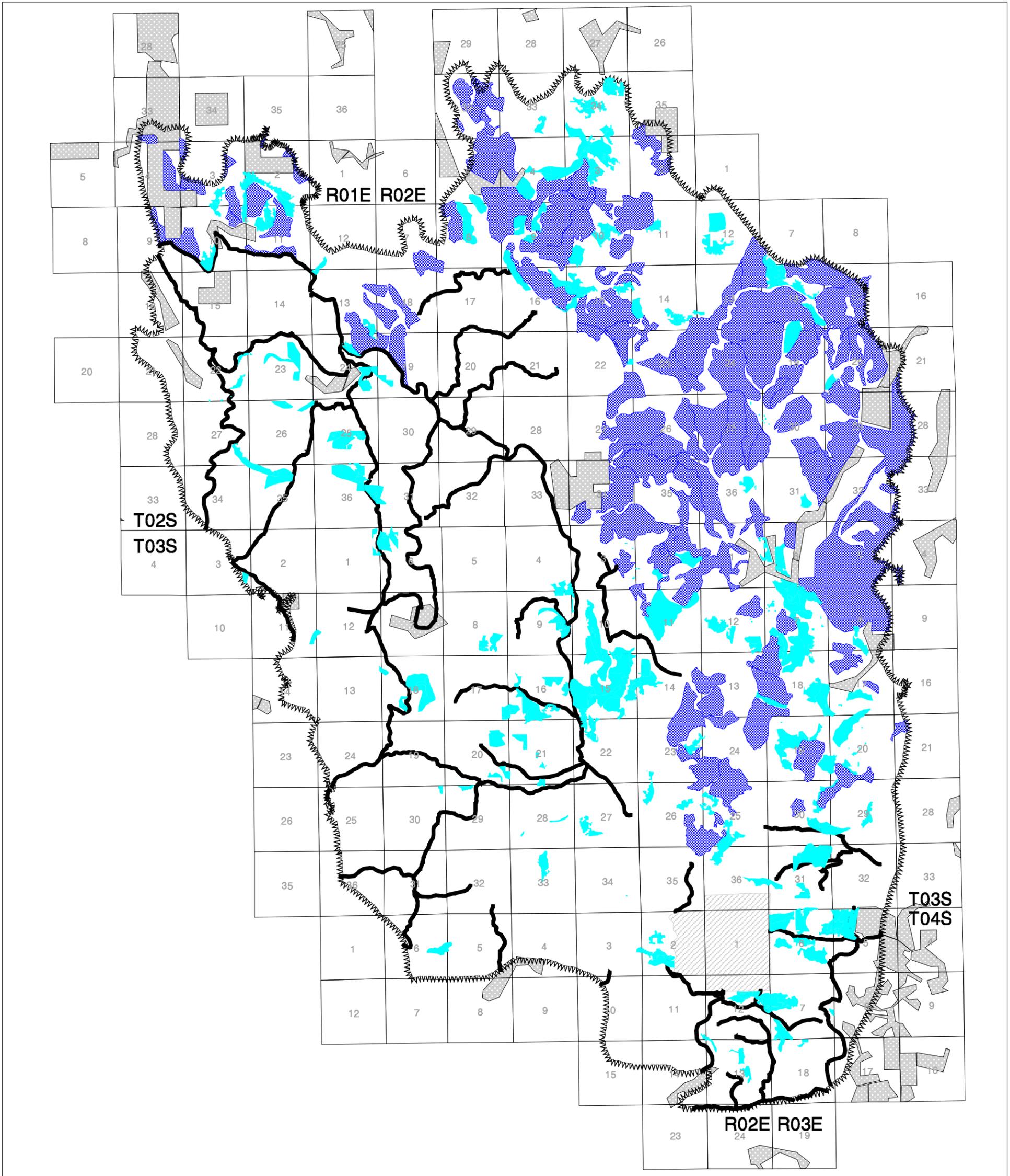
LEGEND

- Fire Boundary
- Hazard Tree Removal Corridors
- Proposed Treatment Units
- Sold Sale Units
- Private
- Jewel Cave NM
- Public Land Survey System

Jasper Value Recovery

Figure 4-1
Cumulative Effects
Alternative B

March 24, 2001
Created by: mmfarrell



LEGEND

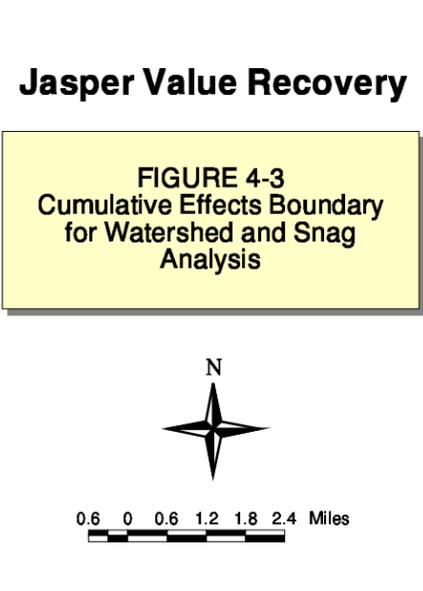
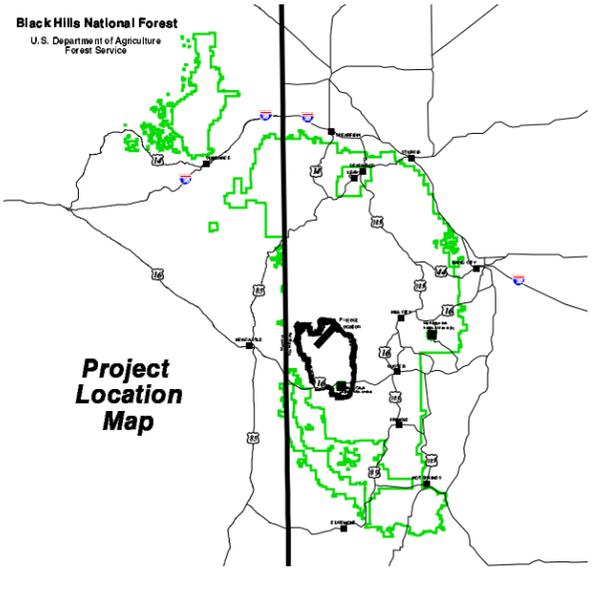
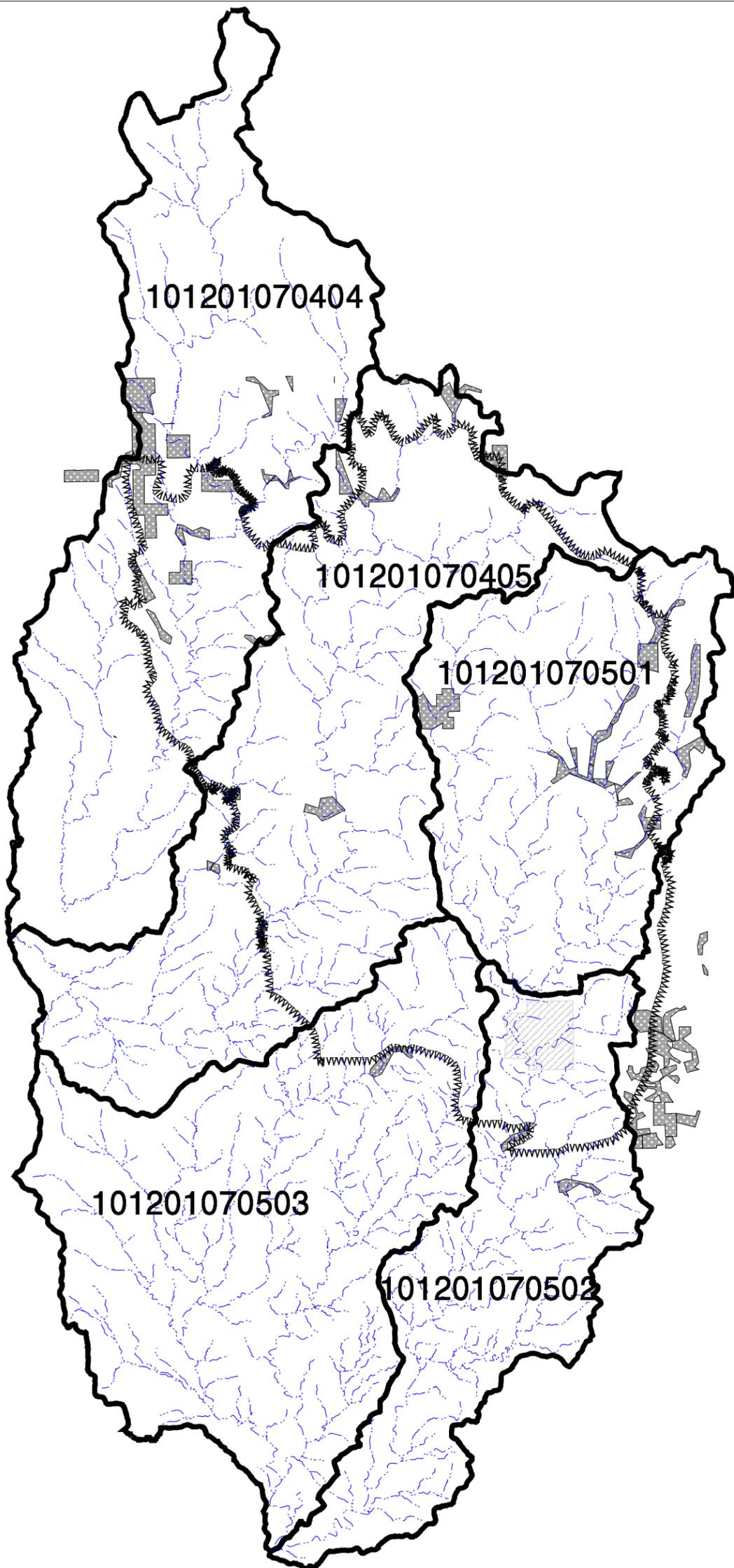
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-  Hazard Tree Removal Corridors
-  Proposed Treatment Units
-  Sold Sale Units
-  Private
-  Jewel Cave NM
-  Public Land Survey System

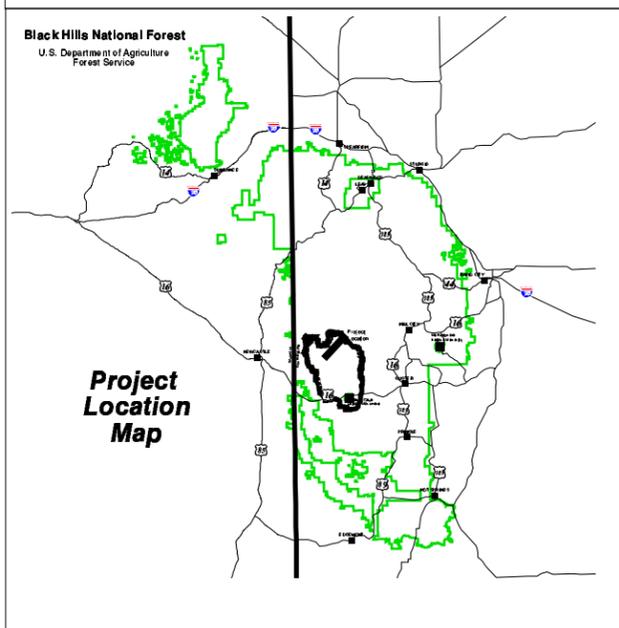
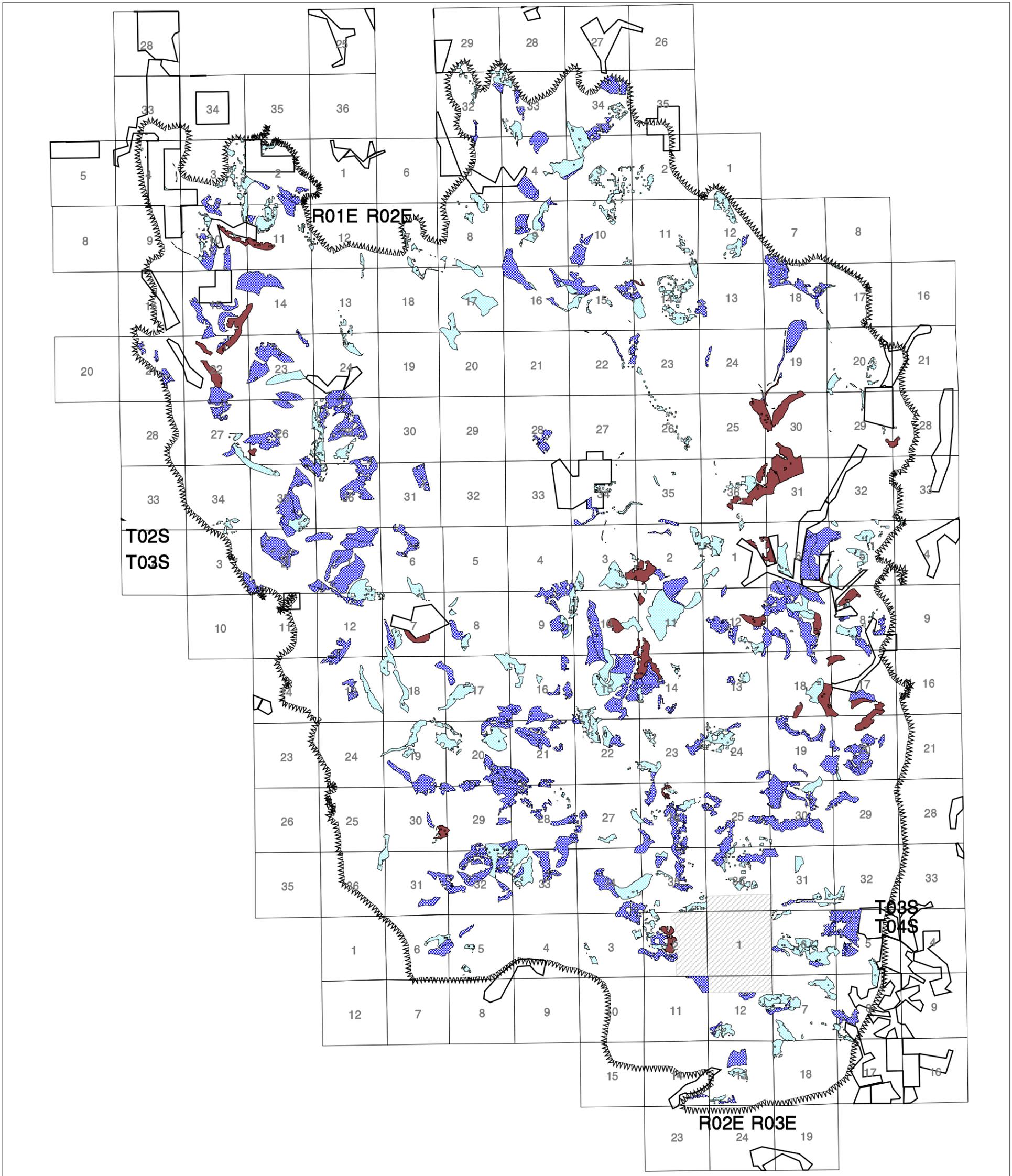
Jasper Value Recovery

Figure 4-2
Cumulative Effects
Alternative C



0.4 0 0.4 0.8 1.2 1.6 Miles





LEGEND

-  Fire Boundary
-  Black-backed Woodpecker Nesting Habitat
-  Good Lewis' Woodpecker Nesting Habitat
-  Marginal Lewis' Woodpecker Nesting Habitat
-  Private
-  Jewel Cave NM
-  Public Land Survey System

HABITAT ASSUMPTIONS

Black-backed Woodpecker Nesting Habitat From Stage II Data:
 $AMD_PC \geq 60$, $BA \geq 120$, $QMD \geq 8.5^\circ$.

Lewis' Woodpecker Nesting Habitat From Stage II Data:
 Good: $AMD \geq 40$, $BA \geq 60$, $QMD \geq 9.0^\circ$. Marginal: Met any of the Good criteria but not all of them.

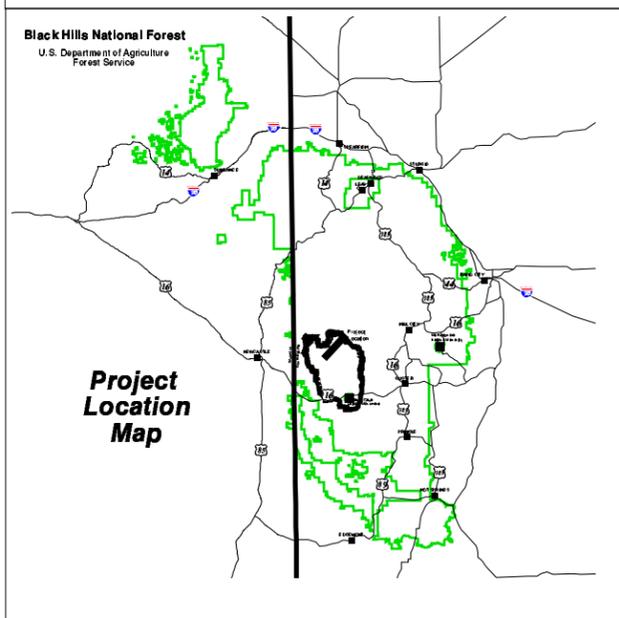
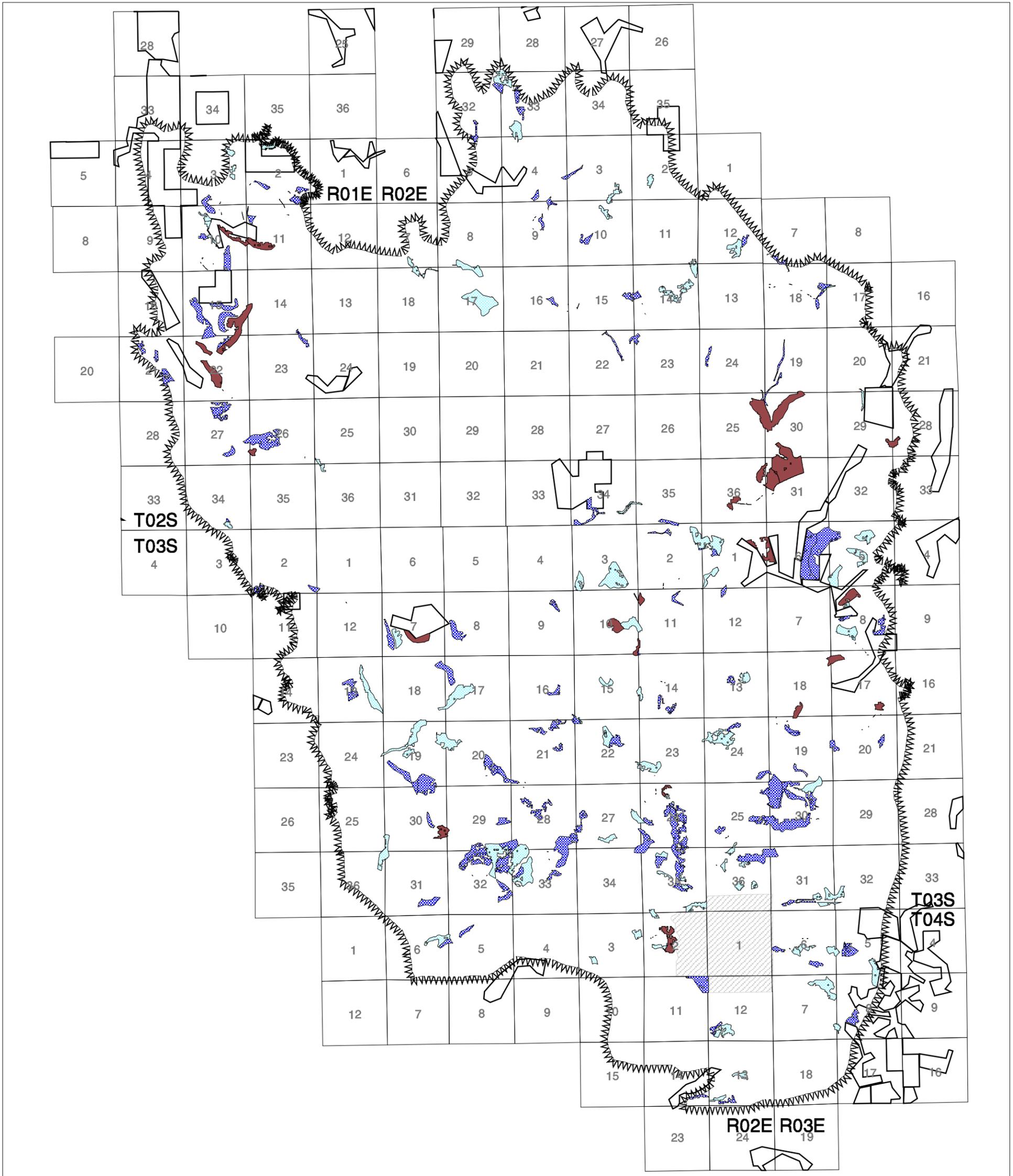
Jasper Value Recovery

FIGURE 4-4
 Potential Woodpecker Habitat
 Alternative A



0.4 0 0.4 0.8 1.2 1.6 Miles





LEGEND

-  Fire Boundary
-  Black-backed Woodpecker Nesting Habitat
-  Good Lewis' Woodpecker Nesting Habitat
-  Marginal Lewis' Woodpecker Nesting Habitat
-  Private
-  Jewel Cave NM
-  Public Land Survey System

HABITAT ASSUMPTIONS

Black-backed Woodpecker Nesting Habitat From Stage II Data:
 $AMD_PC \geq 60$, $BA \geq 120$, $QMD \geq 8.5^\circ$.

Lewis' Woodpecker Nesting Habitat From Stage II Data:
 Good: $AMD \geq 40$, $BA \geq 60$, $QMD \geq 9.0^\circ$. Marginal: Met any of the Good criteria but not all of them.

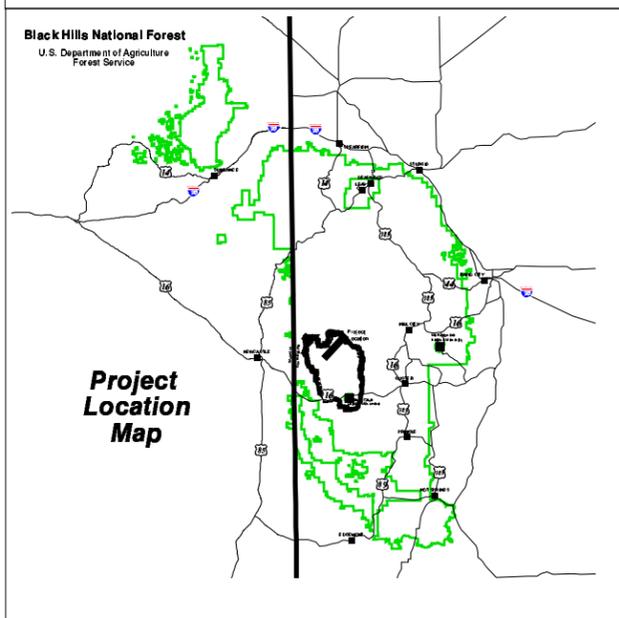
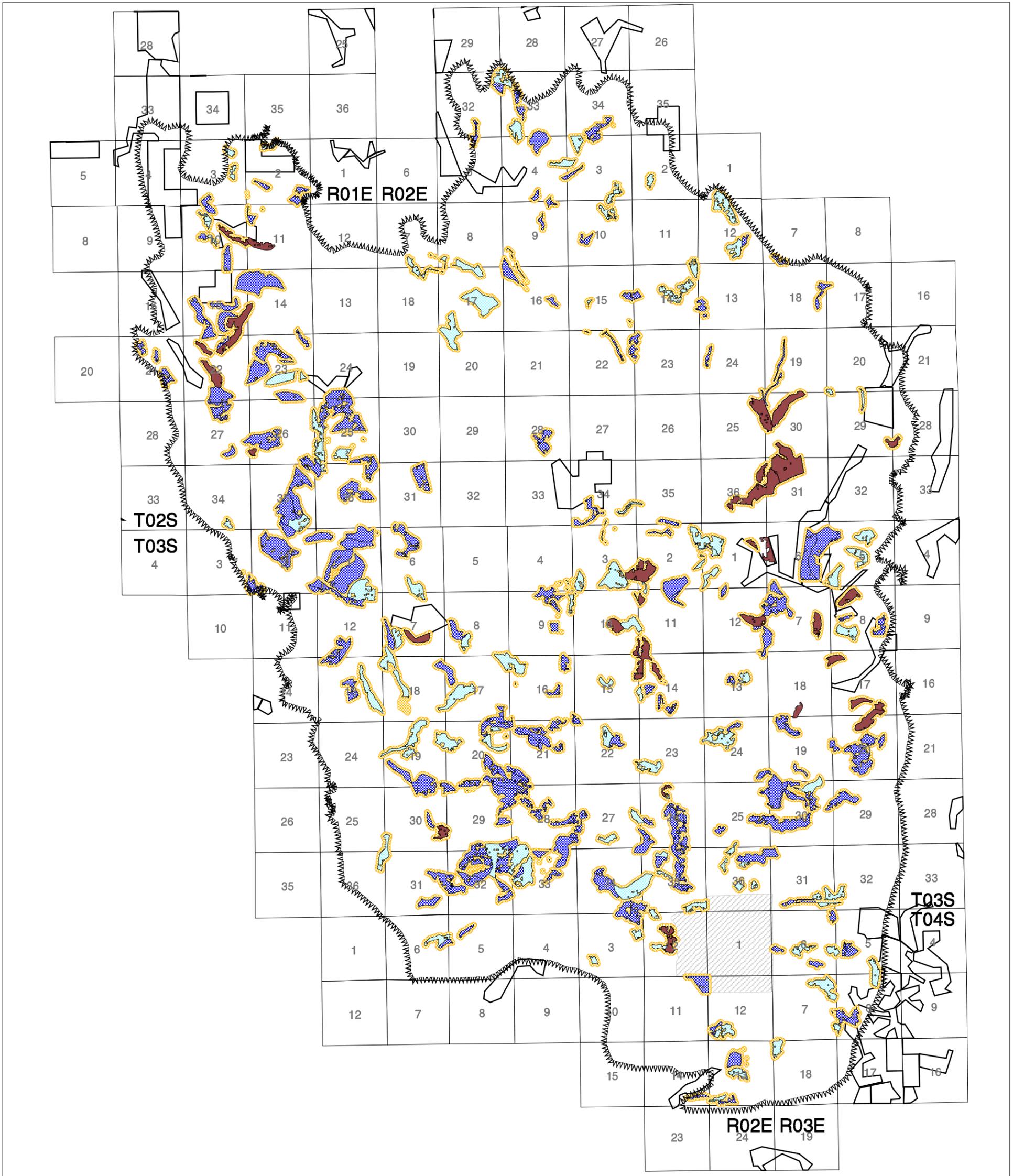
Jasper Value Recovery

FIGURE 4-5
 Potential Woodpecker Habitat
 Alternative B



0.4 0 0.4 0.8 1.2 1.6 Miles





LEGEND

-  Fire Boundary
-  Black-backed Woodpecker Nesting Habitat
-  Good Lewis' Woodpecker Nesting Habitat
-  Marginal Lewis' Woodpecker Nesting Habitat
-  Buffer (61.9 m)
-  Private
-  Jewel Cave NM
-  Public Land Survey System

HABITAT ASSUMPTIONS

Black-backed Woodpecker Nesting Habitat From Stage II Data:
 $AMD_PC \geq 60$, $BA \geq 120$, $QMD \geq 8.5^\circ$.

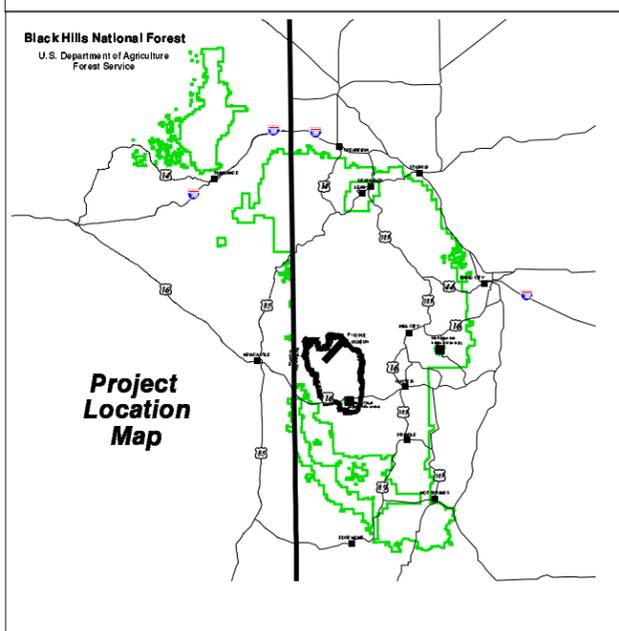
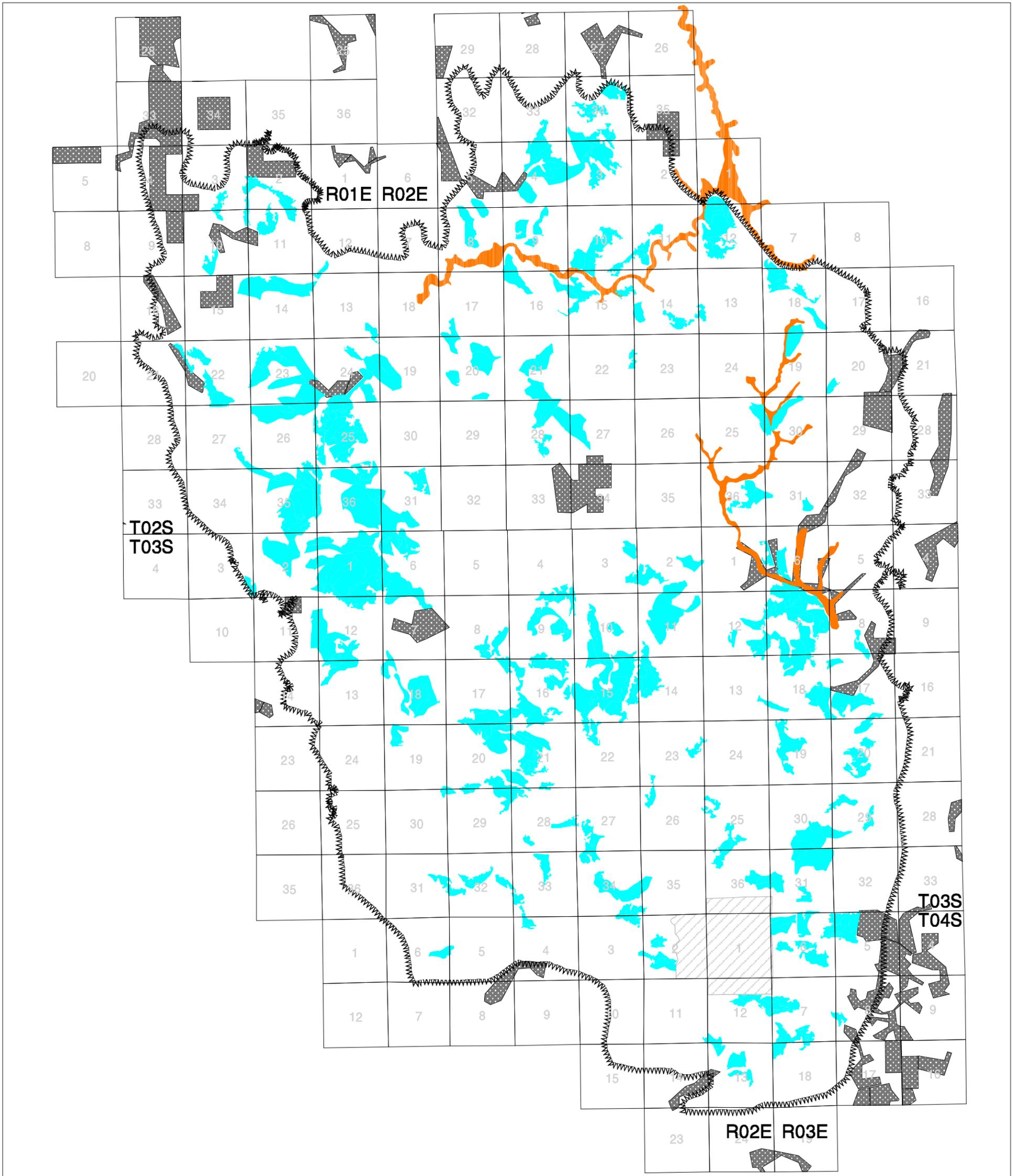
Lewis' Woodpecker Nesting Habitat From Stage II Data:
 Good: $AMD \geq 40$, $BA \geq 60$, $QMD \geq 9.0^\circ$. Marginal: Met any of the Good criteria but not all of them.

Jasper Value Recovery

FIGURE 4-6
 Potential Woodpecker Habitat
 Alternative C



0.4 0 0.4 0.8 1.2 1.6 Miles

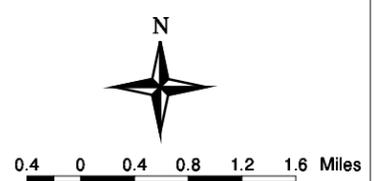


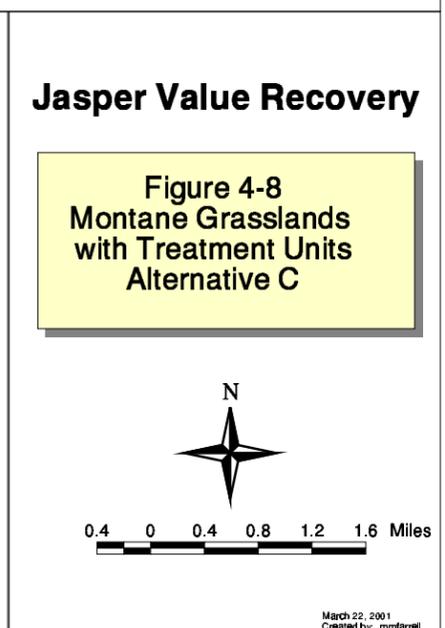
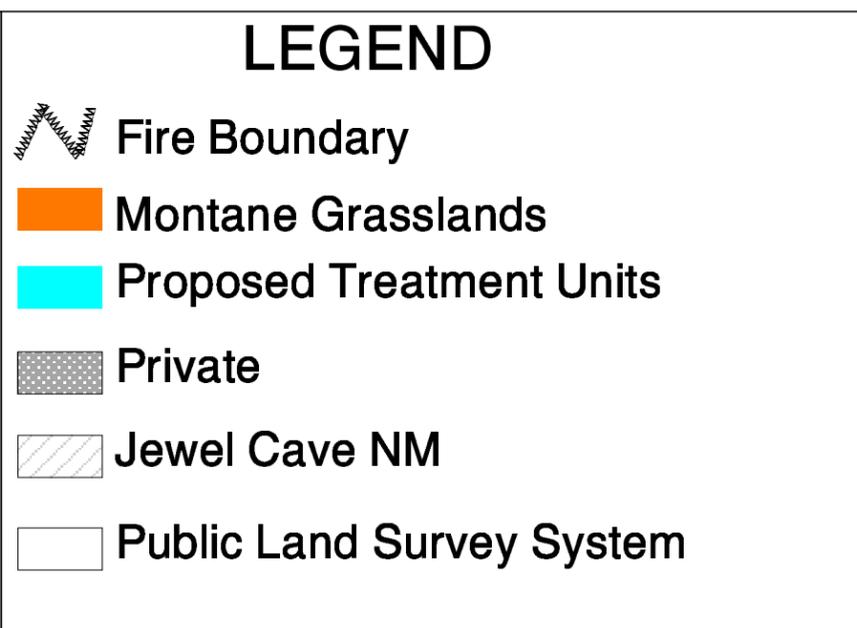
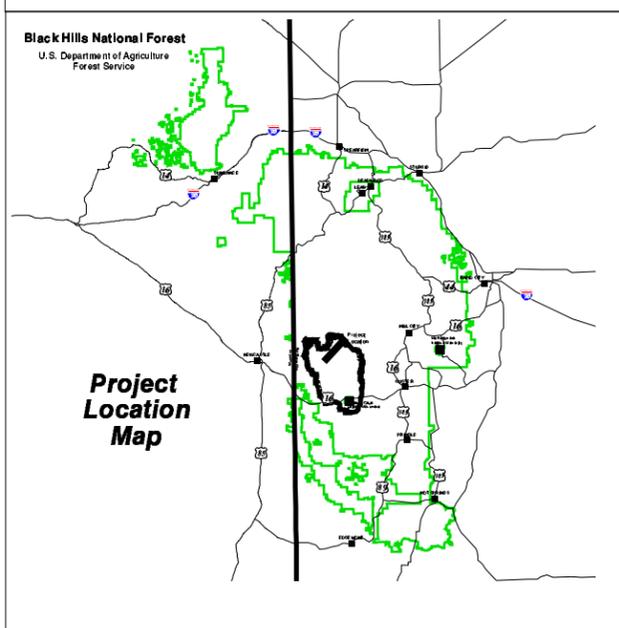
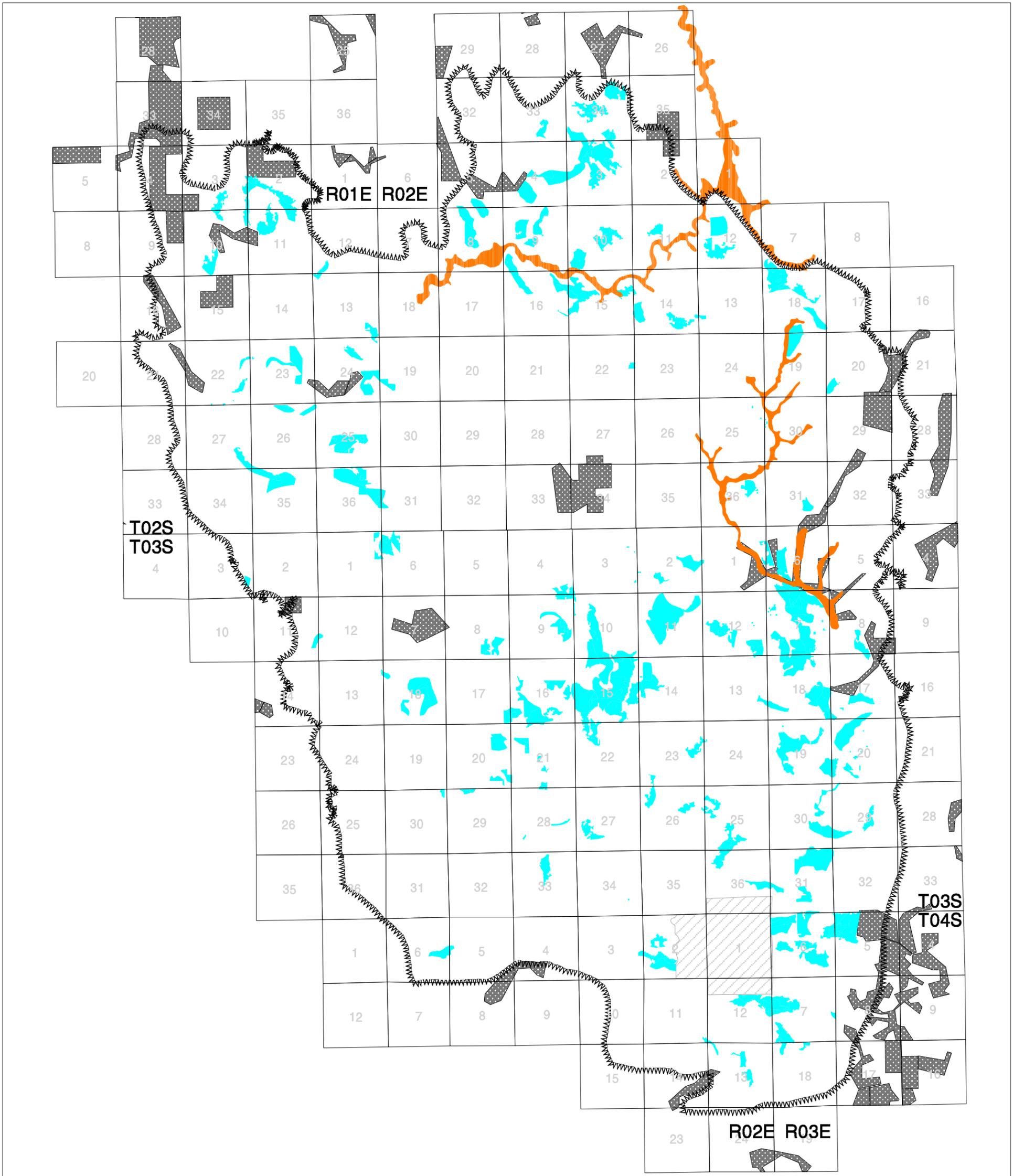
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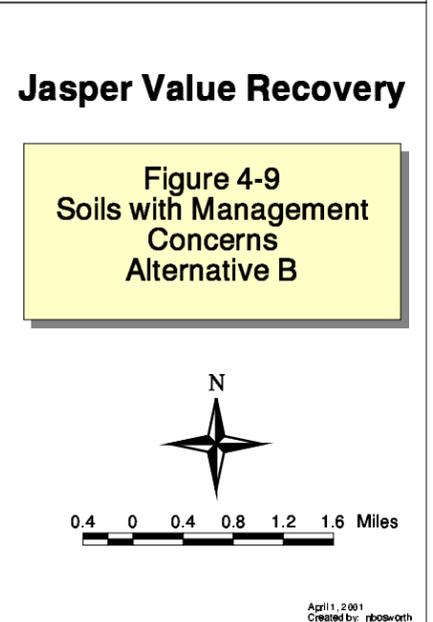
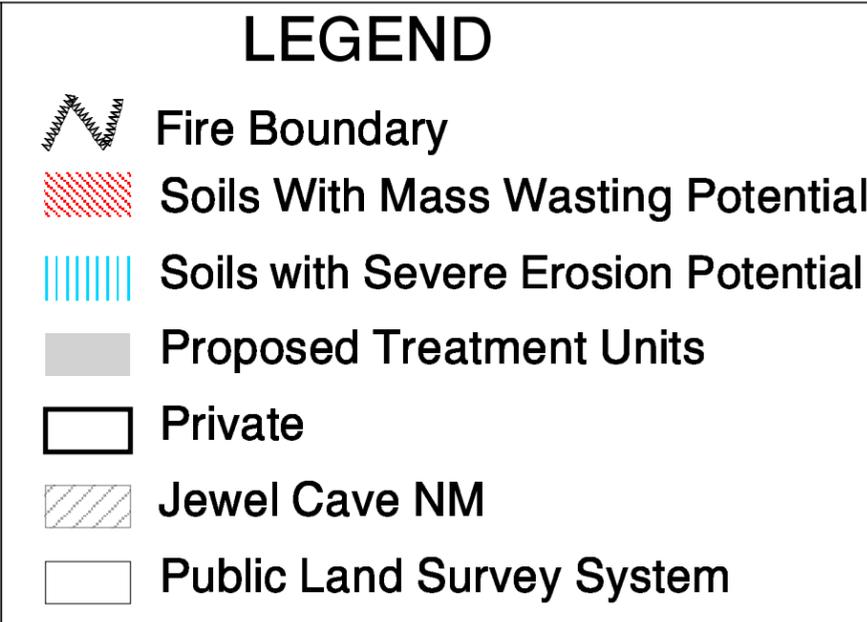
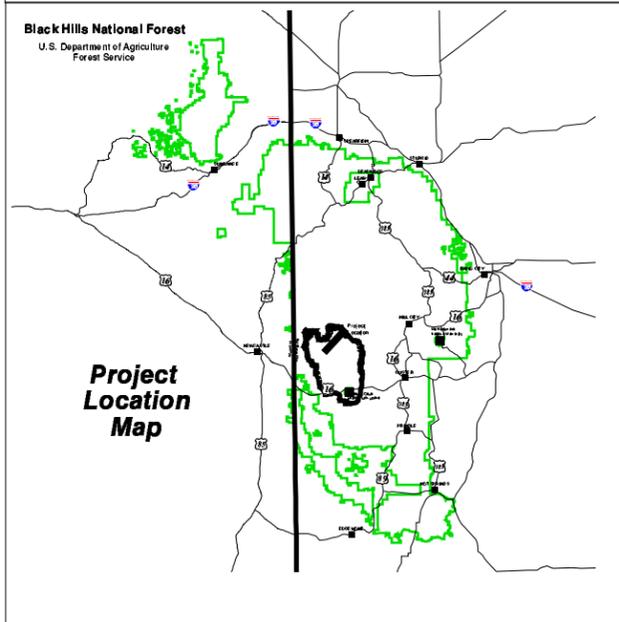
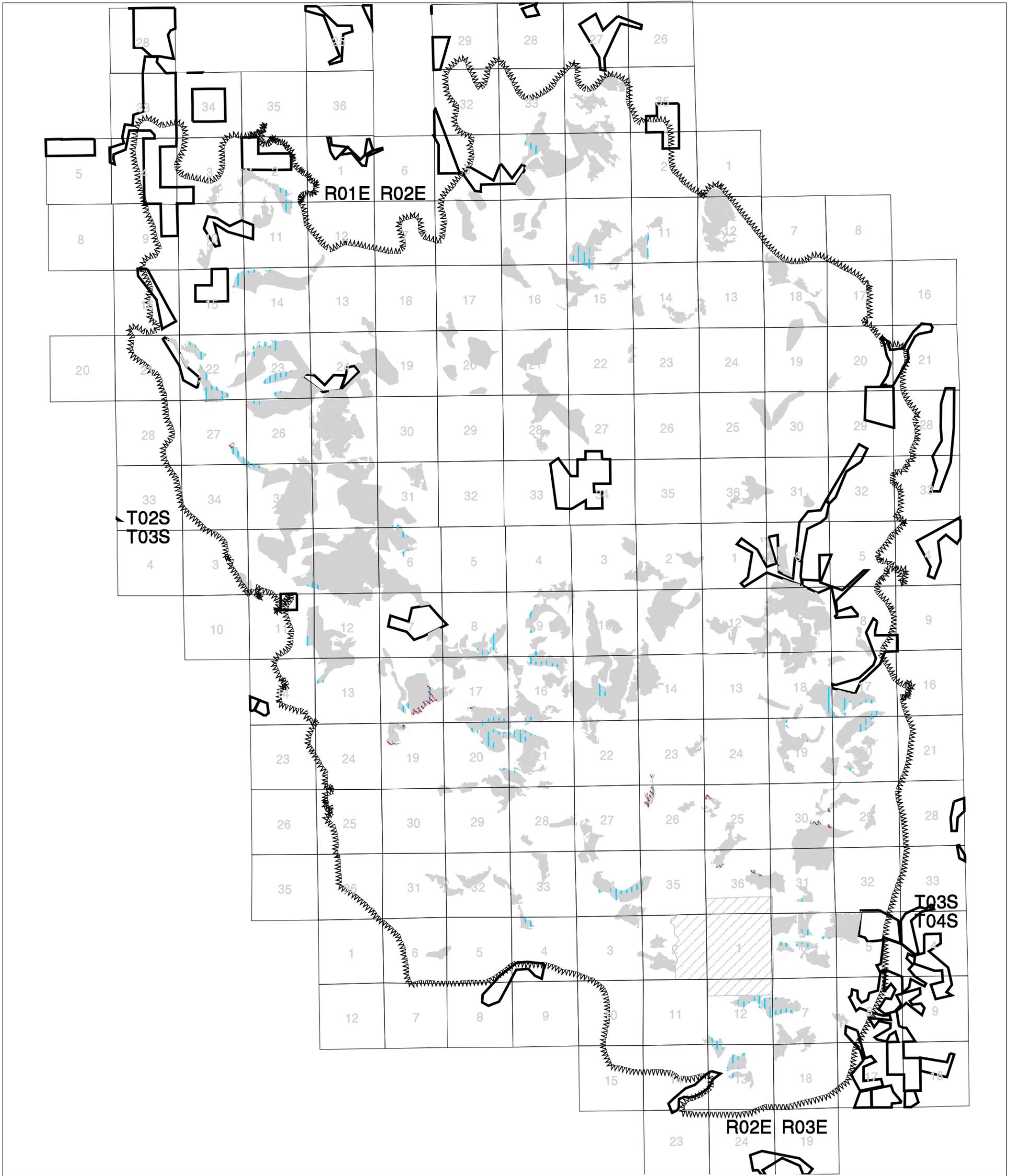
-  Fire Boundary
-  Montane Grasslands
-  Proposed Treatment Units
-  Private
-  Jewel Cave NM
-  Public Land Survey System

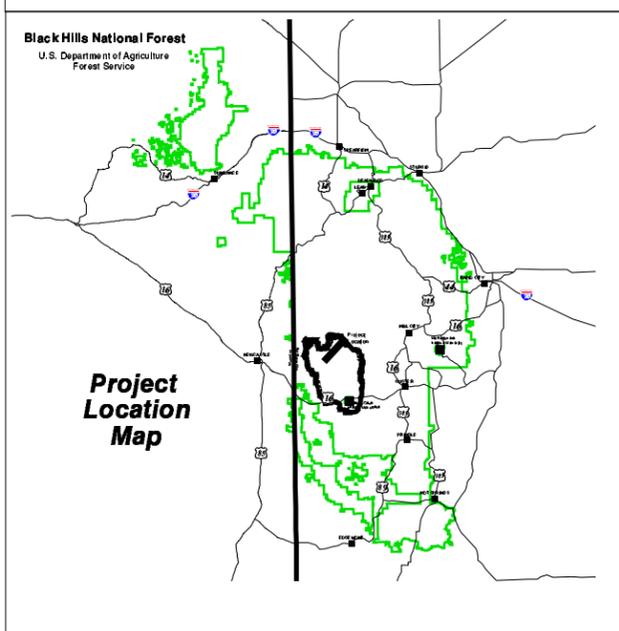
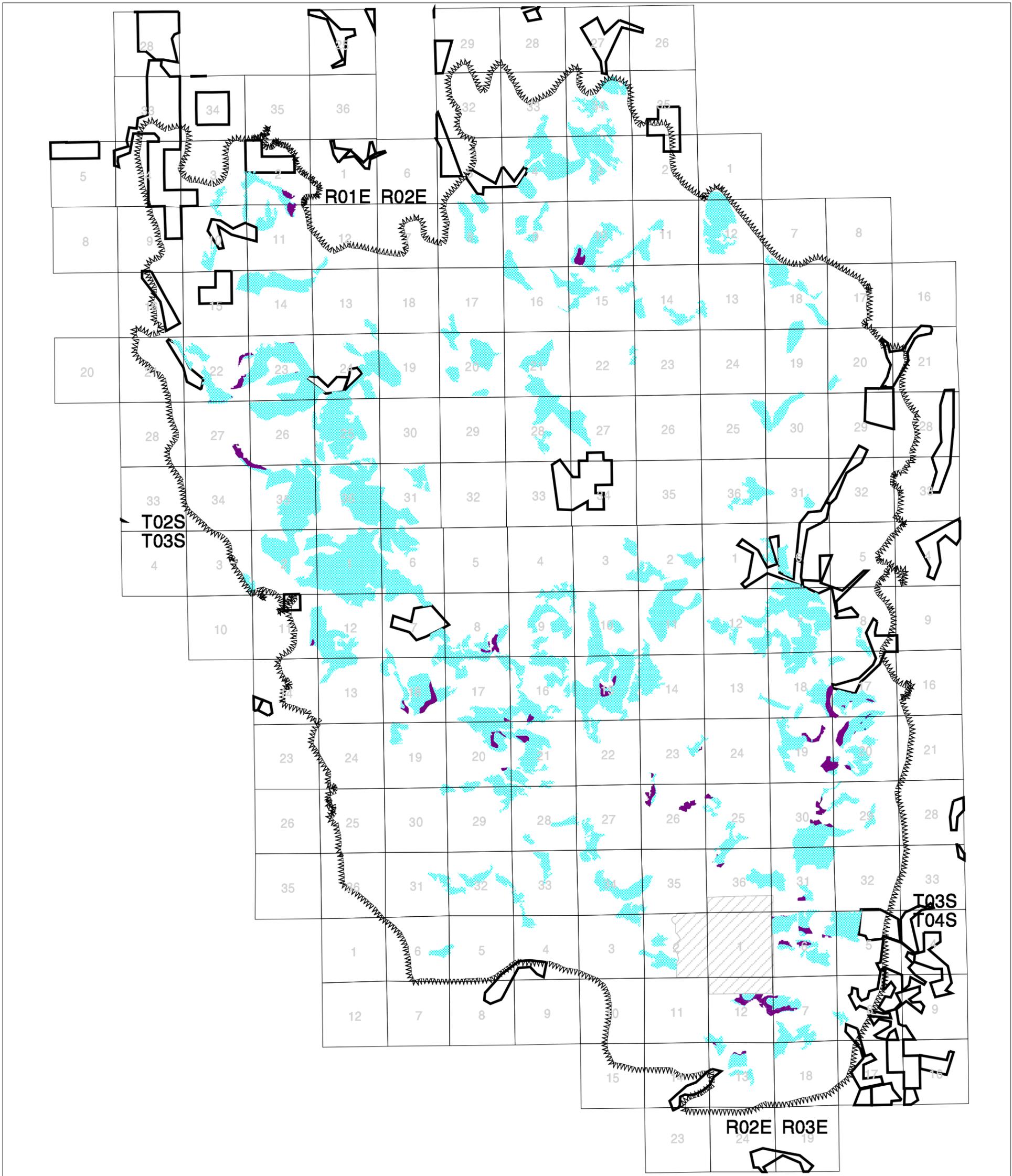
Jasper Value Recovery

Figure 4-7
Montane Grasslands
with Treatment Units
Alternative B









LEGEND

- Fire Boundary
- Soils With Mass Wasting Potential
- Soils with Severe Erosion Potential
- Proposed Treatment Units
- Private
- Jewel Cave NM
- Public Land Survey System

Jasper Value Recovery

Figure 4-10
Soils with Management
Concerns
Alternative C

0.4 0 0.4 0.8 1.2 1.6 Miles

April 1, 2001
Created by: nbosworth

Chapter 5

Glossary

Literature Cited

List of Preparers

Distribution List

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5 Chapter

5.1 Glossary

A

Access – The opportunity to approach, enter, and make use of public or private lands.

Affected Environment – The issue-specified current environment that may be affected by implementation of an alternative.

Allowable Sale Quantity –The quantity of timber that may be sold from the area of suited land covered by the Forest Plan for a time period specified by the Plan. The quantity is usually expressed on an annual basis as the “average annual allowable sale quantity.”

Alternative – One of several policies, plans or projects proposed for decision making.

Analysis File – See “ project file.”

Artificial Regeneration – Renewal of a forest stand by direct seeding or by planting seedlings.

B

Bark Beetle – A tiny black insect, ranging in size from 4 to 10 mm, that bores its way into the tree’s cambium and cuts its supply of food, thus killing the tree. Different species of beetle attack different species of tree.

Basal Area – The area of the cross-section of a tree inclusive of bark at breast height (4.5 feet above the ground) most commonly expressed as square feet per acre.

Best Management Practices (BMP) – A practice or combination of practices that are the most effective and practical (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.

Big Game – Certain wildlife that may be hunted for sport under state laws and regulations. In the Black Hills, these animals include deer, elk, turkey, mountain goats, and bighorn sheep.

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Big Game Summer Range – The area available to and used by big game through the summer season.

Big Game Winter Range – The area available to and used by big game through the winter season.

Biological Evaluation – An analysis of the potential effects on threatened, endangered or sensitive plant or animal species to: (1) Ensure that activities do not contribute to loss of viability of any native or desirable non-native plant or contribute to animal species Federal listing or trend toward Federal listing; (2) Comply with the requirements of the Endangered Species Act, that actions of Federal agencies not jeopardize or adversely modify critical habitat of Federally listed species; (3) provide a process and standard by which to ensure that threatened, endangered proposed, and sensitive species receive full consideration in the decision making process.

Board Foot – A unit of timber measurement equaling the amount of wood contained in a board 1 inch thick, 12 inches long and 12 inches wide.

Burn Intensity – A relative measure of fire intensity based on the post-fire visual appearance of the vegetation canopy used for the purpose of mapping and interpreting fire impacts. Three categories of burn intensity are defined: low, moderate, and high.

- **Low** – Trees are all or partially green. Initial conifer mortality due to the direct effect of fire is relatively low. Ocular estimates place this mortality at 20 percent.
- **Moderate** – Crowns are entirely or almost entirely scorched. Conifer mortality is nearly 100 percent.
- **High** – All tree crowns are consumed by fire, leaving only black needleless trees. Conifer mortality is 100 percent.

C

Candidate Species – Species for which the U.S. Fish & wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list but issuance of the proposed rule is precluded.

Canopy – The foliar cover in a forest stand consisting of one or several layers.

Canopy Closure (crown cover) – The ground area covered by the crowns of trees or woody vegetation as delimited by the vertical projection of crown perimeters and commonly expressed as a percent of total ground area.

Climax – The culminating stage in plant succession for a given site. Climax is reached when a given plant community can indefinitely perpetuate itself under existing conditions. A climax plant community is assumed to have reached a stable condition.

Climax Species – A species that can perpetuate itself in a given climax plant community.

Contour Felling – Falling and placement of trees on the contour of a slope for erosion control.

Cover Type – The vegetative species that dominates a site. Cover types are named for one plant species or non-vegetated condition presently (not potentially) dominant, using canopy or foliage cover as the measure of dominance.

Crown – The upper portion of a tree or other woody vegetation that supports branches and foliage.

Culmination of Mean Annual Increment (CMAI) – The point at which a tree or stand achieves its greatest average growth, based on expected growth, according to the management systems and utilization standards assumed in the Forest Plan.

Cultural Resource – See “Heritage Resource”.

Cumulative Effects – The impact on the environment which results from the incremental impact of the action when added to other actions. Cumulative impacts can also result from individually minor but collective, individual actions over a period of time.

D

Density (Tree or Stand Density) – A quantitative measure of stocking expressed either absolutely in terms of number of trees, basal area, or volume per unit area or relative to some standard condition.

Developed Recreation – Recreation that requires facilities that, in turn, result in concentrated use of an area. Examples of recreation areas are campgrounds and ski areas; facilities in these areas might include roads, parking lots, picnic tables, toilets, drinking water, ski lifts, and buildings.

Diameter at Breast Height (dbh) - The diameter of a standing tree measured 4 feet 6 inches above ground level.

Dispersed Recreation – A general term referring to recreation use outside the developed recreation site; this includes activities such as scenic driving, hiking, off-road vehicle use, hunting, backpacking, and recreation in primitive environments.

Distance Zone – Landscape areas denoted by specified distances from the observer. Used as a frame of reference in which to discuss landscape attributes or the scenic effect of human activities in a landscape.

5 Glossary

- **Immediate Foreground** – The detailed feature landscape found within the first few hundred feet of the observer, generally from the observer to 300 feet away. This distance zone is normally used in project level planning, not broad scale planning.
- **Foreground** – Detailed landscape generally found from the observer to one-half mile away.
- **Middleground** – The zone between the foreground and background in the landscape. The area located from one-half mile to 4 miles from the observer.
- **Background** – The distant part of a landscape. The landscape area located 4 miles to infinity from the viewer.

Diversity – The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan. This term is derived from the National Forest Management Act (NFMA). This term is not synonymous with “biological diversity.”

Draft Environmental Impact Statement (DEIS) – The statement of environmental effects required for major Federal actions under Section 102 of the National Environmental Policy Act, and released to the public and other agencies for comment and review.

E

Ecological Process – The action or events that link organisms and the environment, such as; predation, mutualism, successional development, nutrient recycling, carbon sequestration, primary productivity and decay.

Ecosystem – (1) A community of living plants and animals interacting with each other and with their physical environment. A geographic area where it is meaningful to address the interrelationships with human social systems, sources of energy, and the ecological processes that shape change over time. (2) The complex of a community of organisms and its environment that functions as an integrated unit; for example, forests, ponds, rivers, rotting logs, and planet earth. Ecosystems exist at various scales.

Effects – The environmental consequences as a result of a proposed action. Included are direct effects, which are caused by the action and occur at the same time and place, and indirect effects, which are caused by the action and are later in time or further removed in distance, but which are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern or land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Endangered Species – Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range and so designated by the Secretary of the Interior as endangered in accordance with the 1973 Endangered Species Act.

Environmental Impact Statement (EIS) – A statement of the environmental effects of a proposed action and alternatives to it. It is required for major Federal actions under Section 102 of the National Environmental Policy Act (NEPA) and released to the public and other agencies for comment and review. It is a formal document that must follow the requirements of NEPA, the council on Environmental Quality (CEQ) guidelines, and directives of the agency responsible for the project proposal.

F

FDR – See “Forest Development Road.”

Fire Frequency – The number of wildland fires occurring in a given area over a given time.

Fire Intensity – The rate of heat energy released per unit length of fire front. Numerically, it is the product of the heat of combustion, quantity of fuel consumed per unit area in the fire front, and the rate of spread of a fire, usually expressed in Btu per second per foot of fire front, or in kilowatts per meter.

Fireline – Generally, any cleared or treated strip used to control a fire’s spread; more specifically, that portion of a control line from which flammable materials have been removed by scraping or digging to mineral soil.

Fire Severity – Degree to which a site has been altered or disrupted by fire. Three levels of fire severity are recognized: low (light), moderate, and high (severe).

- **Low-severity** – Described as burned areas with low to medium hydrophobic class ratings and slight to moderate consumption of surface litter.
- **Moderate-severity** – Included areas that had up to 20-40% of the area exhibiting a thin but strong hydrophobic layer near the surface of the mineral layer.
- **High-severity** – These areas characteristically show a strong, discontinuous hydrophobic layer that extends for up to 3 inches in depth and included white ash, and loss of soil structure and total consumption of surface organic matter.

Fire Suppression – All work and activities associated with fire-extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

Floodplain – That portion of a river valley, adjacent to the channel, which is built of sediments deposited during the present regimen of the stream and covered with water when the river overflows its banks at flood stages.

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Forest Development Roads – A Forest road under the jurisdiction of the Forest Service. Forest Development roads are not intended to meet the transportation needs of the public at large. Generally, these roads are constructed to a standard to serve expected traffic generated by resource management. Although generally open and available for public use, the Forest Service may restrict or control use to meet specific management direction.

Forested Land – Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for non-forest use.

Forest Plan – See “Land and Resource Management Plan.”

Forest Structure (Stand Structure) – The horizontal and vertical distribution of components of a forest stand including the height, diameter, crown layers, and stems of trees, shrubs, herbaceous understory, snags and down woody debris.

Forest Supervisor – The official responsible for administering the Black Hills National Forest. The Forest Supervisor reports to the Regional Forester.

G

Game Species – Any species of wildlife or fish for which seasons and bag limits have been prescribed and which are normally harvested by hunters, trappers, and fishermen under state or Federal laws, codes, and regulations.

Geographic Information System (GIS) – Information processing computer technology to input, store, manipulate, analyze, and display earth-referenced spatial resource data in a map base format. GIS has two main components, the first being a database, and the second being a display of data, both numerically, and spatially in map format.

Goal – A concise statement that describes a desired condition to be achieved sometime in the future. It is normally expressed in broad, general terms and is timeless in that it has no specific date by which it is to be completed. Goal statements form the principal basis from which objectives are developed.

H

Habitat – The place where a plant or animal naturally or normally lives or grows.

Heritage Resource – The remains of sites, structures, or objects used by humans in the past – historical or archaeological.

Hiding Cover – Vegetation capable of hiding 90 percent of a standing adult deer or elk from the view of a human at a distance equal to or less than 200 feet.

Hydrophobic Soils (water repellent soils) – A condition where soils are literally “afraid of water” resulting from the exposure to very intensive heating during a wildfire (temperatures may reach over 1,500 degrees F at the soil surface and drop rapidly to temperatures less than 400 degrees F four inches below the soil surface). After a fire sweeps through an area and organic particles are heated to such an extent (vaporized) that as these gases cool and condense, they are chemically bonded to the soil mineral particles and are rendered extremely water repellent with varying thickness of hydrophobic soils remaining.

I

Imminently Dead Trees – Trees with greater than 75 percent crown scorch, or 50 percent bole damage or heavily infested with beetles.

Indicator (for issues) – The index or measure chosen by the interdisciplinary team to evaluate the consequences of the proposed action and alternatives relative to the identified issues.

Indicator Species – See “management indicator species.”

Interdisciplinary Team (IDT) – A group of individuals with different specialized training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view and a broader range of experience to bear on the problem.

Intermittent Streams – A stream which flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas.

Irretrievable – Applies to losses of production or use of renewable natural resources for a period of time.

Irreversible – Decisions causing changes that cannot be reversed. Irreversible commitments often apply to non-renewable resources, such as minerals and heritage resources.

Issue – A point, matter or question of public discussion or interest to be addressed or decided through the planning process.

L

Land and Resource Management Plan – A plan developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, that

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guides all natural resource management activities and establishes management standards and guidelines for the National Forest Systems lands of a given National Forest.

Landing – any place where round timber is assembled for further transport, commonly with a change of method.

LANDSAT™ (land satellite) – One of a series of US satellites designed to transmit multispectral images of portions of the earth's surface to ground stations. The current Landsat Thematic Mapper sensor has seven broad wave bands and a spatial resolution of 30 meters or 98 feet.

Late Succession – Ecosystems distinguished by old trees and related structural features. This term encompasses the later stages of stand development that typically differ from earlier stages in structure, composition, function and other attributes.

There are two types of late succession ponderosa pine defined for the Black Hills. The first type, open-canopy late succession ponderosa pine, occurs where periodic, low-intensity fires have been part of the ecosystem. These late successional stands would consist of clumps or groups of trees with grasses in the openings between the clumps. They would contain large old trees with open branches, irregular and flattened crowns. The clumps or groups of trees would contain little down dead material and few small trees.

The second type, closed-canopy late succession ponderosa pine occurs where periodic, low-intensity high-frequency fires have not been a significant part of the ecosystem. These stands would contain large old trees with open branches and irregular crowns. The stands would have multiple canopy layers made up of various-aged trees. They would be well stocked with trees and contain standing dead and down trees.

M

Management Area – An area of land with similar management goals and a common management prescription.

Management Direction – A statement of multiple-use and other goals and objectives, the associated management prescriptions, and standards and guidelines for attaining them.

Management Indicator Species – A plant or animal species selected in a planning process that are used to monitor the effects of planned management activities on populations of wildlife and fish, including those that are socially or economically important.

Mass Wasting - A general term for a variety of processes by which large masses of earthen material are moved by gravity either slowly or quickly from one place to another. Slow displacements include slumping and soil creep. Rapid movements include slope failures, landslides, debris flows and rock slides.

Mbf – Thousand Board Feet, a measure of wood volume.

MMbf – Million Board Feet, a measure of wood volume.

Mineral Soil – Weathered rock materials without any vegetative cover.

Mitigation – Actions to avoid, minimize, reduce, eliminate, or rectify the impact of a management practice.

Monitoring and Evaluation – The periodic evaluation on a sample basis of Forest Plan management practices to determine how well objectives have been met and how closely management standards have been applied.

Motorized Trail Use – Use of trails by motorized 2-wheeled vehicles such as trail bikes or scooters, or 3- or 4-wheeled vehicles such as ATV's or quad runners, or snowmobiles.

N

National Environmental Policy Act (NEPA) – An Act to declare a National policy which will encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of people, to enrich the understanding of the ecological systems and natural resources important to the Nation and to establish a Council on Environmental Quality.

National Forest Management Act (NFMA) – A law passed in 1976 as an amendment to the Forest and Rangeland Renewable Resources Planning act requiring the preparation of Regional Guides and Forest Plans and the preparation of regulations to guide that development.

National Register of Historic Places – A listing (maintained by the U.S. National Park Service) of areas which have been designated as being of historical significance. The Register includes places of local and state significance as well as those of value to the Nation.

Natural Regeneration – Reforestation of a site by natural means without seeding or planting done by people. The new crop is grown from self-sown seed or by vegetative means, such as root suckers. In burned areas, natural seed would come from trees killed by fire, or by the surviving live trees.

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Non-Forest Land – Lands never having or incapable of having greater than 10 percent of the area occupied by forest trees, and lands formerly forested and currently developed for non-forest use.

Non-Game – Species of animals which are not managed for sport hunting resource.

Notice of Intent – A notice in the Federal Register of intent to prepare an Environmental Impact Statement on a proposed action.

Noxious Weed – A weed defined by law as being especially undesirable, troublesome, or difficult to control.

Nutrient Cycling (recycling) – Circulation or exchange of elements such as nitrogen and carbon between nonliving and living portions of the environment. Includes all mineral and nutrient cycles involving mammals and vegetation.

O

Objective – A concise, time-specific statement of measurable planned results that respond to pre-established goals. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals.

Old growth – See “Late Succession.”

Opportunity – A statement of general actions, measures, or treatments that addresses a public issue or management concern in a favorable way.

Optimum – A level of production that is consistent with other resource requirements as constrained by environmental, social, and economically sound conditions.

Overstory – That portion of the trees, in a forest or stand of more than one story, forming the upper or upper-most canopy layer.

P

Perennial Stream – A stream that has running water on a year-round basis under normal climatic conditions.

Pole-Sized – Trees of at least five inches DBH, but smaller than the minimum utilization standard for sawtimber.

Prescribed Fire – A wildland fire burning under specified conditions which will accomplish certain planned objectives. The fire may result from either planned or unplanned ignitions.

Prescription – Management practices selected and scheduled for application on a designated area to attain specific goals and objectives.

Project File – The report, correspondence and meeting notes that were part of the planning and evaluation process leading up the selection of an alternative within the range of alternatives presented in the EIS.

Proposed Action – In terms of NEPA, the project, activity, or decision that a Federal agency intends to implement or undertake.

Public Participation – Meetings, conferences, seminars, workshops, tours, written comments, responses to survey questionnaires, and similar activities designed and held to obtain comments from the public about Forest Service planning.

R

Range – Land producing native forage for animal consumption and lands that are re-vegetated naturally or artificially to provide forage cover that is managed like native vegetation.

Ranger District – Administrative subdivisions of the Forest supervised by a District Ranger who reports to the Forest Supervisor.

Record of Decision – A document separate from but associated with an Environmental Impact Statement that publicly and officially discloses the responsible official's decision on which alternative assessed in the Environmental Impact Statement to implement.

Recreation Opportunity – Availability of a real choice for a user to participate in a preferred activity within a preferred setting, in order to realize those satisfying experiences which are desired.

Recruitment – The addition to a population from all causes (i.e., reproduction, immigration, and stocking). Recruitment may refer literally to numbers born or hatched or to numbers at a specified stage of life such as breeding age or weaning age.

Reforestation – The natural or artificial restocking of an area with forest trees.

Regeneration – The renewal of a tree crop, whether by natural or artificial means. Also, the young crop itself, which commonly is referred to as reproduction.

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Regulations – Generally refers to the Code of Federal Regulations, Title 36, Chapter II, which covers management of the Forest Service.

Research Natural Areas – An area in as near a natural condition as possible, which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and aquatic features. The area is set aside to preserve a representative sample of an ecological community primarily for scientific and educational purposes; commercial and general public use is not allowed.

Responsible Official – The Forest Service employee who has been delegated the authority to make a specific decision.

Resource Information System – A database containing resource information.

Riparian Area – The moist transition zone between the aquatic ecosystem and the relatively drier, more upland, terrestrial ecosystem(s). This transition zone can extend both laterally and longitudinally away from aquatic ecosystems, sometimes into headwater swales that have no defined stream channel. The riparian ecosystem is the area whose soil is relatively more moist than the adjacent upland and whose vegetation growth reflects the greater accumulation of available water.

RIS – See Resource Information System.

Roadless Area Review and Evaluation II (RARE II) – The national inventory of roadless and undeveloped areas within the National Forest and Grasslands. This refers to the second such assessment, which was documented in the Final Environmental Impact Statement of the Roadless Area Review and Evaluation, January 1979.

Road Closure – The road will be rendered unusable by a variety of means which may include the following; slashing, seeding, gates, felling of trees, etc.

Road Construction – The displacement of vegetation, soil and rock, and the installation of human-made structures involved in the process of building a complete, permanent road facility. The activities occur at a location, or corridor, that is not currently occupied by a road.

Road Reconditioning – Activities performed on an existing road or other facility to restore it to the standard it was constructed to. Involves blading of the surface and restoration of drainage capability where needed.

Road Reconstruction – Construction activities performed on an existing facility. Reconstruction includes those activities that alter the facility from its originally constructed or subsequently reconstructed condition.

S

Salvage – The harvest of trees that are dead or dying because they have been materially damaged by fire, wind, insects, fungi or other injurious agents, before they lose economic value.

Sanitation – Intermediate harvest made to remove dead, damaged, or susceptible trees to prevent the spread of pests or pathogens and so promote the health of timber stands.

Sapling – A young tree larger than a seedling but smaller than a pole. Size is within the range of 1.0 to 4.9 inches DBH.

Scenic Integrity (Existing or Objective) - State of naturalness or, conversely, the state of disturbance created by human activities or alteration. Integrity is stated in degrees of deviation from the existing landscape character in a national forest. It is the measure of the degree to which a landscape is visually perceived to be complete. The highest scenic integrity ratings are given to those landscapes which have little or no deviation from the character valued by constituents for its aesthetic appeal. Scenic integrity is used to describe an existing situation, standard for management, or desired future conditions.

- **Very High:** A scenic integrity level that generally provides for ecological change only.
- **High:** A scenic integrity level meaning human activities are not visually evident. In high scenic integrity areas, activities may only repeat attributes of form, line, color, and texture found in the existing landscape character.
- **Moderate:** A scenic integrity level that refers to landscapes where the valued landscape character “appears slightly altered.” Noticeable deviations must remain visually subordinate to the landscape character being viewed.
- **Low:** A scenic integrity referring to the landscapes where the valued landscape character “appears moderately altered”. Deviations begin to dominate the valued landscape character being viewed but they borrow valued attributes such as size, shape, effect, and pattern of natural opening, vegetative type changes or architectural styles within or outside the landscape being viewed. They should not only appear as valued character outside the landscape being viewed but compatible or complimentary to the character within.
- **Very Low:** A scenic integrity level that refers to landscapes where the valued landscape character “appears heavily altered”. Deviations may strongly dominate the valued landscape character. They may not borrow from valued attributes such as size, shape, edge effect, and pattern of natural openings, vegetative type changes or architectural styles within or outside the landscape being viewed.

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However, deviations must be shaped and blended with the natural terrain so that elements such as unnatural edges, roads, landings, and structures do not dominate the composition.

- **Unacceptable Low:** A scenic integrity level that refers to landscapes where the valued landscape character being viewed appears extremely altered. Deviations are extremely dominant and borrow little if any line, form, color, texture, pattern or scale from the landscape character. Landscapes at this level of integrity need rehabilitation. This level should only be used to inventory existing integrity. It must not be used as a management objective.

Scoping Process – The public land management activities used to determine the range of actions, alternatives, and impacts to be considered in an Environmental Impact Statement.

Sediment – Material suspended in water or that has been deposited in streams and lakes.

Seedling – A young tree less than 0.9 inches DBH.

Sensitive Species – Those plant and animal species identified by the Regional Forester for which population viability is a concern as evidenced by:

- Significant current or predicted downward trends in population numbers or density.
- Significant current or predicted downward trends in habitat capability that would reduce a species existing distribution.

Seral Condition – The unique characteristics of a biotic community, which is a developmental, transitory stage in an orderly ecologic succession involving changes in species, structure, and community processes with time.

Seral Species – A Species that will be replaced in the successional process.

Seral Stages – The series of relatively transitory plant communities that develop during ecological succession from bare ground to the climax stage.

Severe Erosion Potential - A soil erosion hazard rating which is defined as the probability of soil loss resulting from complete removal of vegetation.

Silviculture – The art and science of growing and tending forest vegetation, i.e., controlling the establishment, composition, and growth of forests, for specific management goals.

SIR – See “Supplemental Information Report”.

Site Productivity – Production capability of specific areas of land.

Slash – The residue left on the ground after timber cutting and/or accumulating there as a result of storm, fire, or other damage. It includes unused logs, uprooted stumps, broken or uprooted stems, branches, twigs, leaves, bark and chips.

Small Game – Birds and small mammals normally hunted or trapped.

Snag – A standing dead tree or standing portion from which at least the leaves and smaller branches have fallen.

Snag Dependent Species – Animals whose long-term existence requires the presence of standing dead trees.

Soil Compaction – A physical change in soil properties that results in a decrease in porosity and an increase in soil-bulk density and strength.

Soil Erosion – The detachment and movement of soil from the land surface by water or wind. Accelerated erosion is much more rapid than normal, natural or geologic erosion, primarily as a result of the influence of activities of man, animals or natural catastrophes. Soil erosion and sediment are not the same (see “Sediment”).

Soil Productivity – The inherent capacity of a soil to support the growth of specified plants, plant communities or a sequence of plant communities. Soil productivity may be expressed in terms of volume or weight/unit area/year, percent plant cover or other measures of biomass accumulation.

Stand (Tree Stand) – A contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality to be a distinguishable unit.

Stand Exams – Vegetation and site surveys used to collect data on forest stands. These surveys are sometimes referred to as Stage II inventories.

Standard – A principle specifying conditions or levels to be achieved.

Stand Replacement Fire – Synonymous with “stand destroying fire” and “ecologically significant fire” which is defined as: A high intensity surface fire or crown fire which kills most of the existing vegetation and provides a set of conditions, including consumption of large woody surface fuels and removal of the entire duff layer over much of the area affected by the fire (Crane and Fischer, 1986), exposing the seedbed, opening of closed cones and stimulation of sprouting species which leads to replacement of the pre-fire vegetation (Kilgore, 1978), and largely determines development of future stand density, age structure, and species composition (Brown, 1975).

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Stocking (Tree or Stand Stocking) – A qualitative measure of density when compared to a management objective or standard; i.e., understocked, well stocked, overstocked, etc.

Stream – A watercourse having a distinct natural bed and banks; a permanent source which provides water at least periodically; and at least periodic or seasonal flows at times when other recognized streams in the same area are flowing.

Structural Stage – Any of several developmental stages of tree stands described in terms of tree size and the extent of canopy closure they create. They include:

Structural Stage 1 (Grass/Forb): An early forest successional stage during which grasses and forbs are the dominant vegetation. At the RIS site level, Structural Stage I is defined as nonstocked, with an average maximum density less than 10 percent. Small-scale Structural Stage I within RIS sites are at least one acre in size, do not meet the seedling stocking criteria and contain no saplings, poles or mature trees.

Structural Stage 2 (Shrubs/Seedlings): Developmental stage dominated by tree seedlings (less than one inch DBH) and shrub species.

Structural Stage 3 (Sapling/Pole): Developmental stage dominated by young trees 1 to 7 inches DBH, 10 to 50 feet tall and usually less than 50 years old. This stage is subdivided into three canopy closure classes: A (less than 40 percent), B (40 to 70 percent), and C (greater than 70 percent).

Structural Stage 4 (Mature): Consists of trees larger and older than Structural Stage 3. Also classified by the same canopy closure categories as Structural Stage 3.

Structural Stage 5 (Old Growth): This structural Stage is characterized by trees 160 years of age or older.

Succession – The replacement of one plant community by another, developing toward climax.

Successional stage – The relatively transitory communities that replace one another during development toward a potential natural community.

Suitability – The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suited for a variety of individual or combined management practices.

Suited Timberlands – Land for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions. There is reasonable assurance that such lands can be adequately restocked as provided in 36 CFR 219.13(h)(3).

Supplemental Information Report – A report documenting new information or changed circumstances relating to the environmental impacts of a proposed action which came to the attention of the responsible official after a decision had been made and prior to completion of the approved project.

T

Thermal Cover – Cover used by animals to ameliorate effects of weather. Optimally, thermal cover is provided by a stand of coniferous trees, 30 to 60 acres in size, at least 40 tall, with a canopy cover of at least 70 percent.

Threatened Species – Any species likely to become endangered within the foreseeable future throughout all or a significant portion of its range and that has been designated in the Federal Register by the Secretary of Interior as such.

Tiering – Refers to the coverage of general matters in broader Environmental Impact Statements (such as National program or policy statements) with subsequent narrower statements or environmental analyses (such as Regional program statements or ultimately site-specific statements) incorporating, by reference, the general discussions and concentrating solely on the issues specific to the statement subsequently prepared.

Tractor Logging – Any logging method, which uses a tractor, either mounted on crawler tracks or wheels, as the motive power for transporting logs from the stumps to a collecting point, whether by dragging or carrying the logs.

Treatment Area – Area on which management, like timber harvesting or prescribed burning, occurs.

U

Understory – The lowest layer of vegetation in a forest or shrub community composed of grass, forbs, shrubs and trees usually less than 10 feet tall. Vegetation growing under the tree canopy.

Unsuited Forest Lands – Forest land that is not managed for timber production because: (1) the land has been withdrawn by Congress, the Secretary of Agriculture, or Chief of the Forest Service; (2) technology is not available to prevent irreversible damage to soils, productivity, or watershed conditions; (3) there is no reasonable assurance that lands can be adequately restocked within five years after final harvest based on existing technology

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and knowledge; (4) there is presently a lack of adequate information or responses to timber management activities; or (5) timber management is inconsistent with or not cost efficient in meeting the management requirements and multiple-use objectives specified in the Forest Plan.

V

Viable Populations – 36 CFR 219.19 defines a viable population for planning purposes as one that has the estimated numbers and distribution of reproductive individuals to insure that a continued viable population is well distributed in the planning area.

W

Water Yield – (1) The runoff from a watershed, including groundwater outflow. (2) The measured output of water, usually measured in acre-feet. This water does not necessarily leave the watershed.

Watershed – The area of land, bounded by a divide, that drains water, sediment and dissolved materials to a common outlet at some point along a stream channel.

Wetlands – Areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances, does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

Y

Yarding – Hauling timber from the stump to a collection point.

5.2 Literature Cited

- Black Hills National Forest. September 2000. Jasper Fire Rapid Assessment Report. USDA Forest Service, Custer, SD. Unpublished.
- Black Hills National Forest Overview: Volume I-Synthetic Summary. Lance Rom, Tim Church, and Michele Church Editors. Ms. on file, Forest Supervisors Office, Black Hills National Forest, Custer, South Dakota.
- Cannings, R. J. 1993. Northern Saw-whet Owl (*Aegolius acadicus*). In the Birds of North America, No. 42 (A. Poole and F. Gill, Eds.). Philadelphia: The Academy of Natural Sciences; Washington, D.C.: The American Ornithologists' Union.
- Diaz, Nancy, and Dean Apostol. 1993. Forest Landscape Analysis and Design. USDA-FS. 110 p.
- Dixon, R.D., and V.A. Saab. 2000. Black-backed Woodpecker (*Picoides arcticus*). In The Birds of North America, No. 509 (A. Poole and F. Gill, eds). The Birds of North America, Inc. Philadelphia, PA. 19p.
- Erickson, J. L. and S. D. West. 1996. Managed forests in the Western Cascades: the effects of seral stage on bat habitat use patterns. In: Bats and Forests Symposium, October 19-21, 1995, pages 215-227. Barclay and Brigham, eds. Res. Br., B.C. Min. For. Victoria, British Columbia, Canada.
- Fischer, T.D., D.C. Backlund, D.F. Higgins, and D.E. Naugle. 1999. A field guide to South Dakota amphibians. SDAES Bull. 733, South Dakota State University; Brookings. 25p.
- Frest, T.J. and E.J. Johannes. 1993. Land snail survey of the Black Hills National Forest, South Dakota and Wyoming. USDA-Forest Service, USDI-Fish, and Wildlife Service.
- Garcia, Juanita and Dave Mckee. 2000. Jasper Fire Suppression Activities, BHNF Project Number 001017003. Ms. on file, Forest Supervisors Office, Black Hills National Forest, Custer, South Dakota.
- Hutto, R.L. 1995. Composition of bird communities following stand-replacement fires in northern Rocky Mountain (U.S.A.) conifer forests. Conserv. Biol. 9:1,041-1,058.

5 Literature Cited

- Keegan, Stephen, and Simon Daws. 1997. Monitoring of Post-Fire Landscapes: Visual Quality. In: Monitoring Report, Post-Fire Recovery and Timber Salvage Projects, 1985-1995. Malheur National Forest, Pacific Northwest Region, USDA-FS. John Day, Oregon. 14 p.
- Land and Resource Management Plan, Black Hills National Forest, 1997.
- Lyon, L. J. 1983. Road density models describing habitat effectiveness for elk. *Journal of Forestry* 81(9):592-595.
- Marriott, H. J., A. G. McAdams, D. Faber-Langendoen, D. A. Stutzman, and B. Ward. 1999. The Black Hills Community Inventory, final report. Prepared by The Nature Conservancy, Midwest Regional Office, Minneapolis.
- Marriott, H. 2000. Survey of Black Hills Montane Grasslands. Wildlife Division of the South Dakota Department of Game, Fish and Parks. 56pp.
- Mattson, Todd A. 1994. The distribution of bats, and the roosting ecology of the silver-haired bat (*Lasionycteris noctivagans*) in the Black Hills of South Dakota. M.S. University of Wyoming, Laramie. 60 pp.
- McIver, J.D. and L. Starr. 2000. Environmental effects of postfire logging: literature review and annotated bibliography. PNW-GTR-486. USDA Forest Service, Pacific Northwest Research Station. Portland, Oregon.
- Millspaugh, J. 1995. Seasonal movements, habitat use patterns and the effects of human disturbances on elk in Custer State Park, South Dakota. M.S. Thesis. South Dakota State University, Brookings
- Parrish, J., D. Herman, and D. Reyher. 1996. A century of change in the Black Hills forest and riparian ecosystems. USDA Forest Service, South Dakota Agricultural Experiment Station, Rapid City, SD. 20p.
- Perry, C. and R. Overly. 1977. Impacts of roads on big game distribution in portions of the Blue Mountains of Washington. 1972-1973. *Appl. Res. Sect. Bull.* 11. Olympia WA: Washington Game Dept. 39p.
- Peterson, C.R. 1974k. A preliminary report on the amphibians and reptiles of the Black Hills of South Dakota and Wyoming. University Illinois Masters Thesis.
- Peterson, R.A. 1993. A birdwatcher's guide to the Black Hills and adjacent plains. 2nd ed. PC Publishing; Vermillion, South Dakota. 88p.

- Reyher, D. and L. Gonyer. September 2000. JRAT (Jasper Rapid Assessment Team), Jasper Fire, Resource Conditions, Soil and Water.
- Royer, R.A. and G.M. Marrone, 1992a. Conservation status of the Tawny Crescent (*Phyciodes batessi*) in North and South Dakota. USDI Fish and Wildlife Service; Denver, Colorado. 44p. plus appendices.
- Saab. V.A.; Dudley, J.G. 1998. Responses of cavity-nesting birds to stand replacement fire and salvage logging ponderosa pine / Douglas-fir forest of southwestern Idaho. Res. Paper RMRS-RP-11. Ogden, UT: U.S. Dept. of Agriculture, Forest Service, Rocky Mountain Research Station. 17p.
- Squires, J.R. and R.T. Reynolds. 1997. Northern Goshawk (*Accipiter gentiles*). In The Birds of North America, No. 298 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences; Philadelphia, Pennsylvania and the American Ornithologists' Union; Washington D.C. 32 p.
- Smith F. and L. Lentile. 2000. Snag management in the Black Hills National Forest. College of Natural Resources, Colorado State University. In Progress. 14p.
- South Dakota Natural Heritage Database. 1999. Rare, threatened, and endangered species documented on Black Hills National Forest – Annual Reports to Districts. South Dakota Game, Fish, and Parks Department; Pierre. Web Site: www.state.sd.us/gfp/diversity
- Thompson, S. and D. Backlund. No date. South Dakota snakes: a guide to snake identification. South Dakota Game, Fish, and Parks Department; Pierre, SD. 29p.
- Tigner, J. and W.C. Aney. 1994. Report of northern Black Hills bat survey, October 1993 – October 1994. USDA Forest Service, unpublished.
- Tobalske, B.W. 1997. Lewis's woodpecker (*Melanerpes lewis*). In The Birds of North America, No. 284 (A. Poole and F. Gill, Eds.). The Academy of Natural Sciences; Philadelphia, Pennsylvania and the American Ornithologists' Union; Washington D.C. 28 p.
- USDA. Agriculture Handbook Number 701, Landscape Aesthetics – A Handbook for Scenery Management, USDA-FS, December 1995.
- USDA. Forest Service, 1996. Final Environmental Impact Statement, Intermountain Region Noxious Weed and Poisonous Plant Control Program.

5 Literature Cited

- USDA. Forest Service. Forest Health Protection Risk Assessment, Forest Health Institute, Washington, D.C., 1998.
- USDA. Forest Service. 1992. Risk Assessment for Herbicide Use in Forest Service Regions 1,2,3,4 and 10 and on Bonneville Power Administration Sites.
- USDA. Forest Service. 1992. Risk Assessment for Herbicide Use in Forest Service Regions 1,2,3,4, and 10 and on Bonneville Power Administration Sites.
- USDA. Forest Service. 1997. Black Hills National Forest, Land and Resource Management Plan.
- USDA. Soil Conservation Service. 1990. Soil survey of Custer and Pennington Counties, Black Hills Parts, South Dakota.
- Villard M. and J. Schieck. 1996. Immediate post-fire nesting by black-backed woodpeckers, *Picoides arcticus*, in Northern Alberta. The Canadian Field-Naturalist. Vol. 111. p. 478-479.

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Appendix A

National Direction

A Appendix

The following are excerpts from Congressional actions, the Code of Federal Regulations, the Forest Service Manual, and Forest Service Handbooks that are pertinent to the silvicultural aspects of the proposed action and alternatives of this project.

Laws and Regulations

Forest and Rangeland Renewable Resources Planning Act of 1974 (16 USC 1600), Section 6, (m)

The Secretary shall establish –

(1) standards to insure that, prior to harvest, stands of trees throughout the National Forest system shall generally have reached the culmination of mean annual increment of growth (calculated on the basis of cubic measurement or other methods of calculation at the discretion of the Secretary): *Provided*, That these standards shall not preclude the use of sound silvicultural practices, such as thinning or other stand improvement measures: *Provided further*, That these standards shall not precluded the Secretary from salvage or sanitation harvesting of timber stands which are substantially damaged by fire, windthrow or other catastrophe, or which are in imminent danger from insect or disease attack;

Code of Federal Regulations

Sec. 219.16 Timber resource sale schedule.

(a) (1) (iii) In accordance with the established standards, assure that all even-aged stands scheduled to be harvested during the planning period will generally have reached the culmination of mean annual increment of growth. Mean annual increment shall be based on expected growth, according to management intensities and utilization standards assumed in paragraphs (a)(2) (i) and (ii) of this section and on forest type and site quality. Mean annual increment shall be expressed in cubic measure. Alternatives which incorporate exceptions to these standards shall be evaluated if it is reasonable to expect that overall multiple use objectives would be better attained. Alternatives which incorporate exceptions to these standards are permitted for the use of sound silvicultural practices, such as thinning or other stand improvement measures; for salvage or sanitation harvesting of timber stands which are substantially damaged by fire, windthrow, or other catastrophe, or which are in imminent danger from insect or disease attack; for cutting for experimental and research purposes; or for removing particular species of trees, after consideration has been given to the multiple uses of the area being planned and after completion of the public participation process applicable to the preparation of a forest plan;

Sec. 219.27 Management requirements.

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(c) Silvicultural practices. The following management requirements apply to timber harvest and cultural treatments:

(1) No timber harvesting shall occur on lands classified as not suited for timber production pursuant to Sec. 219.14 except for salvage sales, sales necessary to protect other multiple-use values or activities that meet other objectives on such lands if the forest plan establishes that such actions are appropriate. These lands shall continue to be treated for reforestation purposes if necessary to achieve the multiple-use objectives of the plan.

(2) The selected sale schedule provides the allowable sale quantity for the first planning period. Within the planning period, the volume of timber to be sold in any one year may exceed the average annual allowable sale quantity so long as the total amount sold for the planning period does not exceed the allowable sale quantity. Nothing in this paragraph prohibits salvage or sanitation harvesting of timber stands which are substantially damaged by fire, windthrow, or other catastrophe, or which are in imminent danger of insect or disease attack and where such harvests are consistent with silvicultural and environmental standards. Such timber may either substitute for timber that would otherwise be sold under the plan or, if not feasible, be sold over and above the planned volume.

(3) When trees are cut to achieve timber production objectives, the cuttings shall be made in such a way as to assure that the technology and knowledge exists to adequately restock the lands within 5 years after final harvest. Research and experience shall be the basis for determining whether the harvest and regeneration practices planned can be expected to result in adequate restocking. Adequate restocking means that the cut area will contain the minimum number, size, distribution, and species composition of regeneration as specified in regional silvicultural guides for each forest type. Five years after final harvest means 5 years after clearcutting, 5 years after final overstory removal in shelterwood cutting, 5 years after the seed tree removal cut in seed tree cutting, or 5 years after selection cutting.

(d) Even-aged management. When openings are created in the forest by the application of even-aged silviculture, the following management requirements apply:

(2) Individual cut blocks, patches, or strips shall conform to the maximum size limits for areas to be cut in one harvest operation established by the regional guide according to geographic areas and forest types. This limit may be less than, but will not exceed, 60 acres for the Douglas-fir forest type of California, Oregon, and Washington; 80 acres for the southern yellow pine types of Alabama, Arkansas, Georgia, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Oklahoma, and Texas; 100 acres for the hemlock-sitka spruce forest type of coastal Alaska; and 40 acres for all other forest types except as provided in paragraphs (d)(2)(i) through (iii) of this section:

(iii) The established limit shall not apply to the size of areas harvested as a result of natural catastrophic condition such as fire, insect and disease attack, or windstorm.

Forest Service Manual (FSM)

The salvage sale program provides the means to sustain ecological values and to expedite the efficient recovery of the forest resource value and volume from trees killed or damaged through catastrophic events, such as fire, insects, disease, windthrow, or hurricanes (FSM 2435).

The objectives of the salvage sale program are to:

Respond quickly to potentially serious catastrophes such as wildfire, windthrow, or hurricane, to avoid unnecessary loss of value and volume.

Provide for the removal of damaged or dead timber, as soon as practicable following a catastrophic event.

Assist restoration of the forest resource when a catastrophe causes damage

Manage forested areas that are at high risk of spreading disease or insect epidemics to sustain ecological values and to prevent volume loss.

Manage the use of the Salvage Sale Fund to provide for the rapid, optimum practical use of wood material damaged through natural events, such as insects, windstorms, wildfires, hurricanes, and tornadoes. (FSM 2435.02)

2435.04 – Responsibility

2435.04h - Forest Supervisors

It is the responsibility of the Forest Supervisors to:

1. Develop a salvage sale program annually to address adverse ecosystem impacts resulting from tree mortality or damage and the potential loss of timber volume or value and provide the information to the Districts to use as a basis for developing Salvage Sale Fund (SSF) Plans.
2. Ensure that each sale used to collect or expend the SSF meets the definitions of, and is consistent with, the criteria for using SSF in accordance with FSM 2435.05 and FSM 2435.21.
3. Ensure that each salvage sale is in full compliance with 36 CFR 223.30 and the applicable land and resource management plan.
4. Evaluate forest plan standards and guides as they relate to catastrophic mortality and loss of timber volume and value to ensure consistency with the salvage sale program policy.
5. Ensure that National Environmental Policy Act (NEPA) documentation is cross-referenced in the salvage sale program documentation.

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6. Develop a recommendation showing a potential emergency exists, when appropriate, and request Regional Forester review of the recommendation as provided for at 36 CFR 215.10(d).

7. Ensure collections of SSF from timber sale contracts for all eligible sales within Forest Supervisor authority.

8. Ensure proper management of the Forest's SSF account, concurrently with all other permanent appropriations and trust funds, to assure sufficient collections to accomplish future program needs.

9. Review annually the Forest's SSF account balances. Ensure preparation of a Salvage Sale Fund Balance Analysis (FS-2400-52) for the Forest. Identify excess balances that could be transferred to the Washington Office (FSH 2409.18, ch. 50) and report findings to the Regional Forester.

10. Ensure computation and forwarding of indirect costs for Ranger District and Forest Supervisor offices.

11. Ensure documentation of the budget process used to estimate the planned expenditures, including indirect costs at the District and Forest levels.

12. Review the Forest's and Districts' expenditure estimates to ensure consistency with SSF Plans and identify needs for salvage sale surcharge collections.

13. Determine and approve annually the salvage sale surcharge (FSM 2435.05) collections to be used throughout the Forest when developing SSF Plans.

14. Approve the SSF Plans (Form FS-2400-51) and subsequent revisions within delegated authorities. Ensure each plan includes documentation supporting the assumptions used and that the Forest has not exceeded authorized SSF surcharge collection limits (FSM 2435.22b).

15. Review annually, and update as needed, the SSF Plans for open sales to ensure that each plan reflects the current unit cost rates and the current guidance for application of indirect costs.

16. Issue guidance establishing the correct overhead assessment rate to be used in determining planned indirect costs. Determine annually the indirect costs for the Forest and Ranger Districts. Direct Forest personnel responsible for preparing a SSF Plan (Form FS-2400-51) to use the determined indirect cost values.

17. Ensure the transfer of any excess funds to the Regional Forester or request an exception from the Regional Forester.

18. Schedule periodic reviews of the forest management and financial management program areas of each District's salvage sale program activities. Review each District at least every 3 to 4 years or concurrent with business management reviews (FSM 1410) whichever is sooner.

2435.04i - District Rangers

It is the responsibility of each District Ranger to:

1. Identify timber stand areas having threatened or actual tree mortality and initiate actions to aggressively address potential salvage situations.

2. Complete appropriate work required by the National Environmental Policy Act (NEPA) requirements (FSH 1909.15) to promptly address salvage situations.

3. Ensure that NEPA documentation is cross-referenced in the salvage sale program documentation.

4. Determine budget requests for Salvage Sale Funds (SSF) based on estimated expenditures. Document assumptions made when calculating expenditures. Submit the information to the Forest Supervisor for review and approval.

5. Determine if a sale meets the criteria of a salvage sale in accordance with FSM 2435.05. Develop and approve SSF Plans and subsequent revisions, as needed, within delegated authorities and documenting all plan assumptions. For sales exceeding District Ranger authority, develop SSF Plans and submit them to the Forest Supervisor for approval.

6. Review SSF Plans to ensure they reflect current costs and overhead rates. Forward SSF Plan information to the Forest Supervisor for use in the annual SSF Balance Analysis (FSH 2409.18, sec. 52.49.)

7. Ensure the collection of SSF funds from timber sale contracts for all eligible timber sales within District Ranger authority.

8. When the District Ranger is not a designated collection officer, accept salvage sale payments when there is need for prompt removal of timber to prevent loss. Subsequent payments on salvage sales also may be accepted to avoid delay in salvage operations (FSM 6535.1).

2435.4 - Emergency Salvage Sales

Some situations require the prompt removal of damaged timber to avoid deterioration, the spread of insects, or to protect resource values. An emergency salvage sale is one that arises from an unexpected event or serious occurrence or situation requiring urgent action. Examples of these situations include wildfire, wind storm blowdown, or hurricane. Salvage sales may be designated as emergency only when the Chief has determined (FSM 2435.04a) that an emergency situation exists. If the Chief subsequently determines the sale responds to an emergency action, the rules at 36 CFR 215.10(d) prohibit granting a stay of that decision if appealed. The responsible official must notify the public when a sale has been determined as an emergency (36 CFR 215.5).

Each Region must expedite salvage sales in roaded areas having little likelihood of significant environmental impacts and where either a high risk of fire and loss of life or property exists or a high risk of timber deterioration exists.

1. Sales in roaded areas where only minor access is needed, and minimal resource impact is projected, should be ready for advertising within 90 days of the determination of the need for salvage. Consider using an incident command-type system to expedite the sale process (FSH 5109.17, sec. 11).

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2435.5 - Salvage Sale Preparation Procedures and Resource Coordination

Recognizing the urgency of each situation, and using the flexibility within the Forest Service directive system, expedite salvage sale program efforts within the constraints of the delegated authority and direction stated throughout FSM 2435 through 2435.3.

1. Project Analysis and Documentation.

a. National Environmental Policy Act (NEPA) Compliance. Use existing information to the maximum extent possible and collect new information only where essential. Tier NEPA documentation to existing environmental documents, such as the Forest Plan environmental impact statement (EIS), wherever possible. Incorporate other documentation by reference and use categorical exclusions, where feasible.

If the prescribed comment period for a draft EIS or waiting period before implementation of a final EIS must be reduced for "compelling reasons of national policy" (40 CFR 1506.10(d)), contact the Director of Ecosystem Management Coordination, Washington Office, for assistance and additional guidance (FSH 1909.15, sec. 23.2).

b. Biological Evaluations. For threatened and endangered species, use existing information only, unless the responsible line officer determines field reconnaissance is necessary. The need for, and extent of, field reconnaissance should be commensurate with the project-associated risk to the species involved and with the level of knowledge already available. Work with the Fish and Wildlife Service and the National Marine Fisheries Service to shorten timeframes for consultation, wherever possible.

For species designated by the Regional Forester as sensitive, use existing information. Limit the collection of any additional field data to the specific areas where sensitive species are known to exist or are likely to exist because of known habitat. Consider excluding areas known to have high habitat value from initial salvage sales when field data collection would unnecessarily delay the project. The previously excluded areas may be included later in future sales after completing the additional data collection.

c. Cultural Resource Surveys. Refer to existing cultural resource surveys. Limit new cultural resource surveys to only high priority areas identified in a cultural resource overview. Consider excluding high priority areas from initial salvage sales when the need for surveys would unnecessarily delay the project. After completing needed surveys in the high priority areas, include such areas in future sales later, if appropriate.

2. Fuels Treatment. Ensure that post-harvest fuels are treated to mitigate wildfire risks. Provide for adequate hazard-abatement collections.

3. Timber Sale Procedures. Expedite timber sale preparation by using area sales (FSH 2409.18, sec. 11), scale or weight volume determinations (FSH 2409.15, ch. 50), and 7-day advertisements (FSM 2432.44, para. 2).

CHAPTER 2470 - SILVICULTURAL PRACTICES

2470.5 - Definitions. Refer to The Society of American Foresters, 1971 publication "Terminology of Forest Science, Technology, Practices, and Products" as the recognized basis for silvicultural terminology and definitions.

In addition, use terms defined at 36 CFR 219.3 and the following terms to guide silvicultural practices on National Forest lands.

10. Salvage Cutting. Intermediate cutting made to remove trees that are dead or in imminent danger of being killed by injurious agents.

2471 - HARVEST CUTTING

2471.02 - Objective. To manage timber and other forest resources for protection, enhancement, and sustained yield of those resources through the sale or permitted use of forest products with the long-term intent to regenerate the stand.

2471.1 - Even-aged Stands

2471.11 - Considerations. Before applying any even-aged regeneration cutting method to a stand, consider the standards and guidelines in the forest plan concerning the culmination of mean annual increment along with the size, shape, dispersal, and duration of openings. Apply clearcutting only where it has been found to be the optimum method of regeneration to meet multiple-use objectives.

2471.12 - Methods. Even-aged stands are created through the use of the following regeneration harvest cutting methods:

1. Clearcutting.
2. Seed tree cutting.
3. Shelterwood cutting.

2471.2 - Uneven-aged Stands

2471.21 - Considerations. Consider the effects of frequent entries, generally higher sale layout costs, logging complexities, and relatively low removal volumes per entry when applying uneven-aged cutting methods.

2471.22 - Methods. Uneven-aged stands are produced by the following regeneration harvest cutting methods:

1. Individual tree selection.
2. Group selection.

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2471.3 - Intermediate Cutting

2471.31 - Cautions. Do not use intermediate cutting to begin the regeneration of even-aged stands. If cutting will be heavy enough to begin the regeneration process, such as in a salvage entry, prescribe a regeneration harvest.

2471.32 - Methods. Intermediate cutting includes the following types of treatments or cutting:

1. Release.
2. Thinning.
3. Sanitation.
4. Salvage.
5. Improvement cutting.

Forest Service Handbook Direction

FSH 2409.13 - Timber Resource Planning Handbook, WO Amendment 2409.13-92-1

32.1 - Culmination of Mean Annual Increment. Rotation ages must meet the requirement that all even-aged stands scheduled for harvest generally will have reached the culmination of mean annual increment (CMAI) of growth. Permit the harvest of trees or stands before CMAI for: (1) sound silvicultural practices such as thinnings or other stand improvement measures; (2) salvage or sanitation harvesting of stands substantially damaged by fire, windthrow, or other catastrophes, or stands that are in imminent danger from insect or disease attack; (3) experimental and research purposes; and (4) removal of particular species of trees, after consideration of the multiple-use objectives of the forest plan alternative.

Appendix B

Comment and Issue Handling

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The following table contains a summary of comments received during scoping and how they were handled in the Environmental Impact Statement. The response provides an explanation of how the comment is addressed or where the information on the subject can be found in the EIS. The comments are coded to help the District track how the comment will be handled. Some comments are labeled with an issue. Issues lead to alternative management activities within the scope of the EIS. By reviewing Chapter 1 in the EIS the commentor can see how the alternatives address the issues. Other comments do not specifically apply to an issue. In those cases the issue column is left blank. In cases where the issue is blank the response indicates how the comment is addressed and where additional information can be found.

#	Name	Comment Summary	Issue	Response
	Akam	Supports timber recovery	Value recovery	
		Dead trees should be removed to improve appearance		Both Alternative B and C treat area around private land where commercial volume is present
		Concerned with dead trees falling on their new fences		Both Alternative B and C treat area around private land where commercial volume is present
	Alexander	Supports timber recovery		
		Keep on mailing list		
	BHFRA	Supports timber recovery	Value recovery	
		Use flexible utilization standards		The Forest Plan specifies very broad utilization standards for dead timber
		Use reasonable and flexible mitigation to accomplish resource objectives		This information has been provided to the IDT team and the timber sale contract preparers
		Does not support harvest in designated old growth stands.	Old growth	This issue was considered Alternative C

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#	Name	Comment Summary	Issue	Response
	BHG Sierra Club	An EIS must be used to address cumulative effects		An EIS will be prepared for this action
		The project is tiered to an unlawful Forest Plan		This project will be in compliance with Phase 1 of the Forest Plan amendment process
		Concerned that concerns of Native Americans are considered	Heritage resources	The Native American tribes have been consulted regarding this action. They have provided their own comments.
		The project must provide for cavity-dependent species	Wildlife habitat	This issue is addressed in Alternative C, Mitigation Measures Common to All Alternatives and Cumulative Effects sections of the EIS
		The project must adhere to standards for CMAI		Salvage operations are exempted from CMAI standards. Dead trees have culminated.
		The district must disclose the cumulative impacts of past timber sales		The cumulative impacts of completed timber sales was reflected in the pre-fire forest conditions. The cumulative impacts of on-going sales is addressed in the cumulative effects section
	Biodiversity Associates	The comment period under the NOI is insufficient to address public concerns.		The original scoping letter was sent out on 10/27/00 requesting comments by 11/17/00. The NOI extended that comment period to 12/9/00. Comments will continue to

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#	Name	Comment Summary	Issue	Response
				be accepted until the draft EIS is issued. Following that there will be an additional 45-day comment period.
		This project requires an EIS		An EIS will be written for this project
		This project must consider the Chief's interim direction for wildlife including snags		This action will comply with the Chief's interim direction or wildlife including snags
		No piece-mealing of projects within the Jasper burn area		The EIS for this action will consider the cumulative impacts of past, present, and foreseeable
		This project must protect imperiled montane grasslands		This project will honor commitments made in the Settlement Agreement regarding montane grasslands
		Requests that the montane grasslands be designated as RNAs		This issue is outside the scope of this analysis
		Wants to see dead trees left along roads to improve visual quality		People driving roads through the burn area will be able to see much of the burned forest and associated wildlife under all alternatives.
		Project should provide habitat for snag dependent species	Wildlife habitat	Snag are provided in all alternatives. Alternatives A and C address this issue specifically. Mitigation measure are included in both action alternatives.
		Consider impacts to goshawks		Mitigation measures have been included to protect goshawk

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#	Name	Comment Summary	Issue	Response
				nesting areas from disturbance. Value recovery areas provide an opportunity to substituted dead volume for green timber now under contract saving goshawk habitat in the burn
		Do not harvest in burnt old growth stands	Old Growth	Alternative C defers harvest of dead trees in all old growth stands
		Concerned about potential soil erosion		Mitigation measures have been designed to help prevent soil erosion on harvested sites.
		Concerned about blowdown of other trees after removal of standing dead		Dead trees will gradually blow down over time. Harvesting nearby will not accelerate the rate of blowdown.
		Would like to see project delayed to see which trees will die.		The definition of trees to be harvested under this proposal is trees with less than 25% live green crown. The silviculturist has determined that these trees will very likely die.
		Remove only trees killed by Jasper fire		Only fire-killed trees inside the fire perimeter will be harvested
		Consider an alternative which cuts only the tops of trees to leave enough snags to meet the interim direction		This alternative was not considered in detail since other alternatives will meet the interim direction

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#	Name	Comment Summary	Issue	Response
		Do not harvest trees with >25% live green crown		The definition of trees to be harvested under this proposal is trees with less than 25% live green crown
		Do not harvest dead trees that are at least 20" dbh		Both action alternatives include mitigation to leave some of the largest diameter trees
		Do not log in stands having green canopy closure of at least 50%	Value Recovery	There are some green timber stands inside the burn currently under contract. This project would identify dead stands to be traded for these green stands thus preventing them from being logged.
		Provide a 200' no disturbance buffer around known snail colonies		Mitigation measures provide for a 100' buffer which is in compliance with info from the Expert Interview Summary and the Phase I amendment
		Provide a ½ mile no disturbance buffer around the three surviving goshawk nests		There is only one goshawk nest which survived intact and is likely to be viable. Mitigation measures include a ¼ mile seasonal restriction on harvest activities. This is in compliance with info from the Expert Interview Summary and the Phase I amendment
		Conduct activities to minimize impacts to the BH red-bellied snake		Mitigation measures are included to leave slash and down wood in

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#	Name	Comment Summary	Issue	Response
				harvest units to provide habitat for reptiles and small mammals
		Construct no new roads including temporary roads. Use access over snow instead of temp roads.		No new permanent roads will be constructed. Access over snow will be used whenever possible. Temp roads will only be used to avoid unacceptable soil erosion. All temp roads will be closed following harvest activities
		The BHNF Revised Forest Plan must be amended prior to any decision regarding the burn area.		Because of the unusual conditions arising from the Jasper fire, the Forest may consider a one time amendment to the Forest Plan for this decision.
		The Forest must compensate for lost goshawk habitat by protecting dense mature or old growth forest elsewhere on the Forest		This issue is outside the scope of this analysis
	Biodiversity Associates et al	Prepare a supplemental programmatic EIS for the Forest Plan to address the changes from the Jasper fire and how to consider new information		The changes wrought by the Jasper fire have been assessed in the Jasper Fire Rapid Assessment. This information will be used to address Forest-wide issues under the Phase II amendment process.
		Prepare a significant amendment for the Forest Plan that addresses the Forest's changed abilities to meet goals, objectives, and conditions in		The effects of the Jasper fire will be addressed in both the Phase I and Phase II amendments for the Forest Plan.

#	Name	Comment Summary	Issue	Response
		the Forest Plan		
		Prepare a site-specific NEPA analysis to re-evaluate decisions made for previously authorized timber sales		These timber sales were already under contract and can only be modified in accordance with the contract. The contract provides for changes due to catastrophic events but these changes must be made by mutual consent of the purchaser and the Forest Service. The change to environmental conditions and the negotiated contract changes are documented in Supplemental Information Reports for each sale area.
		Prepare a site-specific EIS to address the proposed salvage/recovery efforts in the Jasper fire area		This EIS is being prepared.
		The EIS must address impacts upon forest insects		Insect populations are discussed in the Environmental Consequences section of the EIS.
		Claims scoping letter said salvage was needed to reduce fire risk of standing trees killed in fire		The scoping letter did not say this. Fuel loading is addressed in the Affected Environment and Environmental Consequences sections of the EIS
		Address impacts to streams and groundwater quality		There are no perennial streams. Groundwater quality is addressed in the Affected Environment and Environmental Consequences

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#	Name	Comment Summary	Issue	Response
				sections of the EIS.
		Address noxious weeds		Noxious weeds are addressed in the Affected Environment and Environmental Consequences sections of the EIS. Effectiveness of past methods and resource protection methods are also addressed in the Revised Forest Plan EIS (1997).
		Address impacts on forest regeneration.		Forest regeneration is addressed in the timber sections of Affected Environment and Environmental Consequences sections of the EIS
		Address impacts to wildlife	Wildlife Habitat	Wildlife habitat is addressed in the Affected Environment and Environmental Consequences sections of the EIS
		Address impacts on recreational opportunities		Recreation is addressed in the Affected Environment and Environmental Consequences sections of the EIS
		Address impacts on scientific opportunities		The EIS addresses scientific opportunities in the Monitoring section
		Suggested designating the fire area as a bison preserve		This alternative is outside the jurisdiction of the Forest Service and outside the scope of this document. See Alternatives Not Considered in Detail.

#	Name	Comment Summary	Issue	Response
		Suggested designating the fire area as research natural area.		Designation of RNAs is being considered with the Phase II amendment of the Forest Plan. Selection of Alternative A would preserve the option for future consideration of an RNA designation.
		Requested the hazard tree removal be delayed and analyzed under this EIS		A project file, categorical exclusion, and decision memo have been completed for hazard tree removal (signed 11/13/00) in accordance with section 31.1b of Forest Service Handbook 1909.15. This project falls under Category 4. Cumulative effects of that project are included in this analysis.
		Requested that we consider changes needed to on-going timber sales due to effects of the Jasper fire.		The changed conditions are documented in the Supplemental Information Report for each sale areas. Modifications have been negotiated with the purchasers. This analysis includes the cumulative effects of those modifications.
		Requested that we include an alternative that reduces logging on other parts of the Forest.		This alternative is outside the scope of this analysis. The effects of the Jasper Fire on timber harvest levels may be addressed in the Phase II amendment process.
		Requested that we include an		Alternative A would build no new

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#	Name	Comment Summary	Issue	Response
		alternative that builds no new roads including temporary roads		roads whatsoever.
		Requested we include an alternative that transfers forest management to Native Americans		This alternative is outside the jurisdiction of the Forest Service and would require new legislation by the U.S. Congress.
	Boysen	Supports timber recovery	Value recovery	
		Dead trees are ugly and should be removed		Alternatives B and C both address visual impacts around private property
		The burn area should be seeded to help prevent erosion and make it more attractive.	Soil protection	Mitigation measures have been designed to help prevent soil erosion on harvested sites. Seeding was considered.
	Brennick	Supports timber recovery	Value recovery	
	Compton	Supports timber recovery	Value recovery	
		Timber recovery would help prepare a seed bed for grass and pine trees.		Comment – no response needed
		Pre-commercial timber should be felled to help prevent soil erosion on steep areas.	Soil protection	Mitigation measures have been designed to help prevent soil erosion on harvested sites. Slash retention was considered. Non-commercial Treatments on steep areas is outside the scope of this

#	Name	Comment Summary	Issue	Response
				decision and will be addressed in another document.
	Dakota Forestry Consulting	Supports timber recovery on as much of the area as possible	Value recovery	
		Concerned about insects causing additional mortality of damaged trees. Suggests that all trees with less than 50% live crown will eventually die and should be salvaged.		The standard for salvage will be less than 25% live crown. Trees with between 25-50% live crown may live long enough to produce a seed crop. These trees will be left for this reason.
		Leaving slash on the ground would help prevent soil erosion in harvested areas.	Soil protection	Mitigation measures have been designed to help prevent soil erosion on harvested sites. Slash retention was considered.
		Concerned about public safety in areas not salvaged.		Public safety in unharvested areas is a concern that will be addressed in a future decision. It is outside the scope of this decision.
	Davis	Supports timber recovery	Value recovery	
	Ducks Unlimited	Supports timber recovery	Value recovery	
		Concerned about noxious weeds		Mitigation measures have been developed to help prevent invasion of noxious weeds in harvest units. Treatment of weeds in other areas of the fire will be addressed in another decision. It is outside the

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#	Name	Comment Summary	Issue	Response
				scope of this decision.
	EPA	Identify all lake and streams including any impaired segments		There are no lakes or streams in the project area. The ephemeral streamcourses are shown in the watershed cumulative effects map.
		Impacts to wetlands should be avoided including riparian areas, springs and seeps.		Mitigation measures have been included to avoid harvest in these areas. See Mitigation Measures section of EIS
		Include a discussion of the Forest's strategy for prevention and control of noxious weeds.		This is discussed in the Environmental Consequences, Mitigation Measures, and Monitoring sections of the EIS
		Include details on expected increase in weeds		This is discussed in the Environmental Consequences section of the EIS
		Identify type, amount and application rate of herbicides to be used		This is discussed in the Environmental Consequences section of the EIS
		Do not broadcast spray herbicides adjacent to riparian areas, springs and seeps.		Mitigation measures have been included to avoid spraying in these areas.
		Describe the purpose and need for forest (trees) revegetation		No forest revegetation is proposed. This will be addressed in a later document and decision.
		Disclose the potential for toxic chemicals to be transported to surface or groundwater.		Only EPA approved herbicides will be used in accordance with label directions. This will avoid any water contamination.

#	Name	Comment Summary	Issue	Response
		Assess whether appropriate native seed is available and impacts of using non-native species		A proposed seed mix is included in the Mitigation Measures section. Some native seed is available from local growers.
		Include a discussion of Management Area designation and direction.		This is included in Chapter 1 of the EIS.
	Fisher	Supports timber recovery on as much of the area as possible	Value recovery	
		Leave slash on the ground to reduce soil erosion including steep slopes	Soil protection	Mitigation measures have been designed to help prevent soil erosion on harvested sites. Slash retention was considered.
		Use equipment that reduces the need for roads. Close temp road and skid trails	Soil protection	Equipment and operations will be selected to achieve desired ground conditions. Temp roads and skid trails will be closed following use.
	Forest Cons. Council	Concerned with the adverse economic effects of commercial logging and loss of ecosystems values associated with intact forest ecosystems.		The economic analysis for this action is in compliance with FS policy and regulations.
		Request that a no-harvest, restoration only alternative be considered.		The No Action alternative will be considered. Restoration activities will be addressed in another document and decision.
	Heinrich	Supports timber recovery	Value recovery	

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#	Name	Comment Summary	Issue	Response
	Kayser	Supports timber recovery	Value recovery	
		Area will look better after harvest		
		Harvest will reduce the chance of fire in fallen dead timber.		
	Klein	Supports timber recovery	Value recovery	
	Morken	Supports timber recovery	Value recovery	
		Re-plant new trees		This issue is outside the scope of this analysis. Planting will be considered in another document and decision.
	NEC	How will the significance of cumulative impacts on wildlife be measured?	Wildlife habitat	This analysis is tiered the Phase I Forest Plan amendment which incorporates the Interim Direction and the Expert Interview Summary. Significance of effects will be judged by compliance with the Phase 1 amendment.
		How will habitat be maintained for wildlife associated with burned habitats?	Wildlife habitat	This is discussed in the wildlife section of the EIS. Analysis is based on the needs of the black-backed woodpecker and Lewis's woodpecker selected as MIS for species associated with burned habitats. The most recent research is considered.

Appendix B

#	Name	Comment Summary	Issue	Response
		How will cumulative impacts to wildlife be addressed?	Wildlife habitat	Cumulative effects will include other past, present, and foreseeable future actions including the effects of the fire, on-going timber sales, etc. as discussed in the cumulative effects section of the EIS.
		How will the on-going projects be re-evaluated in light of the changed conditions due to the fire?		On-going projects were modified based on the changed conditions. These are discussed in the cumulative effects section of the EIS.
		How will this project comply with NFMA, NEPA, and Forest Plan interim direction?		This action will be consistent with the required changes to the Forest Plan as described in the interim direction and the Phase 1 amendment.
		Will commitments made under the settlement agreement with Sierra Club and Biodiversity Associates be kept?		Any and all actions will honor commitments made under the settlement agreement.
	Nelson	Concerned with dead trees on FS lands falling onto his cabin and new fences		Commercial operations should remove most large trees near his cabin. Policy on non-commercial size trees is being developed.
	Norman	Supports timber recovery on as much of the area as possible	Value recovery	
		Agrees with removal of hazard trees along roads		

B Appendix

#	Name	Comment Summary	Issue	Response
		Supports harvest on steeper slopes when ground is frozen	Soil protection	Mitigation measures have been designed to help prevent soil erosion on harvested sites. Frozen ground logging was considered.
		Concerned about soil movement and flooding in Gillette Canyon area	Soil protection	Soils in Gillette Canyon with a potential for mass movement are generally restricted to steeper canyons that will not be harvested. Little can be done to prevent flooding if a large precipitation event occurs before the area revegetates
		Leave slash on ground to prevent soil erosion	Soil protection	Mitigation measures have been designed to help prevent soil erosion on harvested sites. Slash retention was considered.
		Leaving slash on ground also helps rebuild humus layer in soil	Soil protection	Mitigation measures have been designed to help protect soil productivity on harvested sites. Slash retention was considered.
		Timber recovery is a cost efficient tool for recovery of the fire area		An economic analysis was completed for this action and is included in the EIS. Future recovery actions may be able to utilize funds generated from value recovery operations.
	Papcke	Planning salvage logging on their own property in burn area.		
		Keep informed		Kept name on mailing list

Appendix B

#	Name	Comment Summary	Issue	Response
	Saathoff	Keep informed		Kept name on mailing list
	Sicanga Treaty Office	Concerned about unnecessary roads which may contribute to soil erosion in spring		No new roads will be built for recovery harvest. Mitigation measures have been designed to help prevent soil erosion on harvested sites. Temporary roads and skid trails will be closed
		Concerned about protection of sacred sites exposed due to the fire	Heritage	This issue is addressed in Alternative C which avoids all areas that do not have adequate archeological surveys
	SDGF&P	Concerned that suitable habitat is left for snag dependent species	Wildlife habitat	This issue is addressed in Alternative C that defers some high density areas for snag dependent species
		Concerned that hardwoods be retained.		No hardwood harvest is planned under any alternative
		Concerned that large diameter live pine >20" dbh might be removed		No live trees with > 50% green canopy will be removed
		No new roads should be constructed or reconstructed		No new roads are constructed or reconstructed under any alternative
		Concerned that old trails and tracks will be opened for harvest operations		Some old skid trails and 2-tracks may be used but will be closed after use.
		Would like to see some of the area closed to off-road travel		This issue is outside the scope of this decision. Travel management in the burn will be addressed in another decision.
		Does not want an increase in open		No new roads will be constructed

B Appendix

#	Name	Comment Summary	Issue	Response
		road density		and all previously closed roads will be closed again under this decision. There will not be an increase in open road density
		Concerned that snags left for wildlife be protected from firewood cutting		At the present time there is a Forest-wide restriction on the cutting of snags for firewood. This decision will not alter that restriction
		Would like to see temporary trails rehabbed and reseeded		All skid trails and temporary roads will be seeded and closed following use
		Would like slash left on ground		Mitigation measures have been designed to help prevent soil erosion on harvested sites. Slash retention was considered
		Need to protect caves and mines used by bats from salvage activity		Mitigation measure have been designed to protect caves and mines used by bats
	State of Wyoming	No concerns at this time. Keep informed.		Kept name on mailing list
	Van Gerpen	Supports timber recovery	Value recovery	
		Supports efforts to restore area as soon as possible		
	Weston County	Supports timber recovery	Value recovery	
		Set up sales immediately	Value recovery	Harvest has begun within existing sale areas. Our timelines for new

Appendix B

#	Name	Comment Summary	Issue	Response
				sale areas must comply with NEPA .
		Set up sales with 2-5 mmbf for small contractors		Although this concern is outside the scope of this decision, this information will be passed on to the timber sale administration staff for consideration.
		Leave slash on the ground to prevent soil erosion including steep slopes	Soil protection	Mitigation measures have been designed to help prevent soil erosion on harvested sites. Slash retention was considered.
		Supports harvest on steeper slopes when ground is frozen	Soil protection	Mitigation measures have been designed to help prevent soil erosion on harvested sites. Frozen ground logging was considered.
		Concerned with potential flooding in some areas		Little can be done to prevent flooding if a large precipitation event occurs before the area revegetates.

Appendix C

Forest Plan Management Requirements: BMPs and WCPs

C Appendix

Management requirements will include the following Watershed Conservation Practices (WCP) (Forest Service Handbook 2509.25, USDA-Forest Service R-2, 1996), Best Management Practices (BMPs) (South Dakota-Division of Forestry, 1994), and Forest Plan Standards and Guidelines (Standard) (USDA-Forest Service, Black Hills National Forest, 1996).

Connected Disturbed Areas (CDA)

Standard 1116, WCP 1: Manage land treatments to conserve site moisture and to protect long-term stream health from damage by increased runoff. Design Criteria: (a) In each 3rd-order and larger watershed, limit Connected Disturbed Areas (CDAs) so the total stream network is not expanded by more than 10%. Progress toward zero CDA as much as feasible. Do not add CDAs to Class III watersheds. (b) Design the size, orientation, and surface roughness of forest openings to prevent snow scour and site desiccation. BMP: Designate streamside management zones (SMZ) to provide stream shading, sediment and water filtering effects, and wildlife habitat... The width of the SMZ should extend beyond the 50' minimum to include wetlands along a stream bottom and to provide additional protection in areas of steep slopes or erosive soils. BMP: Maintain or provide sufficient ground cover to trap sediment.

Standard 1113, WCP 10: Construct roads and other disturbed sites to minimize sediment discharge into streams, lakes and wetlands. Design Criteria: (a) Design all roads, trails, and other soil disturbances to the minimum standard for their use and to "roll" with the terrain as feasible. (b) Use filter strips, and sediment traps if needed, to keep all sand-sized sediment on the land and disconnect disturbed soil from streams, lakes and wetlands. Disperse runoff into filter strips. (c) Key sediment traps into the ground. Clean them out when 80% full. Remove sediment to a stable, gentle upland site and revegetate. (d) Keep heavy equipment out of filter strips except to do restoration work or build hardened stream or lake approaches. Yard logs up out of each filter strip with minimum disturbance of ground cover. (e) Build firelines outside filter strips unless tied into a stream, lake, or wetland as a firebreak with minimal disturbed soil. Retain organic ground cover in filter strips during prescribed fires. (f) Design road ditches and cross drains to limit flow to ditch capacity and prevent ditch erosion and failure. BMP: Prevent downslope movement of sediment by using sediment catch basins, drop inlets, changes in road grade, headwalls, or recessed cut slopes. BMP: Route road drainage through the Streamside Management Zone (SMZ), filtration fields, or other sediment settling structures. Install road drainage features above stream crossings to route discharge into filtration zones before entering a stream. BMP: Locate skid trails to avoid concentrating runoff and provide breaks in grade. Locate skid trails and landings away from natural drainage systems and divert runoff to stable areas. Use mitigating measures, such as

C Appendix

water bars and grass seeding to reduce erosion on skid trails. BMP: Avoid locating landings that require skidding across drainage bottoms.

Sediment

Standard 1301, WCP 3: In the water influence zone (WIZ) next to perennial and intermittent streams, lakes, and wetlands, allow only those land treatments that maintain or improve long-term stream health. Design Criteria: (a) Allow no land treatments that will cause long-term change to a lower stream health class in any stream reach. In degraded systems, progress toward robust stream health within the next planning period. (b) Keep heavy equipment out of streams, swales, and lakes, except to cross at designated points, build crossings, or do restoration work, or if protected by at least one foot of packed snow or two inches of frozen soil. Keep heavy equipment out of streams during fish spawning, incubation, and emergence periods. (c) Ensure at least one-end log suspension in the WIZ. Fell trees in a way that protects vegetation in the WIZ from damage. Keep log landings and skid trails out of the WIZ. (d) Locate new concentrated-use sites outside the SMZ if feasible, and outside of riparian areas always. Harden or reclaim existing sites in the SMZ to prevent detrimental soil and bank erosion. (e) through (h) relate to grazing management. (i) Maintain the extent of stable banks in each stream reach at 80% or more of reference conditions. Limit cumulative stream bank alteration (soil trampled or exposed) at any time to 20-25% of any stream reach. (j) Do not borrow material from, or store excavated borrow material in, any stream, swale, lake, wetland, or WIZ. BMP: Stabilize erodible, exposed soils by seeding, compacting, riprapping, benching, mulching, or other suitable means prior to fall or spring runoff. BMP: Consider road surfacing to minimize erosion. BMP: Minimize stream channel disturbances and related sediment problems during road construction and installation of stream crossing structures. Use silt fencing, interlocking straw bales, or other methods to prevent soil and other debris from entering streams during construction.

Standard 1106, WCP 11: Stabilize and maintain roads and other disturbed sites during and after construction to control erosion. Design Criteria: (a) Do not encroach fills, or deposit or sidecast soil, into streams, swales, lakes, or wetlands. (b) Properly compact fills and keep woody debris out of them. Revegetate cuts and fills upon final shaping to restore ground cover. Provide sediment control until erosion control is permanent. (c) Do not disturb ditches during maintenance unless needed to restore drainage capacity or repair damage. Do not undercut the cut slope. (d) Space cross drains, from no more than 120 feet in highly erodible soils on steep grades, to no more than 1000 feet in resistant soils on float grades. Do not divert water from one stream to another. (e) Empty cross drains onto stable slopes that disperse runoff into filter strips. On soils that may gully, armor outlets to disperse runoff. Tighten cross-drain spacing so gullies are not created. (f) Harden rolling dips as needed to prevent rutting damage. Ensure that road maintenance provides stable surfaces and drainage. (g) Remove or breach berms that would concentrate runoff without disturbing the original road surface and drainage features. (h) Build firelines with rolling grades and minimum downhill convergence. Outslope and backblade, permanently drain, and revegetate firelines immediately after

burn.

Standard 1109, WCP 12: Reclaim roads and other disturbed sites when use ends, as needed, to prevent resource damage. Design Standard: (a) Site-prepare, drain, revegetate, and close temporary and intermittent use roads and other disturbed sites within one year after use ends. Provide natural drainage that disperses runoff into filter strips and maintains stable fills. Do this work concurrently. Use native vegetation as feasible. (b) Remove all temporary stream crossings (include all fill material in the active channel), restore the channel geometry, and revegetate the channel banks using native vegetation as feasible.

Road Network

Standard 1105, WCP 9: Limit roads and other disturbed sites to the minimum feasible number, width, and total length consistent with the purpose of specific operations, local topography, and climate. Design Criteria: (a) Construct roads on ridge tops, stable upper slopes, or wide valley terraces if feasible. Stabilize soils onsite. End-haul soil if full-bench construction is used. Avoid slopes steeper than 70%. (b) Avoid soil-disturbing actions during periods of heavy rain or wet soils. Apply travel restrictions to protect soil and water. (c) Install cross drains to disperse runoff into filter strips and minimize connected disturbed areas (CDA). Harden cuts, fills, and surfaces between stream crossings and the top of the vertical curve on both sides. (d) Where feasible, construct roads with rolling grades instead of ditches and culverts. (e) Retain stabilizing vegetation on unstable soils. Avoid new roads or heavy equipment use on unstable or highly-erodible soils. (f) Use existing roads unless other options will produce less long-term sediment. Reconstruct for long-term soil and drainage stability. (g) Avoid ground skidding with blades lowered or on highly erodible slopes steeper than 40%.

Conduct logging to disperse runoff as feasible. (h) Designate, construct, and maintain OHV travelways for proper drainage. Harden all OHV stream crossings. BMP: Design and locate skid trails and skidding operations to minimize soil disturbance. Using designated skid trails is one means of limiting soil disturbance.

BMP: Minimize the number of roads constructed in a watershed through comprehensive road planning, recognizing intermingled ownership and foreseeable future uses. Use existing roads where practical, unless such roads would cause or aggravate an erosion problem. BMP: Locate roads a safe distance from streams when roads are running parallel to stream channels. Provide an adequate streamside management zone (SMZ) or other appropriate management technique to trap sediment and prevent its entry into the stream.

Standard 1114: when construction of maintenance level 1 roads, temporary roads, skid trails and landings occur, install structures to divert runoff when needed.

Water Purity

Standard 1211, WCP 15: Place new sources of chemical and pathogenic pollutants where such pollutants will not reach surface or ground water. Design Criteria: (a) Put pack and riding stock sites, sanitary sites, and well drill-pads outside the water influence zone (WIZ). (b) Put vehicle service and fuel areas, chemical storage and use areas, and waste dumps and areas on gentle upland sites. Do mixing, loading, and cleaning on gentle upland sites. Dispose of chemicals and containers in State-certified disposal areas.

Standard 1212, WCP 16: Apply runoff controls to disconnect new pollutant sources from surface and ground water. Design Criteria: (a) Install contour berms and trenches around vehicle service and refueling areas, chemical storage and use areas, and waste dumps to fully contain spills. Use liners as needed to prevent seepage to ground water. (b) and (c) are mining oriented practices. (d) Clean waste water from concrete batching and aggregate operations before returning the water to the streams, lakes, or wetlands. (e) Inspect chemical equipment daily for leaks. If leaks or spills occur, report them and install emergency traps to contain them and clean them up.

Standard 1213, WCP 17: Apply chemicals using methods which minimize risk of entry to surface and ground water. Design Criteria: (a) Favor pesticides with half-lives of 3 months or less. Apply at lowest effective rates as large droplets or pellets. Follow the label. Favor selective treatment. Use only aquatic-labeled chemicals in the SMZ. (b) Use non-toxic, non-hazardous drilling fluids.

Soil Compaction

Standard 1105, WCP 9: as above. Design Criteria: (b) Avoid soil-disturbing actions during periods of heavy rain or wet soils. Apply travel restrictions to protect soil and water.

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Standard 1103, WCP 13: Manage land treatments to limit the sum of severely burned and detrimentally compacted, eroded, and displaced land to no more than 15% of any land unit (FSH 2509.18). Design Criteria: (a) Restrict roads, landings, skid trails, developed recreation areas, livestock gathering areas, and similar soil disturbances to designated sites. (b) Operate heavy equipment for land treatments only when soil moisture is below the plastic limit, or protected by at least 1 foot of packed snow or 2 inches of frozen soil. (c) Conduct prescribed fires when soil, humus, and large fuels are moist.

BMP: Tractor skid when compaction, displacement, and erosion will be minimized. Avoid tractor or wheeled skidding on unstable, permanently or seasonally wet, or easily compacted soils, and on slopes that exceed 40% unless operation can be conducted without causing excessive erosion. Avoid skidding on highly erodible soils, or with blade lowered.

Organic Matter

Standard 1112, WCP 2: Manage land treatments to maintain enough organic ground cover in each land unit to prevent harmful increased runoff. Design Criteria: (a) Maintain the organic ground cover of each land unit so that pedestals, rills and surface runoff from the land unit are not increased. (b) Restore the organic ground cover of degraded land units within the next planning period, using native vegetation as feasible.

Nutrient Removal

Standard 1102, WCP 14: Maintain or improve long-term levels of organic matter and nutrients on all lands. Design Criteria: (a) On soils with topsoil thinner than 1 inch, topsoil organic matter less than 2%, or effective rooting depth less than 15 inches, retain 90% or more of the fine (less than 3 inches in diameter) logging slash in the stand after each clear-cut and seed-tree harvest, and retain 50% or more of such slash in the stand after each shelterwood and group-selection harvest, considering existing and projected levels of fine slash. (b) If machine piling of slash is done, conduct piling to leave topsoil in place and to avoid displacing soil into piles or windrows.

Soil Heating

Standard 1103, WCP 13: as above. Design Criteria: (c) Conduct prescribed fires when

soil, humus, and large fuels are moist. BMP: Limit water quality impacts of prescribed fire by constructing water bars in firelines, not placing slash in drainage channels, maintaining the streamside management zone, and avoiding intense fires unless needed for management goals.

Riparian Areas

Standard 1203, WCP 4: Design and construct all stream crossings and other instream structures to pass normal flows, withstand expected flood flows, and allow free movement of aquatic life. Design Criteria: (a) Install stream crossings to meet Corps of Engineers and State permits, pass normal flow and be hardened to withstand floods as follows: Design life of one year - Design flood is 10 year recurrence interval; up to Design life of 50 years - Design flood is 40 recurrence interval. (b) Size culverts and bridges to pass debris. Install "trash racks" upstream if needed. (c) Install stream crossings on straight and resilient stream reaches, as perpendicular to flow as feasible, and to provide passage of fish and other aquatic life. (d) Install stream crossings in this order of preference as feasible to keep stream beds and banks intact: bridge, hardened ford, bottomless arch, culvert.

Standard 1201, WCP 5: Conduct actions so that stream pattern, geometry, and habitats are maintained or improved toward robust stream health. Design Criteria: (a) Add or remove rocks, wood, or other material in streams or lakes only to maintain or improve their health. Leave rocks and portions of wood that are embedded in beds and banks to prevent channel scour. (b) Install fish migration barriers only if needed to protect endangered, threatened, sensitive, or unique native aquatic populations, and only where natural barriers do not exist. (c) Do not relocate natural stream channels if avoidable. Return flow to natural channels where feasible. Construct channels and floodways with natural stream pattern and geometry and stable beds and banks.

Standard 1302, WCP 6: Do not degrade ground cover, soil structure, water budgets, or flow patterns in wetlands. Design Criteria: (a) Keep ground vehicles out of wetlands unless protected by at least 1 foot of packed snow or 2 inches of frozen soil. Do not disrupt drainage patterns into wetlands with roads, trails, or ditches. (b) Keep roads and trails out of wetlands if feasible; use bridges or raised prisms with diffuse drainage in wetlands. Set crossing bottoms at natural levels of channels beds and wet meadow surfaces. (c) Do not build firelines in or around wetlands unless needed to protect life, property, or wetlands. Use hand lines with minimum feasible soil disturbance. Use wetland features as firelines if feasible.

C Appendix

Standard 1210, WCP 7: Maintain enough water in perennial streams to sustain existing stream health. Return some water to dewatered perennial streams when needed and feasible. Design Criteria: (a) For existing dams and diversions on naturally perennial streams. Obtain bypass flows at the point of diversion or storage that sustain a community of aquatic life having all regionally-expected species with all age and sex groups at permit reissuance. Native median February flow from October to March, and native median August flow from April to September, are base flows that have been shown to sustain aquatic life. (b) For new dams and diversion, obtain bypass flows at the point of diversion or storage that protect stream processes, aquatic and riparian habitats, and recreation and aesthetic uses where such values are important. Include base flows, and a range of high flows that bracket bankfull discharge, as needed to support these uses. (c) Obtain instream flow water rights under Federal and state law to protect stream processes, aquatic and riparian habitats, and recreation and aesthetic uses on streams where such values are important. Top priority is to protect native, endangered, threatened, and sensitive species.

Standard 1207, WCP 8: Manage water-use facilities to prevent gully erosion of slopes and to prevent gully erosion of slopes and to prevent sediment and bank damage to streams. Design Criteria: (a) Design all ditches, canals, and pipes with at least an 80% chance of passing high flows and remaining stable during their life. (b) Do not flush or deposit sediment from behind diversion structures into the stream below. Deposit sediment in a designated upland site. (c) Mitigate water imports so that the extent of stable banks in each receiving reach is at least 80% of reference conditions.

Standard 1204: Naturally occurring debris shall not be removed from stream channels unless it is a threat to life, property, important resource values, or otherwise covered by legal agreement.

Standard 1304: As opportunity arises, and need dictates, relocate or implement mitigation measures for roads, trails, watering tanks and similar facilities currently located within the Water Influence Zone.

Standard 1306: Prohibit log landing, decking areas and mechanical slash piling within riparian areas unless the integrity of the riparian area can be protected (e.g., frozen, snow-covered ground conditions).

Appendix D

Comment Letters

D Appendix

Black Hills Forest Resource Association

2040 West Main Street, Suite 315, Rapid City, South Dakota 57702-2447. (605) 341-0875
CUSTER/ELK MTN RD

CUSTER/ELK MTN RD

February 4, 2001

District Ranger
Mr. Mike Lloyd
Hell Canyon Ranger District
330 Mt. Rushmore Rd
Custer, SD 57730

Dear Mike:

FEB 7 '01

DR	TM STAFF
INCPA STAFF	SALE ADM
PRESALE	SCALER
W/BOL	SLV
PROB/GIS	TSI TECH
ENG TECH	TM FOR
CORA STAFF	LABOR STAFF
R CON	LANDS
R TECH	ARCH
FIRE/FAC	REC
HELTACK	ADM STAFF
FIRE TECH	BMA
FIRE TECH	RECEPT
FIRE TECH	ONE

FEB 6 '01

DR	TM STAFF
INCPA STAFF	SALE ADM
PRESALE	SCALER
W/BOL	SLV
PROB/GIS	TSI TECH
ENG TECH	TM FOR
CORA STAFF	LABOR STAFF
R CON	LANDS
R TECH	ARCH
FIRE/FAC	REC
HELTACK	ADM STAFF
FIRE TECH	BMA
FIRE TECH	RECEPT
FIRE TECH	ONE

Enclosed are the comments of the Black Hills Forest Resource Association concerning the Jasper Fire DEIS.

Page 2-8. The discussion of 'areas with structural stage 5, a timber component of 801 (old growth), and Forest Plan designated late succession sites would be retained for wildlife habitat,' is confusing. Timber component codes and forest plan designated late succession sites should be one in the same, if not there may be double counting. **Old growth stand designation needs to be reviewed.**

Snags - Page 2-9. I understand the reasoning behind the recommendation for 4 snags per acre in Alternative B, however, the recommendation for 17 snags per acre in Alternative C is absurd. There is no demonstration or research that indicates the need for an extreme number of snags. Under Alternative C scenario there will be a significant portion of the burn area untouched with an extraordinary number of snag retained. Leaving 17 snags per acre in the harvest units is unwarranted. **If Alternative C is to be considered viable, the snag requirement needs to be reduced to 4 snags per acre. The requirement in Alternative B should not be increased.**

Black-backed woodpecker nesting habitat - Page 2-9. The EIS states that nesting habitat should be expanded to 130 acres. Black-backed woodpeckers need between 74 and 130 acres for nesting. There was no reason why all stands managed for black-backed woodpeckers should be expanded to a minimum of 130 acres. **The range of 74 to 130 acres is very appropriate for consideration of nesting habitat.**

Weeds - Page 2-11. We understand the concerns of many people about noxious weeds, and we support aggressive efforts to control the spread of noxious weeds. However, we cannot support noxious weed prevention measures that do not apply equally to all users. The instructions for C6.27#-Noxious Weed Control clearly expect that timber sale purchasers will be treated equally with all other forest users. The noxious weed

1

AP9

2

SNG1.1

3

WDP1

4

NOX1



A renewable resource

4 } prevention measures on page 2-11 are very vague, but do not appear to treat all forest users equally. For example, it appears that timber contractors will be required to clean vehicles and equipment but other users will be asked to clean themselves and equipment from noxious weed seeds. There is also no discussion about how the prevention measures would apply to Forest Service vehicles or equipment. **We ask that you revisit the prevention measures on page 2-11, and re-write them to ensure that all forest users, including timber purchasers, recreationists, livestock permittees and the Forest Service, will be held to the same standards.**

5 } Old Growth – Page 3-11. The paragraph describing old growth/late succession is confusing. Any stands that were designated for old growth management should be the identical stand that are included on the Black Hills National Forest Land Management Late Successional Map. Those are the only stands that are designated for late successional management on the Black Hills National Forests. There may be other stands that meet the criteria, but they are not designated for management for old growth conditions.

6 } In conclusion, the Black Hills Forest Resource Association supports the selection of the preferred Alternative B provided the undercarriage cleaning adheres to the direction within the C clauses.

Thank you for the opportunity to comment.

Sincerely,



Mary Flanderka
Forest Programs Manager

AD9

SP2

VR 3.1

RO-C6.27# - Noxious Weed Control (11/98). In order to prevent the potential spread of noxious weeds into the sale area, purchaser shall be required to furnish Forest Service with proof of weed-free equipment.

The following is considered proof of weed-free equipment:

The purchaser will be required to clean all logging and construction equipment that operates off roads prior to entry on the sale area. Logging and construction equipment is hereby defined as all wheeled and tracked equipment that will be operated beyond the clearing limits of roads Purchaser has been authorized by Forest Service to use. Under this provision the definition of a road is limited to those roads intended for use by pickups and log trucks and specifically does not include "tractor roads" or "skid trails." Cleaning shall remove all dirt and plant parts and material that may carry noxious weed seeds into the sale area. Only logging and construction equipment certified as "cleaned" will be allowed to operate within the sale area. All subsequent move-ins of logging and construction equipment shall be treated the same as the initial move-in.

Prior to initial move-in of all logging and construction equipment, and all subsequent move-ins, the purchaser shall make equipment available for Forest Service inspection at an agreed location. By written agreement, Purchaser's written certification that equipment has been cleaned may be accepted in lieu of Forest Service inspection.

INSTRUCTIONS: For use in timber sales where the Environmental Assessment or Environmental Impact Statement specifically requires noxious weed control. To insure that all forest users are being treated equally, this provision shall be used only when the forest has a comprehensive noxious weed control plan in force.

RO-C6.27#
(11/98)

February 4, 2001

BHNF
Hell Canyon Ranger District
330 Mt. Rushmore Rd.
Custer, SD 57730

Dear Sirs,

- 1 | I wish to show my support for Alternative B on the Jasper Fire. We need to salvage as much wood as possible, as fast as we can, because we all know there isn't much time left before bugs and blue stain affect the burnt timber. It is useless then. | VR 3.1
- 2 | The 17 snags per acre alternative is ridiculous. There will be enough snags throughout the untreated areas to more than compensate for snags in this area. | SNAG 1.1
- 3 | The rule on cleaning equipment is too vague. We need to look at keeping the current C provisions in place. | Nox 1

In closing, time is running out on the salvage of any of the burn which is what the environmentalists are counting on. Lets move on this *now* before it's too late.

Sincerely,

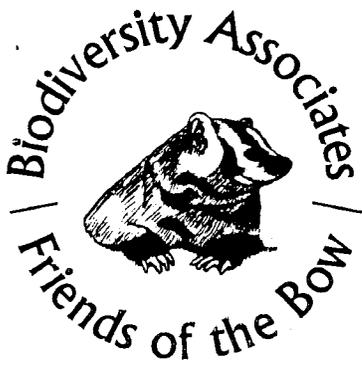


Chuck Carlson
HCR 83 Box 155
Custer, SD 57730

CUSTER/ELK MTN RD

FEB 6 '01

FOR		TM STAFF	
NEPA STAFF	/	SALE ADM	
RESALE	/	SCALER	
BIOL	/	SILV	
ASICS		TSI TECH	
ENGINE TECH		TM FOR	
DRY STAFF		LMR STAFF	
R CON		LANDS	
E TECH		ARCH	
FIRE/FAC		REC	
HELITACK		ADM STAFF	
FIRE TECH		BMA	
FIRE TECH		RECEPT	
FIRE TECH		OAC	



8

Working to Protect Native Species and Their Habitats

P.O. Box 6032, Laramie, WY 82073 (307) 742-7978 fax: (307) 742-7989

February 5, 2001

Alice Allen
Hell Canyon Ranger District, Black Hills National Forest
330 Rushmore Road
Custer, SD 57730

Dear Ms. Allen:

The following comments are submitted on behalf of Biodiversity Associates, Friends of the Bow, Wildlands Center for Preventing Roads, the Wyoming Outdoor Council, the Center for Native Ecosystems, The Wilderness Society, and their supporters and members on the U.S. Forest Service's (USFS's) proposed Jasper Fire "Value Recovery" project and associated draft environmental impact statement (DEIS).

The Black Hills is already one of the most (if not the most) heavily developed, logged, and roaded National Forests in the country. Less than 2% of the stands remain in an old growth condition and, with over 8,000 miles of roads, only a few small areas have been left undeveloped on the Forest. The Chief of the USFS has concluded the Revised Forest Plan for the BHNH does not ensure viable, well-distributed populations of sensitive species such as the goshawk, marten, pygmy nuthatch, woodpeckers, and land snails of special concern. The agency's proposal to conduct commercial logging extensively in the Jasper Fire area only adds insult to the significant and irreparable injury that has already been caused to the Forest.

Before we proceed to discuss our concerns about the DEIS and proposed action, we must object to the Forest Service's hasty process used to prepare the DEIS. The draft EIS was issued only a week or so after the scoping period closed. There is no way the agency could have meaningfully addressed the public's scoping comments on this proposal in that short time. And, in fact, after reviewing the DEIS, it became quite evident that the public's comments were not addressed. The DEIS failed to analyze and disclose key impacts, it failed to rigorously explore and objectively evaluate reasonable alternatives, and the DEIS failed to address critically important issues such as the need to reduce the forest-wide harvest level to account for the loss in timber supply, the need to designate replacement habitat to compensate for the habitat burned by the fire, and the need to protect imperilled montane grasslands (e.g., by designating them RNA's) made more vulnerable by the fire and proposed logging activities. It is clear the USFS employees on the Black Hills National Forest only see this public forest as a source of timber for private corporations.

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AD1

2 We are also very disturbed by the Forest Service's unlawful decisions to implement extensive logging in Jasper fire area under (1) a Categorical Exclusion associated with the "Hazard Tree Removal" decision, and (2) Supplemental Information Reports (SIRs) issued on the Uncle, Dumbuck, and Crawford timber sales. These activities are clearly connected parts of the overall Jasper Fire value recovery project, and the USFS has unlawfully piecemealed those extensive logging activities out of the overall NEPA analysis. In addition, despite the fact that the Hazard Tree decision involved extensive commercial timber harvest, the USFS did not conduct a proper scoping process and unlawfully denied the public the right to appeal that decision. The USFS knows it is not allowed to categorically exclude such logging projects, and that the public has a right to appeal any logging activities on the National Forest. Thus, the USFS knowingly and deliberately failed to comply with its NEPA obligations, and the agency deliberately denied the public the right to appeal this important decision. This conduct was designed solely to benefit private logging companies.

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4 Adding insult to injury, the SIRs issued for the existing timber sales in the fire area were prepared without any scoping, were not subject to public review and comment, and the public was also denied the right to appeal the important decisions associated with the SIRs. The USFS knows that SIRs cannot be used to evaluate the impacts of new logging activities; SIRs can only be used to evaluate the significance of new information and changed circumstances. Nevertheless, the USFS knowingly and deliberately used the SIRs in question to significantly expand logging in the timber sale areas -- logging that was never contemplated in the Forest Plan or the respective timber sale NEPA documents. In preparing the SIRs, the USFS also deliberately failed to re-evaluate the purpose and need of the timber sales to account for the changes in conditions caused by the fire. For example, significant amounts of logging were authorized in the timber sales on the grounds that there were purported needs to create more grass/ forb habitat, to reduce pine encroachment into meadows, and to reduce the density of forest stands. See "Purpose and Need" sections of the EAs issued on the Crawford, Dumbuck, Uncle, and Lemming timber sales. Whether or not those stated "needs" were correct is irrelevant now; the fire has created abundant grass/ forb, has created extensive new meadows, and has significantly reduced forest density in the timber sale areas. Nevertheless, in its SIRs, the USFS deliberately ignored how these changed conditions affect the stated "purpose and need" for each timber sale, and the Forest Service is now proceeding to not only log the sales as originally designed (i.e., to create more grass/ forb, meadows, and reduce stand densities), but has also used the SIRs to unlawfully authorize significantly more logging in these areas than was contemplated in the sale EAs and Forest Plan. The agency knows this is unlawful and inappropriate. And it is being done solely to benefit local timber corporations.

OS7

5 It appears the proposed Jasper Fire "Value Recovery" project will be just another massive get-the-cut out timber sale. Indeed, as noted above (and below), the hastily prepared DEIS deliberately ignores key issues that might slow-down the project, and the USFS is apparently trying to rush the project forward under false claims of an "emergency." For example, in the cover letter announcing the availability of the DEIS, the USFS emphasized that **"reviewers should assume this project will be handled as an emergency when preparing their comments."** (Emphasis in original.) This indicates

OS4

the Forest Service is intending to use the provision at 36 CFR 215.10(d) to allow ground-disturbing activities to proceed during the appeal period and before the public's issues and concerns about the project are resolved. Again, the only beneficiary of such an action is the local timber industry; the public would be stripped of their right to be assured their concerns are fully addressed -- an that the underlying NEPA document is legally adequate -- before actions are implemented on the Forest. But there is no "emergency" associated with the Jasper Fire proposal. A possible loss of economic "value" does not constitute an emergency. In fact, courts have repeatedly recognized the lost economic value does not even constitute "irreparable" harm. Furthermore, if the burn area is not logged this year or the next, or the next..., this will have no long-term impact on the Forest. In contrast, the proposed logging project does pose significant impacts to the forest and the Black Hills ecosystem, and these impacts must be fully and carefully considered before the agency decides whether and how to proceed with managing the fire area. There is simply no emergency here, and it is wrong and fraudulent for the USFS to claim an "emergency" situation exists solely to deny the public of their rights to a legally adequate NEPA document, a careful and thorough consideration of how to manage the fire area, and to appeal any decision issued on future management of the fire area.

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OSA

There is No Need to "Treat" Dead or Dying Trees in the Jasper Fire Area, and Logging Will be Inconsistent with the Forest Plan

The DEIS says the "underlying need" for the proposed "Value Recovery" project -- really just a massive commercial timber sale -- is to "implement the Revised Forest Plan and national agency direction..." DEIS, page S-2. The DEIS goes on to say the "purpose and need for the project is to recover value from the Jasper Fire Area in the form of timber in a timely manner and in a way that protects and enhances other resources in the area. This complies with Goal #3 in the Forest Plan (USDA, 1997) providing for sustained commodity uses in an environmentally acceptable manner."

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AP8

Id. These reasons do not justify the massive commercial timber sale the USFS is proposing for the Jasper Fire area. In fact, these stated reasons are not even valid.

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As a threshold matter, the Revised Forest Plan did not anticipate the Jasper Fire or any of the proposed (or alternative) "Value Recovery" logging activities. The Fire has taken the entire Jasper area out of the conditions anticipated in the Revised Forest Plan; the proposed logging will only take the area further away from the required conditions set forth in the Revised Plan. For instance, the Revised Forest Plan (and associated programmatic EIS) were based on the assumption that the area would be dominated by trees, with varying age classes and structural conditions, and that the area would continue to provide habitat for goshawks and other forest-dwelling species throughout the planning period. The same can be said of the Plan's requirements for cover for elk and deer. These habitat elements have already been reduced by the fire to below minimum acceptable levels required by the Plan, and the proposed logging will only take make this Forest Plan inconsistency even worse.

In addition, the proposed logging associated with Jasper project would be completely

6 inconsistent with the Forest Plan's "disaggregated volume" calculations. On other parts of the BHNF, the Forest Service has been dismissing (i.e., refusing to consider) reasonable timber sale alternatives that involve volumes less than the disaggregated volume. See, e.g., Coyote and Crawford timber sale EAs and appeal rulings. Under this reasoning, the USFS should not be allowed to consider any timber management alternatives for the fire area that are inconsistent with the Forest Plan. The agency can't have it both ways and claim the Forest Plan requires a certain volume of harvest on one hand and then turn around and ignore the Plan.

7 Moreover, the Jasper project's purported goal of "providing for sustained commodity uses in an environmentally acceptable manner" will not be met by the proposed action or any other logging-based alternatives. This is because the rush to cut the burned trees will cause considerable instability in the timber market; this high spike in volume is not sustainable and will actually destabilize employment in logging-related sectors. This is because more people will need to be hired to conduct the massive logging operation, and when it is completed in a year or two, many of those people will have to be let go. This is unsustainable situation will be bad for community stability. In addition, because these people will not want to lose their new-found jobs following completion of any logging operations in the fire area, they will become a vocal and aggressive voice that pushes the USFS to keep offering excessive amounts of timber from other parts of the Black Hills. This will pose a serious threat to ecosystem stability in the future -- an ecosystem which is already so badly impacted from past logging that there is not enough old growth and interior forest habitat to sustain populations of goshawks, interior forest birds, martens, and other species.

8 It is also entirely arbitrary for the USFS to pick only one narrow Goal (#3) from the Revised Forest Plan in an attempt to justify this ill-conceived boondoggle. There are many goals and objectives in the Revised Forest Plan, including providing snags and other habitat for wildlife, sustaining the ecosystem (which includes natural processes), taking care of soils and nutrient cycling, and so on. These goals, when properly considered, would be compromised by the proposed logging activities. The USFS has an obligation to fully consider how to manage the Jasper Fire area in the context of all Forest Plan goals, objectives, and direction. This was not done. The agency must prepare a new or supplemental Draft EIS to evaluate and disclose the consistency of any proposed actions in the fire area in the context of all Forest Plan direction. The public must be given the opportunity to review and comment on this evaluation. The agency cannot simply force the public to accept some arbitrary and indefensible reasons for massive logging that was never anticipated in the Revised Plan.

9 The DEIS also claims (without stating so in the "purpose and need") that logging the fire area is needed to reduce risk of forest fire and insects. However, the Jasper Fire has already eliminated ground and ladder fuels from the burn area, and even if many of the standing dead trees fall in the next 20-30 years, this will not significantly increase the fire risk beyond the risk that would be created by logging the area and leaving slash. Much of the area has been burned so much there is no foreseeable fire risk. Moreover, the fire breaks constructed for the Jasper Fire will allow easy control of any future fire in the area.

10 [Concerning insects, the DEIS -- like all other timber sale documents the USFS has ever issued on the Black Hills -- ignores the ecological values of native species such as the pine beetle. The experts interviewed for the BHNF Phase I amendment informed the agency that there need to be beetles and insects occurring on the Forest to sustain populations of woodpeckers and other insect-gleaning species. The proposed action would suppress insects and thereby adversely impact these species. Thus, even if snags are left for woodpeckers, their populations may not increase or recover due to lack of food.] WL7

The USFS Must Adopt a "Purpose and Need" that Addresses the Changes in Conditions and Circumstances Caused by the Fire

11 [The "purpose and need" for taking action in the burn area should not be to provide the timber industry with more public timber for private profit; the purpose and need for the Jasper Fire response action should be (1) deciding how to manage the area in the wake of the fire, and (2) deciding how to amend the Revised Forest Plan and programmatic EIS to account for the significant changes in the forest environment caused by the fire (and associated management activities).] AP8

11.1 [The first decision should be based, first and foremost, on sustaining the ecosystem. This is, in fact, now required by the new NFMA regulations at 36 CFR Part 219. The DEIS does not even mention this important new set of regulations, much less use them to help the USFS decide how to manage the area in the wake of the fire.] AP9

12 [To sustain the Black Hills forest ecosystem, the agency must address the serious snag shortage across the Forest. The DEIS only considers leaving snags in the burn area to provide a modest population of snag-dependent species in the burn area. The agency must broaden its perspective and recognize that the burned trees are not "excess" that can be logged without consequence, but are needed to help sustained (and recover) populations of snag-dependent species across the Forest. The Jasper Fire area, if allowed to evolve without removal of snags, will serve as a population "source" for much of the rest of the Forest which acts as a population "sink" for these species.] SNG1

10 [Sustaining the ecosystem also requires accounting for the roles of native insects, including pine beetles. For example, the USFS was informed that "Pine beetles and other bark beetles are a very important year-round food source, and have a great effect on the woodpecker's abundance, distribution, and long-term viability...." See BHNF Phase I Expert Interview Summary, page 84. The DEIS ignores this key conclusion and instead treats pine beetles and insects as threats rather than natural and important components of the ecosystem.]

13 [Sustaining the ecosystem must also take into account soil health and nutrient cycling. The DEIS does not account for these, but again puts commodity production above ecological needs. It is not enough to simply minimize soil erosion; the USFS must also ensure long-term soil health. Standing dead and downed trees and debris left by the] WS4

13 [Jasper Fire are and will be an important source of long-term nutrient input for the soil. There is no assessment of how the fire or proposed logging activities would reduce soil nutrients or otherwise impact soils in the burn area.]

14 [The USFS Must Protect Additional Old Growth and Interior Forest Habitat Elsewhere on the Forest to Account for the Unexpected Loss from the Fire] OS-8

The Jasper Fire resulted in a significant reduction in the amount of interior forest, goshawk nesting habitat, structural stage 4C habitat, and old growth habitat. The Revised Forest Plan and associated programmatic EIS did not account for these significant reductions, but were instead based on the assumption that this part of the Forest would continue to provide these habitats throughout the planning period. In fact, the viability assessments for the Revised Forest Plan were based on these same assumptions. The Chief of the Forest Service concluded, in his decision on our appeal of the Revised Forest Plan, that even maintaining all of this habitat may not be enough to ensure viable, well-distributed populations of goshawks and other forest-dwelling species. The DEIS acknowledges that "The recovery of goshawk foraging and nesting habitat destroyed by the fire will take a very long time." DEIS at 4-11.

15 [To address this significant and long-lasting change in conditions on such a large part of the Forest, the USFS must prepare a supplemental programmatic EIS and amend the Forest Plan. In addition, to provide the amount of SS-4C, goshawk nesting habitat, and old growth habitat the Revised Forest Plan directs the agency to maintain on the Forest, the Forest Service must set aside (i.e., protect and designate unsuitable for logging) additional stands of such habitat on other parts of the Forest.] AP4.1

This important issue is not "beyond the scope of the analysis." It is one of the main issues that must be addressed in the analysis. Furthermore, the USFS cannot put off addressing this issue off until later; otherwise, when the agency finally gets around to evaluating how to deal with the habitat loss caused by the fire (and "value recovery" logging), the agency may find it has already logged all possible "replacement" habitat elsewhere on the Forest.

The USFS Must Immediately Protect the Imperilled Montane Grasslands in and around the Fire Area

The Jasper Fire area contains several montane grassland (i.e., floral valley) communities. The Black Hills is the only place in the world where such communities are known to exist. Of the seventy or so montane grasslands that originally existed on the Forest, most have been lost or severely impacted by development, road construction, water development, non-native species, livestock grazing, and off-road vehicle use. As a result, The Nature Conservancy and Natural Heritage Program have ranked the montane grasslands as G1S1 -- the highest rate of imperilment on the global and local levels. The montane grasslands in the Jasper Fire are among the best remaining examples of these remarkable communities on the Forest, and hence in the world.

Despite our previous requests that the USFS act to protect these special places, the agency has done nothing to increase protection or change management in these areas. In fact, shortly after the Jasper Fire started, we called the BHNF and requested that the agency ensure the fire fighting efforts would not impact these sensitive areas. The Deputy Supervisor assured us that the areas would be protect. Yet, we have since learned that parts of at least one montane grassland were heavily bulldozed, apparently by the Governor of South Dakota, during a bout of photo-op political posturing. In any case, it is clear the USFS has not fulfilled its responsibilities to protect the highly imperilled montane grasslands.

16 [In our scoping comments, we specifically requested that increased protection be provided for these areas and that the agency give the areas a special management designation, such a Research Natural Area, to ensure the areas would be managed with protection of natural values as a highest priority. This request was ignored.] OS2

The USFS cannot keep ignoring this issue; the Jasper Fire -- and the proposed logging activities -- will make the montane grasslands more vulnerable to damage and more accessible to motorized vehicles. If the USFS delays addressing the management needs of the montane grasslands until the Phase II amendment is completed (some 5 or more years from now), the grasslands could be significantly and irreversibly impacted.

16.1 [Moreover, the logging and road construction/reconstruction activities associated with the proposed "value recovery" project could significantly impact these communities. For example, the agency is apparently intending to conduct logging in areas adjacent to the montane grasslands; this would alter the overall plant community associated with the grasslands and could change the hydrology and other conditions that help sustain the grasslands. These would constitute significant and irreversible impacts, yet the DEIS does not evaluate these impacts. This violates NEPA. It also violates the USFS's requirements to maintain diversity and protect important public resources.] SP1

We have previously requested that 1/2-mile no-disturbance buffers be established from the edge of each of the montane grasslands in question. This request was ignored and was apparently not even considered as alternative mitigation in the DEIS. This violates NEPA. We are again demanding that the high-quality (B, B+, and A/B ranked) montane grassland communities in the Jasper Fire area be designated as RNAs with 1/2-mile protective no-disturbance buffers. This issue is not beyond the scope of the analysis because the fire and subsequent management activities pose significant impacts to these rare communities. The USFS cannot turn a blind eye to an important and urgent management need simply to rush forward with a massive commercial logging project designed to benefit only a few local timber corporations.

SP1

The USFS Must Adjust the ASQ and Lands Suitable for Timber Production

17 [As discussed above, one of the key "needs" that must be addressed in response to the Jasper Fire is adjusting the Forest Plan to account for the significant changes the fire caused in the forest environment. Nearly 10% of the forest burned, and of this, a] OS3

significant part has been converted from forest to non-forest for the foreseeable future (i.e., well beyond the planning period).

17

The Revised Forest Plan and associated programmatic EIS did not account for this significant reduction in forest-land or loss of merchantable sawtimber. The Jasper Fire EIS must evaluate the reduction in timber supply and forested land suitable for timber production. The decision issued on the Jasper Fire EIS must adjust the allowable sale quantity to account for this significant change in conditions on the Forest.

OS3

The USFS cannot ignore this significant change until a later amendment is done. This is because the agency is continuing to plan and implement timber sales across the Forest based on the ASQ and suitable timber base calculated for the Revised Forest Plan. This is inappropriate and will lead to a harvest level that is not sustainable and further over-cutting of the Forest. The adjustment must be made now, before the Jasper Fire area is logged and before additional logging is allowed elsewhere on the Forest. As with the "replacement habitat," this issue is not "beyond the scope" of the Jasper Fire analysis; it is one of the most important issues that must be addressed in response to the fire. The key issue must be addressed now, to ensure the agency does not create a "train wreck" in the near future by ignoring the reduction in merchantable sawtimber on the Forest caused by the fire.

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The USFS is also obligated under NFMA and the NFMA planning regulations to re-assess, once every five years, the acreage of land on the Forest that is suitable for timber production. The Revised Forest Plan was issued in 1996, and the analysis of lands suitable timber production for that Plan was made in 1994 or 1995. It is now more than five years since that analysis was done, so the agency is legally obligated to not only re-evaluate the acreage of land suitable for timber production in the Jasper Fire area, but on the entire Forest.

OS3

18

The USFS is Using an Arbitrary and Ambiguous Definition of "Dead Tree"

VR2

Not only is the USFS trying to rush through with a project that is unjustifiable, the agency is also attempting to use arbitrary definitions that will allow the maximum amount of logging.

The DEIS says that "all trees likely to survive" will be left standing, the DEIS defines "likely to survive" so narrowly that many trees could be logged, even if they would likely survive for many years. DEIS, page 2-9. However, the DEIS states "A dead tree is defined as those trees with no needles remaining, or all of the needles are scorched with no green needles remaining. Trees that are expected to die in the first year are those with less than 25% green crown and/or those exhibiting cambium damage on at least 50% of the bole." DEIS at 2-9. We agree that trees with no remaining green needles can be considered "not likely to survive." However, trees with less than 25% green crown and/or more than 50% bole damage may survive. Indeed, ponderosa pine are hardy and are adapted to not only resist fire damage, but to recover following significant fire damage. What scientific evidence or research did the USFS use to decide

18 trees with less than 25% green crown or more than 50% bole damage would die? The agency cannot simply pull such important numbers out of the air, particularly when whatever numbers the agency decides to use will have a significant influence on how many trees are logged and how much of ground disturbance will occur. The NEPA document must cite the sources relied upon for assumptions and conclusions. Did the agency do test burns of a large number of trees, of many different sizes and in many different productivity sites, to arrive at these figures?

Also, what does the USFS mean by "likely to survive"? Does "likely" mean a 95% chance of surviving beyond ten years? Or does it mean a 10% chance of surviving the first year? Did the USFS consider alternative definitions, in accordance with NEPA? Clearly, the definition of "likely to survive" is critically important to the public's understanding of the proposed action and its scope and effects. Yet this key definition is not presented in the DEIS. This definition must be presented to the public in a revised or supplemental draft EIS.

Given the significant loss of forested habitat caused by the fire, the USFS should not classify any tree as dead unless and until the tree actually dies. The only trees that should be "treated" are those that are clearly dead, and even then, dead trees should only be removed or felled if there is a clearly demonstrable need to remove those trees. As discussed above, the DEIS does not show there is any compelling need to remove or fell trees in the burn area. Providing timber to local corporations -- when such timber volume was never anticipated or considered in the Revised Forest Plan or programmatic EIS -- cannot be used as a "need" or justification for large-scale commercial logging of the fire area.

VR2 AP8

The DEIS Fails to Adequately Assess and Disclose Potentially Significant Impacts

19 The USFS's "assessment" of potential environmental impacts associated with the proposed Jasper Fire Value Recovery Project is presented in Chapter 4 of the DEIS. Disturbingly, there is no real analysis of impacts in this entire chapter or anywhere else in the DEIS. Instead, the DEIS only presents conclusory assertions and gross generalizations. Below we provide a few examples of this fatal flaw in the DEIS. The lack of any meaningful impacts analysis prevents reviewers from really understanding the environmental effects posed by the proposed logging activities and prevents reviewers from knowing which alternative they should support. For these reasons, the USFS must prepare and circulate a revised or supplemental Draft EIS to present the public, scientists and various expert agencies with the missing impacts assessment so they can submit meaningful comments on the proposal and possible alternatives.

AP3

Impacts to Land Snails of Special Concern. There are more than 30 varieties of land snails in the Black Hills. In 1993, Frest and Johannes studied the snail diversity in the Black Hills and found the following seven land snails to be "Species of Special Concern" on the Forest:

- Pahasapa mountainsnail (*Oreohelix strigosa* n. subsp.)
- Black Hills (or Cooper's) mountainsnail (*Oreohelix strigosa cooperi*)
- Berry's mountainsnail (*Oreohelix strigosa berryi*)
- Mystery vertigo snail (*Vertigo paradoxa*)
- Frigid ambersnail (*Catinella gelida*)
- Callused vertigo (*Vertigo arthuri von Martens*)
- Striate disc (*Discus (Gonyodiscus) shimeki*)

Some of these snail taxa are only known to exist in the Black Hills. Frest and Johannes concluded these snails are of special concern because these snails "are believed to be currently rare over their entire range, to have suffered considerable reduction in numbers of sites and individuals, to be unprotected as yet by existing federal or state laws, rules, or regulations, and to be in imminent danger of extinction or likely to become so in the near future." T. J. Frest and E.J. Johannes, "Land Snail Survey of the Black Hills National Forest, South Dakota and Wyoming," Final Report, Contract #43-67TO-2-0054, (1993), p. 41.

Frest and Johannes also concluded that logging in the BHNF is "essentially disastrous" to these land snails, for instance, because logging "increases insolation; removes cover; increase ground temperature in summer; decreases effective ground temperature in winter (i.e., increase exposure); decreases available moisture and effective humidity; removes shelter, hibernation, and egg-laying sites; removes ground cover, including forage plants for many species; simplifies community structure; and decreases diversity. The removal of coarse woody debris and litter by logging (often followed by slash burning) is particularly objectionable."

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Despite the very precarious status of the Snail Species of Special Concern, the DEIS does not contain any real analysis of potential impacts to these species or their habitats. Instead, the entire "analysis" of direct, indirect, and cumulative impacts the Snail Species of Special Concern is found in the following few sentences:

"4.3.11 Snails

Value recovery operations could add to disturbance at these colonies with uncertain effects. Removal of standing dead trees could make the sites warmer and drier adding to the effects of the fire. Removal of these trees also precludes their falling to the ground as down woody debris later slowing the re-accumulation of a duff layer. Heavy duff layers are a characteristic of snail locations.

Cumulative Effects

The greatest effect to snails and snail habitat resulted from the Jasper Fire. With mitigation measures, no additional cumulative effects are expected."

DEIS at 4-14 and 4-15. This is not "analysis," and the USFS cannot comply with NEPA by saying some impacts could occur and then claim they are "uncertain." See 40 CFR

AP3

1502.22. How many colonies of the snail species in question were known to occur on the Forest before the Fire? How many snail colonies were impacted by the fire? How did the fire affect the viability and distribution of the snail populations? Just how much disturbance would "value recovery operations" cause to these colonies? How many different colonies could be impacted by the wide-spread logging and other "value recovery" operations? How important are these colonies to the overall distribution and viability of the snail population(s) on the Forest? How many acres of snail habitat could be impacted or altered by tree removal, skidding, etc.? How much warmer and drier would sites become after logging? What are the temperature and humidity tolerances of the snails? Would logging alter hydrology that could dry up essential springs and seeps needed by these snail colonies? How long would the lack of a heavy duff layer persist following the logging operations? Would snails do better if dead trees were left standing for an extended distance around the colonies? How could snails be impacted by subsequent ORV use associated with opening the area through logging and the USFS's refusal to close the fire area to motorized vehicle use? What about impacts from fire wood gatherers who visit the area in the future? Would livestock grazing increase after the fire area is logged, in response to the increased growth in grass and forbs? If so, how would this impact snails?

WL3

The DEIS does not attempt to answer any of these critically important questions. Viability concerns must be fully and carefully addressed for each of the Snail Species of Special Concern, particularly in light of the fact that Frest and Johannes (1993) concluded these species should each be listed as Endangered or Threatened under the Endangered Species Act. This conclusion was reached before the fire occurred and before additional colonies were impacted or lost. So the status of the snails is no doubt even more precarious now. In addition, the Chief of the Forest Service concluded the Revised Forest Plan does not ensure viable, well-distributed populations of these snail species on the Black Hills. NEPA demands answers to these questions.

Astonishingly, after admitting the value recovery operations could impact these land snail colonies, the DEIS turns right around and claims "no additional cumulative effects are expected" from these operations. Either there will be absolutely no direct, indirect, or cumulative impacts from the value recovery operations -- which the DEIS does not demonstrate -- or there will be some affects from the logging operations -- in which case there will be additional cumulative effects. Since the snail species are currently believed to be threatened or endangered, even small additional impacts to the remaining colonies could be cumulatively significant.

AP2

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The DEIS claims "mitigation measures" would avoid impacts to the snail colonies. What "mitigation measures" are the DEIS talking about? The only reference to a mitigation measure for snails is found on page 2-10 of the DEIS, which reads "Protect all known snail colony locations with a 100' buffer of no disturbance." There is no evidence a 100-foot buffer would be adequate to protect snails. For instance, a mere 100-foot no-disturbance buffer around known colonies would still allow for significant changes in microclimate and hydrology that could lead to the loss of a snail colony. A NEPA document cannot merely say a mitigation measure would reduce or eliminate impacts to an insignificant level; the NEPA document must evaluate and disclose their

WL3

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effectiveness. The NEPA document must also rigorously explore and objectively evaluate alternative mitigation measures, including measures that are stronger than those associated with the "proposed action." See, e.g., 40 CFR 1508.25(b)(3) These requirements have been upheld by various federal courts. In our scoping comments, we have asked the agency to use buffers larger than 100-feet. Not only was this request ignored, the DEIS did not even bother to consider any alternative of using larger, more effective buffers. We again demand a minimum of a 100-meter no-disturbance buffer be used for all snail colonies, and this buffer must apply to logging, road construction/reconstruction, off-road motorized vehicle use, fire-wood gathering, livestock grazing, and all other activities that could adversely impact snail species of special concern, colonies of these species, or their habitats.

The USFS has also completely ignored the fact that the proposed 100-foot buffer would do nothing at all to protect snail colonies that were overlooked in previous surveys. Therefore, whatever "action" alternative the agency selects for managing the Jasper fire area, the agency must be required to conduct surveys to look for new colonies in any areas where ground-disturbing activities could occur and where firewood gathering and off-road motorized-vehicle use will be allowed.

Impacts to Goshawks and Old Growth Associated Species. The best available data indicates the Black Hills goshawk population may presently consist of no more than 15-30 nesting pairs. See nest data in recent BHNF monitoring reports. See also, statements in the Hollow Timber Sale EA that only 30 pairs of goshawks are believed to exist on the Forest. This is not a viable or well-distributed population of goshawks. In his ruling on our appeal of the BHNF Revised Forest Plan, the Chief agreed with this and concluded a population of as many as 50 pairs of goshawks does not constitute a viable, well-distributed population on the Forest. Similar conclusions were reached by prominent goshawk experts interviewed by the USFS. For instance, these experts concluded that "Managing for only the known goshawk nests and territories would not ensure a viable population." Expert Interview Summary, page 79. They also concluded "The objective (207) to manage at least 5 percent of the forested land base in late succession may also be too low to support goshawks." Expert Interview Summary, page 78. The BHNF presently contains less than 2% old growth habitat, some of which is spruce and therefore not suitable for goshawks.

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Based on these conclusions, it is clear the BHNF is, at the present time, substantially out of compliance with the viable population requirement, and there is no basis for the USFS to conclude any project would maintain a viable, well-distributed population of goshawks.

GOS1

The DEIS suggests the proposed logging activities "are not expected to affect goshawk habitat because only dead trees in moderate and high density burn areas will be harvest." DEIS at 4-11. However, some logging would be done in areas immediately adjacent to unburned areas that may provide suitable goshawk nesting or foraging habitat. Logging adjacent to or near these unburned areas would reduce the overall suitability of the unburned stands for goshawks. This will have adverse effects on goshawks, and these effects are completely ignored by the DEIS.

21 } In addition, the DEIS completely ignores the cumulative impacts to goshawks caused by the fire and other past, present, and foreseeable logging projects. The fire resulted in the loss of several known goshawk nesting territories (including post-family fledging areas) as well as significant acreages of potential nesting and foraging habitat. There is no discussion of these cumulative impacts in the DEIS's chapter on Environmental Consequences. This is a critical omission because if this loss in habitat were properly assessed and disclosed -- along with the conclusions of the Chief and goshawk experts that the Forest does not provide sufficient habitat to sustain a healthy, well-distributed goshawk population -- it would be clear to all readers that the USFS must take action to address the habitat shortage. This would show the agency must not only consider the alternative of designating replacement goshawk habitat on other parts of the Forest, it would show the agency must designate replacement habitat to compensate for the significant habitat loss caused by the fire. } GOS1 OS8

Impacts to Sensitive Species. The DEIS's entire discussion on impacts to Sensitive Species is contained in the following statement:

"A biological evaluation was completed for this project. A determination of 'may adversely impact individuals but not likely result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range-wide' is made for the following species: pygmy nuthatch, black-backed woodpecker, northern three-toed woodpecker, Lewis' woodpecker, Townsend's big-eared bat, fringed-tailed bat, tiger salamander, pale milk snake, Black Hills red-bellied snake, northern leopard frog, tawny crescent butterfly, and regal fritillary butterfly. A determination of 'may beneficially impact' is made for the following species: merlin, western burrowing owl, upland sandpiper, loggerhead shrike, and black-tailed prairie dog."

22 } DEIS at 4-16. This does not contain any analysis whatsoever. Agencies must present, in their NEPA documents, enough information to demonstrate the basis for the conclusions and assumptions presented in the NEPA document. And courts have held that agency's cannot simply cite to other documents, not circulated with the NEPA document, to satisfy NEPA's requirements. Yet this is precisely what the USFS is trying to do here. The public was not given the "biological evaluation" (BE) to review, and even if citizens had requested that document, the FOIA regulations only ensure the citizens would receive a copy of the document within 30 work-days, which means citizens would not necessarily receive the BE until it was too late for them to review and comment on that document. Moreover, the NEPA regulations require the agency to circulate the draft and provide 45 days public review and comment period on a draft EIS; if the Forest Service is going to rely solely on a BE for the analysis of impacts to sensitive species, the agency has a legal obligation to circulate the BE along with the DEIS so citizens will have the full 45 days to review that document and comment on its adequacy or inadequacy. This was not done. The DEIS is so inadequate on this issue that citizens cannot submit meaningful comments on possible impacts to sensitive species or on the adequacy of the USFS's "analysis" because the analysis was not included in or even summarized in the DEIS. A new or supplemental DEIS must be } WLA

circulated to address this fatal flaw.

22

In addition, while we did not have time to obtain and review the BE, it is clear the conclusions it reached (at least the two narrow conclusions cited in the DEIS), are indefensible and incorrect. There is absolutely no basis for the BE's determination that the proposed action "may adversely impact individuals but not likely result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range-wide" on any species much less for the pygmy nuthatch, black-backed woodpecker, northern three-toed woodpecker, Lewis' woodpecker, Townsend's big-eared bat, fringed-tailed bat, tiger salamander, pale milk snake, Black Hills red-bellied snake, northern leopard frog, tawny crescent butterfly, and regal fritillary butterfly.

WLA

This is because the DEIS and BE do not specify how many "individuals" of each species could be impacted (directly, indirectly, or cumulatively), how many individuals are in the overall BHNF population for each species, and how many individuals are needed for each species to maintain a viable and well-distributed population on the Forest. Without this key information, there is no way for the agency to decide whether or not this proposed project -- in conjunction with the fire and other logging activities -- would reduce populations below viable or well-distributed levels.

23

In addition, the DEIS and BE suffer from the same problem the Chief of the Forest Service identified in the BHNF Revised Forest Plan. For example, the Chief concluded the EIS for the Revised Plan suffered from the following fatal flaws: guidelines in the Plan (purportedly designed to protect wildlife) "lack ... underlying scientific merit" and are "seriously weakened by potential cumulative effects of multiple projects within a single diversity unit; ... the viability assessments relied on habitat capability but this information "is not in itself adequate for making effects determinations; ... there is little discussion of critical habitat features; there is little or no discussion of actual populations; there is a fairly casual discussion of habitat distribution;" and the agency wrongly assumed 20 to 50 pairs of goshawks would constitute a viable, well-distributed population on the Forest. Chief's ruling, pages 57-58. The same flaws plague the Jasper Fire DEIS and BE.

ADA

In addition to the Chief's conclusions concerning the viability problems on the Black Hills, scientists have concluded the Forest -- even before the Jasper Fire -- does not contain enough old growth habitat to ensure viable, well-distributed populations of woodpeckers and other species. For instance, when the USFS Anderson fell that the percentage of old growth allocated in the [Revised] Forest Plan is inadequate for the Three-toed woodpecker." See Expert Interview Summary, page 87. Likewise, "Saab specifically stated that managing 5 percent of the Forest as late succession may not be enough for long-term persistence of the Lewis's woodpecker," and he expressed "immediate concerns regarding inadequate old growth allocations in the Forest Plan...." Id. page 88 and 91. The Revised Forest Plan only allocated 5% of the forested areas to be managed for old growth, and due to past mismanagement, less than 2% of the Forest currently contains actual old growth habitat. In light of these conclusions, there is no basis in the DEIS or BE for concluding there is no viability concern for the Lewis or Three-toed woodpeckers.

WDP1

Impacts to Bats and Caves. There are several species of bat that would be adversely impacted by the proposed Jasper logging project. The USFS has been informed by bat experts that "Without protection of Townsend's hibernacula, there is a big risk to the species, and it could be listed." See Expert Interview Summary, page 59. The DEIS does not ensure adequate protection of caves or hibernacula. The DEIS does say the USFS "should" leave a 500-foot buffer around cave entrances. DEIS at 4-11. However, this does not actually require this minimum level of protect be provided during the Jasper Fire project. A 500-foot buffer must be maintained around all cave entrances. In addition, the DEIS and proposed action do not address impacts to caves and hibernacula caused by activities away from cave entrances. When areas are logged or roaded, this does change the subsurface hydrology and often results in less water percolating through substrate and into caves. The result is a drier cave micro-environment which can significantly impact the cave ecosystem. Thus, logging more than 500-feet away from a cave opening can still result in significant adverse impacts if the cave is more than 500-feet long. The DEIS ignores these potential impacts to caves and bat habitat in the fires area. This must be addressed in the revised or supplemental DEIS, and the USFS must adopt meaningful protections for all cave resources and bat habitat, not just those around cave entrances.

24

WL5

AP12

WL5

Impacts to Montane Grassland Communities. The DEIS does not assess and disclose the cumulative impacts to montane grassland communities. Specifically, while the DEIS recognizes these rare communities exist in the area, the DEIS ignores possible impacts that would be caused by logging in upland or adjacent areas. Removing trees near these plant communities could change microclimate, hydrology, and other conditions that presently sustain the imperilled grasslands. These impacts must be carefully considered; the DEIS ignored them. Likewise, the DEIS does not evaluate impacts that would be caused by increased motorized vehicle and off-road vehicle use following the fire or logging activities. Motorized vehicles do pose significant impacts to these places and such use has already significantly impacted other montane grasslands. The DEIS also fails to evaluate the possible direct, indirect, and cumulative impacts of introducing non-native plants into the grasslands. With increased access to the area (resulting from the fire, the proposed logging activities, and the USFS's refusal to obliterate roads in the burn area), there will be an increase in non-native plants throughout the burn area. The DEIS mentions this is a possibility, but it does not evaluate how this might impact the montane grasslands.

25

SP1

We have requested a 1/2 mile no-disturbance buffer be established around all montane grasslands in the burn area, but this request was ignored. We have also asked that these areas be designated as RNAs or closed under other administrative order to protect the communities from ground-disturbing activities such as logging, road construction, and off-road vehicle use. We again request that these reasonable and necessary protections be provided for these sensitive and special areas.

26

DSZ

Impacts to Deer and Elk. Concerning possible impacts to big game species, the DEIS states that "Value recovery operations will not affect cover or forage levels in the burn area since only dead trees will be harvested." DEIS at 4-13. This is an indefensible statement. First, commercial logging associated with the lumber "value recovery

27

WL2

27 operations" will log more than just dead trees. As discussed above, the DEIS defines "dead tree" in such arbitrary and liberal terms that many trees which would live long after the fire will be classified as "dead" and subject to logging. The logging of these trees -- as well as trees that are actually dead -- will significantly reduce cover for deer and elk in the area for many years. If these trees and boles are left standing, they will provide some valuable cover (even if not ideal cover) until new shrubs or new pole stands regenerate in the understory and thereby remedy the loss from the fire.

28 For cumulative effects to big game animals, the DEIS's entire "assessment" amounts to a single vague sentence: "Cumulative effects of ongoing sales and proposed harvest may cause additional disturbance for big game animals through the summer of 2001. Again, this does not constitute any actual analysis and leaves ALL of the critical questions unanswered. How much loss of cover was caused by the Jasper fire? How much was lost to past logging activities? How much impact will occur from the ongoing sales? How much more disturbance, impact, and loss of cover would result from "proposed harvest"? What about motorized-vehicle use in the area? Clearly, with less cover and the USFS's refusal to close existing roads in the area, the burn area will be much less suitable for deer and elk. This reduction must be quantified in the NEPA document; again, it is not enough to simply say some impacts or additional disturbance will occur.

28.1

29 *Impacts from Roads and Road Work.* The DEIS fails to assess or disclose the direct, indirect, and cumulative impacts of the massive road system "reconditioning" and new road construction associated with the two action alternatives. Even basic information is missing. Nowhere in the DEIS can the reader find data on the miles of system roads vs nonsystem roads, the maintenance level and condition of the system roads, the need or purpose for the roads, etc. And nowhere in the DEIS are the impacts discussed or analysed of "reconditioning" nearly 270 miles of road and the construction of 13 miles of new roads. Given the enormous environmental impacts of roads (on wildlife, sensitive species, water quality, etc.) this is a fatal omission.

30 At the national level, the USFS in the past two years has developed a new roads management and transportation analysis policy. On January 4, 2001, the Chief of the USFS approved this new Forest Road Management Policy and Rule, and stated that the new policy "will rely heavily upon scientific analysis and public involvement at the local level to provide a road system that is safe, responsive to public needs, environmentally sound, affordable and efficient to manage." The new policy, according to the Chief, "shifts the agency's policy from developing its transportation system to managing its transportation system in an environmentally and financially responsible way." The final rule, according to the Federal Register Notice, "removes the emphasis on transportation development and adds a requirement for science-based transportation analysis. Yet the DEIS for the Jasper "fire recovery" project fails to meet the requirements of the new policy and rule, In fact, the DEIS omits any substantive discussion or analysis of the direct, indirect, or cumulative impacts associated with "reconditioning" of 269 miles of road and construction of 13 miles of new roads.

The DEIS Fails To Rigorously Explore and Objectively Evaluate Reasonable and Necessary Alternatives

31

In our scoping comments on the Jasper Fire proposal, we outlined a number of reasonable alternatives that we asked be fully evaluated in the draft EIS. The following reasonable alternatives were completely ignored or improperly dismissed in the DEIS:

AP6.1

- (1) designating the montane grasslands in the fire area as RNAs;
- (2) protecting additional old growth and goshawk habitat (from logging) in other parts of the forest to compensate for the loss of these habitats in the burn area;
- (3) alternative mitigation measures, including stronger wildlife protections (the DEIS is only considering wildlife mitigation measures that would be consistent with the "anticipated Phase I forest Plan amendment direction" which is too weak and has not gone through the NEPA process);
- (4) closing and reclaiming all logging roads and roads that are not major transportation routes in the fire area, and closing the entire area to off-road travel;
- (5) alternatives to "treat" the forest without commercial logging (e.g., prescribed fire, cut & fell);
- (6) alternatives that would return ownership (or management authority) of the fire area to the Native American tribes who were deeded the land under the original Sioux Treaty; and
- (7) action alternatives involving less than 27 mmbf of logging.

None of these alternatives were evaluated. The only action alternatives considered in the DEIS are two massive commercial logging schemes. This violates NEPA and does not satisfy NEPA's requirement to rigorously explore and objectively evaluate all reasonable alternatives.

Other Issues and Concerns

32

The Proposal Lacks a Valid Forest Plan and Programmatic EIS. The Chief of the Forest Service concluded the Revised Forest Plan and programmatic EIS for the BHNF are legally inadequate in a number of significant respects. These inadequacies have not be corrected. Nevertheless, the agency is justifying the Jasper Fire project under the Revised Forest Plan. The agency cannot do so -- and cannot tier the project NEPA document to the programmatic EIS -- until the existing flaws are corrected. The CEQ regulations make clear that no ground-disturbing activities can be undertaken

AP4.1

until valid programmatic and site-specific NEPA documents are issued. We formally request that the Jasper Fire proposal be suspended -- with the exception of activities such as designating RNAs, road closures, and replacement habitat that do not involve ground-disturbing activities -- pending correction of the Revised Forest Plan and programmatic EIS.

33 *The Economic Analysis Shows the Project is Economically Unjustifiable.* The DEIS shows the proposed action (Alternative B) would result in a net loss in value of \$614,294.46, more than a half million dollars and a benefit/ cost of only 0.73. Alternative C is also a loser, with a benefit/ cost ratio of less than 0.7 (i.e., for every dollar spent, less than \$0.70 would be returned in benefits). This means both alternatives are economically unsound. The USFS may argue that the other benefits of the project outweigh this massive economic loss. However, the DEIS does not show this to be the case. And, in fact, the only purported benefit being claimed for the project is related to "recovery" of timber value. Because the timber value is less than the cost of implementing the project, it should not be allowed to go forward. Basically, the DEIS shows the proposed project would not "recover" values but would lose significant economic value. If the significant impacts to wildlife, soils, water quality, and other resources were assessed as actual costs of the project, the USFS would find the proposed action (and Alternative C) would lose significantly more values. This is not a value recovery proposal, but a value depletion proposal. AP10

The USFS should rigorously explore and objectively evaluate alternatives that are cost efficient. The DEIS does not do this. If no such alternative(s) can be found (while protecting all forest resources and values), no action should be taken.

34 *The Proposed Action Would Change Tree Diversity Contrary to NFMA.* NFMA requires the agency to maintain the diversity of trees "similar to that existing in the region controlled by the plan." Nevertheless, the USFS is proposing to convert forested land to non-forested land by logging trees throughout the Jasper Fire area, and this will cause a significant shift in vegetation diversity in the area and on the Forest. While the fire certainly converted some forested land to non-forested land -- and this significant change must be addressed -- the USFS's proposal to log and effectively deforest large tracks of land in the fire area will cause additional significant changes in tree diversity. Specifically, the USFS would log many partially burned trees that are alive and still provide seed sources in the future, and removing these trees will convert the areas to grassland. The DEIS does not address this important issue. NSP

35 *The Proposed Action May Violate Water Quality Requirements.* We believe the significant soil disturbance associated with the project (including logging, skidding, road construction and maintenance work, and hauling) will significantly impact soils and hence water quality in the burn area. In addition, we believe the project may violate Clean Water Act and State Water Quality requirements. The USFS must ensure all applicable requirements are met and the project honors the full spirit and intent of the Clean Water Act and associated Executive Orders. WS3

In summary, we are very disappointed in the quality of the DEIS. This document does not come close to satisfying NEPA's minimum requirements of taking a "hard look" at possible impacts or of objectively evaluating reasonable alternatives. Accordingly, we are formally requesting that a revised or supplemental draft EIS be prepared to address the issues, errors, and omissions described in these comments. Given the significant impacts that have already occurred to the Black Hills forest from more than a century of wide-spread logging, we can only support an alternative that involves no commercial logging and includes the following measures in response to the Jasper Fire:

36 (1) the montane grasslands in the fire area will be promptly designated as RNAs with 1/2 mile protective buffers; OS2 SP1

37 (2) the Forest Service designates and protects -- outside the fire area -- replacement habitat for old growth, SS-4C, and goshawk nesting territories (based on the best available habitat) to compensate for the significant loss of these habitats caused by the fire; OSB

38 (3) the Forest Service closes, obliterates, and reclaims all former logging roads and roads that are not major transportation corridors through the burn area; RDS1

39 (4) the Forest Service protects all known snail colonies (and searches for unknown snail colonies) from logging, road construction activities, motorized vehicles, livestock grazing and other potential impacts, and WL3

40 (5) the Forest Service promptly re-assesses the acreage of land suitable for timber production on the Forest -- and reduces the allowable sale quantity -- to account for the significant reduction in timber supply and forest land resulting from the fire. OS3

41 Please include these comments in the project file and address and respond to each of our issues and concerns in any future NEPA document prepared on this proposal. We request that these comments be reproduced, in their entirety, in an appendix to any final NEPA document. If the agency wishes to "summarize" our comments, the agency must explain why such extreme action is necessary or desirable. In our experience, when our comments have been summarized in by the USFS in the past, many comments were ignored or misconstrued. In addition, if a summary of comments is done, we will expect the agency to include the entire paragraph(s) associated with each comment to ensure the comment is not taken out of context or reduced in scope or importance. Thank you for considering these comments. AP12

Sincerely,



Donald J. Duerr
Biodiversity Associates
P.O. Box 6032
Laramie, W 82073



Jeff Kessler
Friends of the Bow
P.O. Box 6032
Laramie, WY 82073

for Don Duse
Bethanie Walder
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for Kelly Matheson
Wyoming Outdoor Council
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for Jacob Smith
Center for Native Ecosystems
2260 Baseline Road, Suite 205
Boulder, CO 80302

for Suzanne Jones
The Wilderness Society
7475 Dakin Street, Suite 410
Denver, CO 80221

CUSTER/ELK MTN RD

FEB 6'01

DR	TM STAFF	
NEPA STAFF	SALE ADM	
PRESALE	SCALER	
NW BIOL ✓	SILV	
RIS/GIS	TSI TECH	
ENG TECH	TM FOR	
ORA STAFF	LWR STAFF	
R CON	LANDS	
R TECH	ARCH	
FIRE/FAC	REC	
HELITACK	ADM STAFF	
FIRE TECH	BMA	
FIRE TECH	RECEPT	
FIRE TECH	OAC	



DEPARTMENT OF GAME, FISH AND PARKS

Regional Office
 3305 West South Street
 Rapid City, South Dakota 57702-8160

10

February 5, 2001

Mr. Michael D. Lloyd
 District Ranger
 Hell Canyon District
 330 Mt. Rushmore Road
 Custer, SD 57730

DR	TM STAFF	
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WMA STAFF	LMNR STAFF	
R CON	LANDS	
R TECH	ARCH	
FIRE FAC	REC	
HEALTHCOK	ADM STAFF	
FIRE TECH	BMA	
FIRE TECH	-RECEPT	
FIRE TECH	OAC	

FEB 6 '01

Re: Jasper Fire Value Recovery Draft EIS

Dear Mike,

CUSTER/ELK MTN RD

This will acknowledge receipt of and response to the above-referenced matter. Thank you for the opportunity for our agency to provide comments.

I found the information in the Draft EIS thorough for the most part and greatly informative. I appreciate the efforts and time put into this document. I also realize that time is of the essence and some issues simply cannot be thoroughly discussed at this time. Following are some general comments by topic. Further in the document, I express our Agency's preferred course of action.

1 [Montane Grasslands I agree that the montane grasslands be protected from certain logging practices.] SP1
 Although out of the scope of this proposed action, the Forest needs to review the impacts of other activities on these grasslands that cause impacts (ORV, livestock grazing, pine encroachment, etc.).

2 [Coarse Woody Debris I have visited salvage operations on three different occasions. For the purposes of this salvage proposal, I support logging practices that leave woody debris on-site and skid cut trees to a landing.] SNG 1

3 [Noxious Weeds I do not believe that seeding disturbed sites caused by logging is an accepted solution to noxious weed control. Therefore, increasing treated (salvaged) acres to reduce the spread of noxious weeds (page S-11) is invalid. Conversely, and later in the text, the Draft] NOX 2
 NOX 3

mentions how mechanized equipment can spread noxious weed seeds. I would appreciate documentation that illustrates how salvage operations alone actually decrease the spread of noxious weeds. Seeding, rehabilitation, etc. to prevent noxious weeds can be accomplished on many levels and do not have to be implemented to accommodate and justify salvage operations.

2 [Action alternatives will address noxious weeds and visuals as outlined in Sections 2.4.3 and 2.4.9 (Pages 2-11 – 2-15). The Draft lists grass species used to reclaim landings, skid trails and enhance areas adjacent to private lands, but does not list the shrub species. What are they?]

NOX 2
NOX 3

Section 4.4 discusses weed spread by burn intensity. As I understand, "burn intensity" describes dead trees and visual aspects of dead trees. "Burn severity" describes the impacts of fire on soil. The two definitions are not interchangeable in fire literature. So, predicting weed spread could be based on many factors, including burn intensity, but especially on burn severity and favorable soil conditions that would allow for weed establishment. I found this Section and the tables provided very confusing and believe this should be clarified prior to the Final EIS.

Forage Production

4 [Page 4-8 states that "Harvest of dead trees will not affect goals or objectives associated withforage production...". Further "The proposed action will not have a direct affect to the range resource" (Page 4-22). In summary, neither action Alternative is of consequence to range resources (Page S-11 and Section 4.7). Then why is the Forest range staff preferring any alternative? I found the information presented on the amount of slash on the ground vs. eventual fall of snags somewhat contradictory in logic regarding range resources/forage production. Part of the confusion may lie in the incorrect titles on page 4-23. Cattle are going to have a tougher time negotiating downed timber and snags but conversely, it is that same ground cover which will promote browse establishment due to micro-climates conditions.]

RNG 1
APG

Page 4-23 states that Alternative B is preferred in part because trees will be salvaged around existing improvements. Why not remove trees around existing improvements in Alternative C as well? Fences were once installed (and still are) around trees, over rough terrain, etc. I do not think that repair of structural improvements should sway one Alternative over another. If this really is an issue, then the Draft needs to spell out what fence lines and what improvements need salvage logging and why the salvage logging cannot be accommodated in both action alternatives to achieve those objectives.

RNG
APG

Preferred Action

5 [After reviewing the Draft, various published literature on effects of fire to natural resources and visiting current salvage operations on three separate occasions with professionals from various disciplines, I felt that the full range of alternatives were not explored.]

APG

As required by NEPA, a no action alternative (Alternative A) is discussed. Our agency agrees that this alternative does not meet the goals and objectives of the Forest Plan.

The following two paragraphs are the main focus of my discussion and concern. I will synthesize the issues of the two Alternatives later in the text.

1. Alternative B proposes to salvage the most volume of merchantable timber remaining outside of the five current sales. In order to achieve this goal, the Forest proposed to salvage timber across the landscape, regardless of whether an area has been surveyed for cultural resources. However, you did stipulate that heritage resource surveys would be completed and sites would be protected if a proposed sale fell within the unsurveyed areas. Snag diversity and densities are not as high priorities in

6 [Alternative B. The Draft mentions on page 2-7 that Alternative B would achieve Goal 3 of the Forest Plan. Are there no Goals that would be achieved in Alternative C?] AP12

2. Alternative C proposed to only salvage in areas that have already been surveyed for heritage resources, significantly reducing the effective salvage volume. Snag diversity and densities are a high priority in this Alternative and retention will further reduce the effective salvage volume.

7 [Our Agency cannot support Alternative B as proposed without some modifications. I realize that there is more merchantable timber than what can practically and timely be salvaged. Therefore, it follows that I realize that there will be many areas left unsalvaged and thus, many areas that will provide snags. I am not familiar with the pre- and post-fire stand inventories and structural stages outside of proposed salvage areas. Therefore, I am left with commenting on your alternatives without the benefit of knowing what remains outside of proposed salvage areas and how preferred wildlife snags are distributed across the landscape.] AP6

The information provided regarding black-backed and Lewis' woodpeckers was greatly appreciated. The Draft mentions that proper snag management is critical to cyclic populations of cavity dependent species, which in turn is essential for exchange of genetic information and for species viability (which is key to the Plan Amendment). It appears that managing habitats for these two woodpecker species will provide for other cavity dependent species. The literature available to our agency explains the importance of retaining larger diameter snags, which will not be replaced on the burned landscape for a minimum of 100 years. I understand that we cannot create what we don't have and that

8 [we will lose standing snags through time. However, it would have been helpful in understanding snag recommendations if you had explained how you came up with 17 snags per acre for Alternative C.] SN92

9 [Retaining dense stands of snags primarily for black-backed woodpeckers may also benefit big game, which was not discussed in great detail in either action alternative. Page 4-8 states that "Harvest of dead trees will not affect goals or objectives associated with ... cover along roads...". I am not convinced that some salvage efforts will not effect horizontal cover (sightability) along some road corridors. While the scope of this] WL2

9 project does not address travel management and potential permanent road closures, it is imperative that the Forest retain dense stands of snags as elk and deer travel corridors and security/hiding cover. Many roaded areas within Jasper have already been salvaged for hazard trees, greatly widening the width of some roads. Evaluation of salvage operations needs to address cumulative effects of fragmented travel corridors for big game along roadways and adjacent salvage operations, making big game more vulnerable to hunters and human disturbances along roadways. Over time, visual obstructions and cover will again appear on the landscape and snags will begin to fall. But, until that time, visibility of big game along roadways should be evaluated during this comment period. There may be roaded areas that were only lightly burned outside of the proposed salvage areas that provide green travel corridors. Those areas may suffice - I do not know. WL2

The literature indicates that elk within the Mt. Saint Helens blast area are doing quite well without thermal and security/hiding cover. However, disturbances from humans are neither as prevalent or frequent in that area compared to most portions of the Black Hills. Millspaugh's work in Custer State Park illustrated that while Black Hills elk may not require thermal cover (similar to Mt. St. Helens), if it is there, they will select for it in summer and also use it as hiding cover (which is necessary). Burned snags will not provide thermal cover, but may be selected for none-the-less. Our agency requests that the Forest ensure that dense stands of snags be retained along some roadway sections to provide some security cover. WL2

10 Our agency supports the snag management recommendations (sizes and densities) in Alternative C but would appreciate clarification of recommendations. However, this Alternative will receive great criticism from publics concerned about the timber industry and timely economic recovery. This Alternative removes a small fraction of the burned timber and that is fine to offer that as an Alternative. However, our Agency fears that Alternative C is too restrictive and is almost set-up to fail. Once again, it will be the "environmentalists vs. the timber industry" when the dividing factor of the two alternatives, as currently proposed, is based mostly on what heritage surveys have or have not been conducted to date. AD6

10.1 Therefore, in summary, we suggest a third action alternative that accommodates reasonable salvage volume (Alternative B), snag management (Alternative C) and heritage surveys (both Alternatives B and C). If the Forest is willing to conduct heritage surveys in Alternative B, why not be willing to conduct them in a third action alternative? The Draft stated that "No adverse impacts [to heritage resources] are expected from implementation of either of the action alternatives" (page S-11). Therefore, we strongly suggest that the Forest re-evaluate the proposed salvage areas of Alternative B, continue to trade green trees for dead trees (in the current sale contracts) and apply the snag recommendations in Alternative C. How do the respective numbers for salvage volume and snag retention fall out now? Can the Forest still achieve some (or more) of the Forest Plan Goals? VR3

In summary, our Agency appreciates the efforts that went into this Draft EIS and we appreciate the opportunity to comment.

Sincerely,

A handwritten signature in black ink that reads "Shelly Deisch". The script is cursive and fluid, with the first name "Shelly" and last name "Deisch" written in a single continuous line.

Shelly Deisch
Wildlife Biologist

Cc: John Kirk



United States Department of the Interior

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February 1, 2001

ER 00/0911

Ms. Alice Allen
Black Hills National Forest
Hell Canyon Ranger District
330 Mt. Rushmore Road
Custer, South Dakota 57730

Dear Ms. Allen:

The Department of the Interior has reviewed the Draft Environmental Impact Statement for the Jasper Fire Value Recovery, Black Hills National Forest, Custer and Pennington Counties, South Dakota (ER 00/0911) and has the following comments:

1 [Page 2-16, 2.5. Section Monitoring Activities - The Department of the Interior supports the Forest Service proposal to evaluate the effects of the fire by setting aside separate areas that will remain untreated (not logged). This should be an important tool in the evaluation of the effects of the fire and salvage logging that is occurring.

AP7

2 [Page 2-16 and 2-17, 2.5.1. Research Monitoring Proposal - This section identifies scenarios that will be evaluated for post fire monitoring. We recommend that additional monitoring occur to evaluate impacts of livestock/wildlife grazing on the regeneration of the forest communities. Specifically, the Fish and Wildlife Service notes that intense grazing may suppress regeneration of quaking aspen communities after events such as fire or clear cutting have occurred which normally stimulate aspen growth. Therefore, the Service recommends that grazing effects on the regeneration of the plant communities also be monitored. The design of the treatment areas should allow the monitoring to differentiate between livestock and wildlife grazing impacts.

AP7
RNG1

3 [Page 4-15, 4.3.14. Threatened and Endangered Species - The Service concurs with the Forest Service determination of "no effect" for the bald eagle. Page 2-16, 2.5. Section Monitoring Activities.

WL4

Sincerely,

Robert F. Stewart

RISGR	TSI TECH
ENG TECH	TM FOR
ORA STAFF	LMR STAFF
R CON	LANDS
R TECH	ARGH
FIRE/FAC	REC
HELITACK	ADM STAFF
FIRE TECH	BMA
FIRE TECH	RECEPT
FIRE TECH	

CUSTER/ELK MTRN RR

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

999 18th STREET - SUITE 300
DENVER, COLORADO 80202-2466

26 - pg. 1

CUSTER/ELK MTN RD

FEB 14 2001

FEB 16 '01

REF: EPR-EP

Mike Lloyd
District Ranger
Hell Canyon Ranger District
Black Hills National Forest
330 Mount Rushmore Road
Custer, SD 57730

DR		TM STAFF	
NEPA STAFF		SALE ADM	
REG SALE		SCALER	
TRUCK		SILV	
INS/IGIS		TSI TECH	
ENG TECH		TM FOR	
DATA STAFF		LAWR STAFF	
R CON		LANDS	
R TECH		ARCH	
PRE/FAC		REC	
MELITACK		ADM STAFF	
FIRE TECH		BMA	
FIRE TECH		RECEPT	
FIRE TECH		CMC	

Re: Jasper Fire Value Recovery
DEIS, Black Hills National Forest

Dear Mr. Lloyd:

The U.S. Environmental Protection Agency (EPA) Region VIII has reviewed the Draft Environmental Impact Statement (DEIS) for the analysis of the Jasper Fire Value Recovery project. Our review of this DEIS was conducted in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. We appreciate the opportunity to review this project and provide comments. The following comments are provided to assist in reaching an environmentally sound decision. Thank you for your willingness to consider our comments at this stage of the process, and we hope they will be useful to you.

My staff have discussed this project with your project leader, Alice Allen, and with Ed Fischer of the Forest Planning Office. We thank them for taking the time to explain the project and answer questions regarding the NEPA analysis. We understand that this fire recovery project will not include any new permanent roads, will take place almost exclusively on the stable soils and mild slope areas within the project area, and that no permanent streams exist in the treatment areas. We remain confident that if the mitigation measures are adhered to throughout project implementation, the Jasper Fire Value Recovery effort can be accomplished without significant impacts to water or air quality.

WS1

Aquatic Resources

The limestone areas in the Black Hills region are currently under evaluation by the South Dakota Department of Environment and Natural Resources as potential source-water protection areas. We encourage you to check with Anita Yen, South Dakota's Source Water Protection Coordinator (605-773-3296) regarding the status of the Jasper Fire Area, and for her input on measures that could protect drinking water through this project.

WS2



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3 [It appears that the project area may include fractured limestone topography. Fractured limestone typically has very direct connections between ground water and surface water via sink holes and losing stream segments. Because of this ground water connection, all project mitigation measures applied to protect surface water from the effects of sediment or herbicides should also be applied in sink holes and to intermittent stream courses. Excess sediment can affect recharge rates in karst areas by clogging recharge zones, and can negatively impact ground water quality.] WS2

Because major fires such as the Jasper Fire usually result in landscape hydrologic changes including increased water yield and increased availability of ground water, it may be possible that some stream segments currently classified as "intermittent" may flow more often or become permanent, and that stream channels may become more defined due to increased runoff.

4 [Additionally, it is very likely that the increase in available water will result in emergence of new springs and seeps in the project area. We therefore encourage the USFS to visually monitor the surface hydrology in the project area throughout the project period, and allow for any modifications to the project that would be necessary to protect water quality should significant hydrologic change be detected.] WS2

5 [The FEIS should identify whether the project area is tributary to any impaired (Clean Water Act 303(d) listed) stream segments, and should identify the pollutants of concern, and any potential adverse impacts to these waters from the project.] WS3

Roads

6 [We understand that the temporary roads that would be created in this project in fact already exist as old, unmapped timber roads. If this is indeed the case, the FEIS should include a description of the current state of these roads, and the amount and type of improvement needed to allow use of these temporary roads.] AP12

EPA supports the plan to close these temporary roads at the end of the project and we commend the USFS for not making these closures "contingent on available funds" as is often the case. We do recommend that some detail be added to the FEIS to describe what is meant by the term "closed." The FEIS should specify whether the meaning of "closed" includes re-seeded, re-contoured, and obstructed.] RDS1
AP12

7 [The DEIS does not clearly define the term "road reconditioning." We assume that this term simply indicates that roads will be brought up to standard, thereby reducing environmental impacts. If reconditioning will indeed result in improved environmental conditions, we recommend that the FEIS include an analysis and disclosure of these improvements.] RDS1

If road reconditioning could upgrade the use-classification of the road, the FEIS should indicate what specific road segments will be upgraded to another class, and the FEIS should analyze and disclose the effects of the class upgrade. While reconditioning these roads, the USFS hydrologist may want to evaluate whether the existing culverts are of sufficient size to accommodate the expected increases in runoff within the project area.]

8 [The terms "road reconditioning" and "road closure" should be added to the glossary.] AP12

9 [One of the mitigation measures for the project stated on DEIS page 2-11 is "consider using snag falling to close temporary and non-system roads used for harvesting." The FEIS should eliminate the word "consider" from this measure as it is unclear when or if this measure would be applicable. If needed, the FEIS could include the conditions under which snag felling will be used.] AP12

Noxious Weeds

10 [EPA is concerned that sufficient weed-free seed, mulch, straw, hay and grain products may not be available because of last year's intense fire season and the resulting increased demand for weed-free and native materials. In order to meet the weed-free mitigation measure (p. 2-11), the USFS should commit to limiting its soil disturbing activities associated with the project to coincide with the amount of weed-free material available to protect soils and water quality.] NOX3

Because of the devastating ecological effects of noxious weeds, EPA supports USFS's intent to aggressively prevent and control noxious weeds in the project area.

Treatment of Public Land/Private Land Interface Zones

11 [EPA assumes that proposed salvage treatment in the public land/private land interface zones in the action alternatives will meet the same criteria as the rest of the treatment areas, including: no activity in or around wetlands or seeps; no activity on slopes greater than 30%; and protection of erosive soils through limiting activity or harvesting over-snow. If the criteria for interface zone treatments are different than for the rest of the project area, the FEIS should so state, and should provide an analysis of the environmental impact from these differences.] AP12

Wildlife Mitigation

12 [The discussion of cumulative effects to snags (p 4-10) should include the acres of road and trail safety salvage that has already been done in the project area since the Jasper Fire. The FEIS should include the safety salvage numbers as it determines the effects of this project on snags per acre within the project area.] AP2

13 [The discussion of cumulative effects to snags (p 4-10) indicates that future salvage actions in the project area are likely to include snags adjacent to fences, powerlines, range improvements and survey monuments. The DEIS states that the number of snags removed with these efforts is "not likely to be substantial." We note that the Jasper fire damaged approximately 150 miles of fence, 65 stock tanks, 6 wells and 20 miles of water pipeline (p. 17: Jasper Fire Rapid Assessment Report). Presumably, trees were killed by the fire along all of these corridors and around these structures, and some of the structures not damaged by the fire may also require protection. If we assume a 50 foot corridor on each side of the structures would be sufficient to protect them (100 foot total corridor width), the 150 mile fence corridor alone would represent over 1800 acres of additional timber salvage. If our above assumptions are accurate, this acreage would represent a 16% increase in salvage area over the preferred alternative (Alt. B) and a 34% increase in area over Alternative C associated with the fence lines alone. This would represent a] AP2

13 [potentially substantial increase in the acreage treated, and it is likely that some of this acreage is on slopes greater than 30% or on fragile soils. We encourage the USFS to include an analysis of these resource protection salvage activities in the FEIS. Inclusion of this topic will allow the USFS to more accurately determine the effects of planned actions including whether the project will retain the required density of snags per acre. The resource protection salvage operation would represent an identical activity (fire salvage) occurring in the same time frame and within the project area as the proposed action and should therefore be considered in this DEIS (40 CFR 1508.25).] AP2

14 [It is unclear why the proposed number of snags per acre differs between the action alternatives. Alternative B would leave the minimum 3 snags per treated acre while Alternative C leaves 17 snags per treated acre. We recommend that the decision include the higher figure in order to provide more protection for Management Indicator Species including Lewis' and Black-Backed Woodpecker.] SNAGS, WDP1

Revegetation

15 [USFS's response to the EPA scoping comment regarding forest revegetation indicated that revegetation is outside the scope of this project. We note that revegetation is routinely included in USFS NEPA documents pertaining to fire recovery or vegetation management because where it is used, it is an integral part of managing the landscape in the closing stages of the project. We understand that the USFS does not yet know the extent to which the forest will naturally regenerate, and therefore cannot predict the exact location or amount of revegetation that will occur. However, in order to provide the public with the information necessary to evaluate the full effect of the post-fire recovery efforts planned for the project area, the FEIS should include a fairly detailed discussion of the criteria USFS will use to determine which areas will be revegetated. For example, the DEIS included a description of the noxious weed control efforts and mitigation measures even though the exact extent and location of these efforts cannot yet be predicted.] TM2

Forest Plan Direction

16 [Please identify, in the FEIS, the Management Area designations that apply to the project area, and discuss any deviations from the Forest Plan Goals, Objectives, Standards and Guidelines that would be required of this project.] AP5.1

Environmentally Preferred Alternative

Based on the comparison of outputs and effects provided in the DEIS (Table 2-1), EPA designates Alternative C as the environmentally preferred action alternative. Alternative C is environmentally preferable over Alternative B because Alternative C:

- has 3 less miles of temporary road
- leaves 253 acres more old growth untouched
- has ~60% less harvest on soils with severe erosion potential and mass wasting potential
- retains ~48% more Lewis' and Black-Backed Woodpecker habitat

- retains 14 more snags per acre on treated sites
- has less effect on all snag-dependant species

We encourage the decision maker to select an alternative that has less impact to these resources than Alternative B in its current state.

17 [EPA has rated the preferred alternative in the Jasper Fire Value Recovery DEIS as EC - 2 (Environmental Concerns, Insufficient Information). The DEIS does not provide enough information to determine potential for impacts to groundwater, and the preferred alternative appears to have more impact to old growth and snag retention than would be required to meet the purpose and need. The DEIS does not analyze related salvage activity that will occur in the project area to protect structures (fences, tanks, etc.) in the project area which could result in substantial increases in salvage activity and related impacts beyond what is disclosed in the DEIS.] WSZ

8 [The "EC" in our rating indicates that EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts. The identified additional information, data, analyses or discussion should be included in the FEIS. A full description of EPA's EIS rating system is enclosed.] APZ

We look forward to working with your project staff as needed and with Mr. Fischer throughout this NEPA process. Should you have any questions regarding these comments, or as you progress into the NEPA process, you may contact me at (303) 312-6704.

Sincerely,



Cynthia G. Cody
 NEPA Unit Chief
 Ecosystems Protection Program

cc: Anita Yen, SDDENR

Enclosure



**Environmental Protection Agency Rating System for Draft Environmental Impact Statements
Definitions and Follow-Up Action***

Environmental Impact of the Action

LO - - Lack of Objections

The Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC - - Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO - - Environmental Objections

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU - - Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 - - Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 - - Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 - - Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

These comments are in regard to the Jasper Fire "Value Recovery" Salvage Project and Draft EIS.

- 1 [1)The BHNH currently does not have viable or well-distributed populations of goshawks, pine martens, mountain lions, sawwhet owls, pygmy nuthatches, land snails of special concern, etc. The Chief's ruling on our appeal of the Revised Forest Plan confirmed this. The USFS has yet to correct these serious problems. The proposed Jasper logging, snag removal, and road construction will only exacerbate this unlawful and ecologically irresponsible condition. OS6
- 2 [2)You cannot support the Proposed Action (Alt. B) or Alternative C because both are inconsistent with the Forest Plan, would exacerbate wildlife habitat shortages on the forest, and would further reduce wildlife populations and distributions below already unlawful levels. AP5
- 3 [3)The USFS should pick either no action or one of the alternatives improperly dismissed in the DEIS, including a Native American land transfer alternative, a "bison preserve" alternative, or another alternative that preserves wildlife habitat, helps remedy the serious snag shortage on the forest, protects soils, and does not involve extensive timber harvesting or road construction activities. AP6.1
- 4 [4) The USFS must protect additional old growth, structural stage 4C habitat (mature, closed canopy stands), and interior forest in other parts of the Black Hills to compensate for the significant loss of these habitats from the arsonist's fire. OS8
- 5 [5)The USFS should not allow logging of partially burned trees that "might die" simply to provide more public timber to the insatiable timber industry in the Black Hills. VR2
- 6 [6)The DEIS suggests salvage logging is needed to reduce fire risk of standing trees killed by fire. There is no evidence there is or will be an increased fire risk if salvage logging is not done. If burned trees are not logged this year, they will continue to provide wildlife habitat in future years. However, if the trees are logged this year, this will adversely impact the forest and wildlife right away. This means the "Value Recovery" project would actually be a Value Reduction project. VRA
- 7 [7)The USFS should designate the montane grasslands in the fire area as Research Natural Areas to provide immediate and continuing protection for these special places. OS2
- 8 [8)A forest plan amendment must be prepared on the Jasper Fire proposal to reduce the forest-wide Allowable Sale Quantity (ASQ) and acreage of land suitable for timber harvest to account for the significant and unanticipated reduction in timber supply and forested land following the fire. OS3
- 9 [9)There is no need for the excessive network of roads in the area--8,000 miles forest-wide is far too many. Only major throughways should be left open in the fire area; other roads should be closed and obliterated, and no new roads (including temporary roads) should be constructed. With 8,000 miles of roads on this Forest, the agency should be prioritizing road closure, obliteration and reclamation, not new "temporary" road construction. Off-road vehicle use should be prohibited on the closed roads. RDS1
- 10 [10) A revised or supplemental draft EIS must be prepared to fully evaluate the cumulative impacts to wildlife, including viability concerns exacerbated by the fire and proposed logging activities. RDS2
- 11)Noxious weeds "are likely to rapidly spread as a result of the fire." AP2

11 The ecological impacts of noxious weeds on native forest is a very serious (particularly in an ecosystem with many rare plants and communities like the BHNF) and all measures should be taken to ensure noxious weeds do not populate or repopulate the Jasper Fire burn area. The FEIS must assess the extent to which the proposed logging and roads would exacerbate the noxious weed problems.

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NOX2

12 12) Finally, the Jasper Fire "Value Recovery" proposal is not an "emergency," and should not be treated as one. The "emergency" conditions listed in 36 CFR 215.10(d) all relate to existing unsafe or hazardous conditions. There is no existing unsafe or hazardous condition in the Jasper fire area that needs to be treated as an "emergency." If trees may die and pose a risk, they can be felled and/or burned the next year, and the USFS can impose a temporary closure on areas that are believed to be unsafe.

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OSA

13 The USFS's desire to rush through a "value recovery" project for the benefit of the timber industry in now way justifies the woefully inadequate and hastily prepared draft EIS, the agency's failure to explore reasonable alternatives, the agency's failure to take a hard look at significant impacts, and the agency's false claims of an "emergency." Instead, these all indicate the Forest Service is putting the desires of a bloated timber industry above the public good and federal law.

|

AP

Sincerely,

Jay Lininger
Klamath-Siskiyou Wildlands
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KS Wild defends the globally outstanding biological diversity of the Klamath-Siskiyou ecoregion in southwest Oregon and northern California. We monitor three (3) million acres of public land to ensure that logging, road construction, grazing, mining, ski developments, lethal predator control, and other industrial activities comply with environmental laws. We use legal, organizational, and collaborative tactics to achieve our mission.

Response to Comments

E Appendix

Jasper Value Recovery Project
Responses to Comments on the Draft EIS

(NOTE: The issues below are characterized by verbatim transcriptions and close paraphrasing of comments received. Letters and comments are referenced in each issue below to show the sources of the issue characterization. Their listing is not meant to imply they are the only comments received that pertain to that issue.)

Analysis Process (AP)

AP-General

(Letter 303, comment 13) The agency's desire to rush through a "value recovery" project for the timber industry does not justify an inadequate analysis and false claims of an "emergency". (Letter 16, comment 2) The agency must prepare a revised or supplemental DEIS to address the many omissions and inadequacies that mark this DEIS.

Response: The DEIS meets all of the legally mandated timelines under NEPA. It also includes all of the necessary analysis for the decision maker to make an informed decision regarding this project. The Washington Office has agreed that an "emergency" situation exists for a portion of the project area in order to meet wildlife related habitat objectives. That objective is to trade black trees outside existing sale units to protect remaining goshawk and big game habitat and replacement snags. (See response OS-4 for more information).

AP-1) Public Involvement

(Letter 16, comment 14) The scoping process was conducted and closed on December 8, 2000. The DEIS was issued only one week later. It would appear to be impossible to prepare an adequate DEIS in a single week. We conclude the DEIS had been prepared before the comment period ended. (Letter 8, comment 1) There is no way the agency could have meaningfully addressed the public's scoping comments in that short a time.

Response: The DEIS was not prepared in one week. Resource professionals had been designing this project since the scoping letter was mailed. Many resource concerns had already been identified. The Forest had previously solicited public comment on the roadside hazard tree removal. These commentors also identified issues that were considered in the EIS. Most interested persons mailed their comments well before the scoping deadline. Persons who provided comments toward the end of the comment period identified few issues that had not surfaced earlier.

AP-2) Cumulative Effects

(Letter 303, comment 10) A revised or supplemental DEIS must be prepared to fully evaluate the cumulative impacts to wildlife, including viability concerns exacerbated by

E Appendix

the fire and proposed logging activities. (Letter 37, comment 14) Key impacts analysis was omitted from the DEIS and must be presented in a revised or supplemental DEIS.

(Letter 35, comment 2) The Forest must identify any other planned salvage proposals in this area and analyze the cumulative effects of these actions. (Letter 9, comment 8) Actions conducted thus far under supplemental information reports (SIRs) in the Lemming, Crawford, Dumbuk and Uncle Timber Sales should have been evaluated in a single NEPA document. This EIS must analyze the cumulative effects of those actions.

(Letter 8, comment 20) The DEIS admits there could be effects to snail colonies from the proposal, but then says that no further cumulative effects are expected. Please explain.

(Letter 9, comments 1, 7, 16, 25, 27) Object to logging without fully disclosing the direct, indirect and cumulative effects on wildlife species, sensitive plants, noxious weeds, visual quality and soil conditions. The Forest continues to illegally piece-meal the NEPA review on the Jasper Fire Area by deferring similar and connected actions to “consecutive” analyses. The DEIS ignored the cumulative loss of wildlife habitat from the fire itself and how this loss, together with the proposed “Value Recovery” and other past, present and foreseeable actions, could impact species viability. The Forest ignores the impacts of past sales in the area by stating they are reflected in pre-fire conditions. The Forest avoids any scientific discussion of cumulative effects. Current conditions do not equal cumulative effects. The Forest must assess the cumulative impacts of past three-step and two-step shelterwood silvicultural prescriptions on all past timber sales that can be identified in the Jasper Fire area, to determine if these even-aged prescriptions promote “viable, well-distributed” wildlife populations and retain older forest and snag habitats.

(Letter 33, comment 5) The cumulative effects analysis considers only timber harvest and ignores other contributing factors such as increased OHV use, increased risk of fire, grazing, etc.

(Letter 36, comments 12, 13, 18) The analysis of cumulative effects on snags should include the acres of road and trail safety salvage that has already been conducted. The DEIS indicates future actions in the project area could include clearing along fences, powerlines, range improvements and survey monuments. We calculate along fences alone this could include some 1800 acres of clearing, representing a 16% increase in salvage in Alternative B, and a 34% increase in Alternative C. These actions should be considered in the FEIS.

Response: The cumulative effects analysis in the FEIS addresses the cumulative effects of all salvage operations that have been undertaken to date including harvest within existing sale units as documented in the SIRs for Dumbuk, Lemming, Uncle, and Crawford, as well as, snags removed under road hazard tree removal. All of these areas are displayed in Figures 4-1 and 4-2. It also considers some future hazard tree removal

along other roads, fencelines, etc. The cumulative effects of these projects are discussed for each resource that might be affected.

The DEIS acknowledged that there could be detrimental effects to land snail colonies if mitigation measures were not applied. No cumulative effects were expected because mitigation measures are included to protect known colonies from effects of this project as well as impacts from livestock grazing. The FEIS has been edited to clarify this issue. (See Response AP-3 for more information)

This FEIS is a project level document. Forest-wide species viability is outside the scope of this analysis. The BA/BE for this project concluded that implementation of this project would not contribute to a loss of viability for any Threatened, Endangered, or Sensitive species in the planning area. In making this determination the BA/BE considered habitat conditions across the Forest. Future projects will also consider the effects of the Jasper Fire on habitat conditions. (See response OS-6 for more information)

The Forest acknowledges that past actions including numerous timber sales had affected habitat conditions prior to the Jasper Fire. The fire itself then further affected habitat conditions. The cumulative effects of these events have resulted in the habitat conditions present post-fire, i.e., the current conditions for the purposes of this analysis.

AP-3) Significance of effects

(Letter 8, comments 19, 20, 29) The DEIS does not present true impacts analysis so it is impossible for reviewers to really understand the effects of the proposal and know which alternative they should support. The DEIS states that value recovery operations could disturb snail colonies, but then says that no additional cumulative effects are expected. This is not analysis. The DEIS does not disclose the effects of the massive road reconditioning and new construction associated with the two action alternatives.

Response: The statement in the snail analysis would be true if no mitigation were applied. The analysis continues and states that with mitigation additional effects are not expected. Road reconditioning is defined in the glossary as restoring the road to its original standard. The FEIS was edited to include a more detailed discussion of roads.

AP-4) Tiering and Referencing

(Letter 8, comment 23) There is no scientific basis for the conclusion that there is no viability concern for the black-backed or three-toed woodpeckers. The protections shown in the DEIS lack scientific basis and merit, the same reason the Revised Forest Plan was found to be deficient on appeal review. (Letter 35, comment 6) Proactive planning for sensitive wildlife species habitat is needed; saving a few pieces as mitigation is not enough.

E Appendix

Response: The decision on the Jasper Value Recovery Project considers the scientific information on which the Phase I amendment is built and the resulting protections for wildlife species and habitat. More comprehensive analysis of wildlife needs across the Forest will take place in the Phase II LRMP amendment process. The Phase I/Phase II amendment process is consistent with the action plan developed to address the deficiencies in the Revised Plan which were found and documented in the Chief's appeal decision of October 1999.

AP-4.1) The Revised LRMP contains no direction for response to large fires.

(Letter 8, comments 6, 15, 32) The Revised Forest Plan did not anticipate the Jasper Fire or any of the proposed actions. The fire has taken the entire Jasper area out of the conditions anticipated in the Revised Forest Plan; the proposed logging will only take the area further away from the required conditions set forth in the Plan. To address a significant and long-lasting change in conditions on such a large part of the Forest requires a programmatic EIS and Plan amendment. The agency cannot tier the Jasper project to the Revised Plan until that document is corrected.

(Letter 35, comment 19) MA 5.4 is supposed to be managed for wildlife. This implies wildlife habitat planning will be the first priority. This is not happening with this project.

Response: We agree that the character of the Jasper Fire area has changed markedly as a result of the fire, and that new programmatic direction may be needed to address these changed conditions and circumstances. These changes have been analyzed and documented in the Burned Area Emergency Rehabilitation (BAER) Report, the Jasper Rapid Assessment Team (JRAT) Report, and in work conducted for this analysis. The BAER and JRAT reports provided management recommendations for projects within the area. These recommendations have been incorporated and applied, as modified by site specific analysis, in this current project.

The BAER report indicated that the fire did not result in an emergency regarding potential loss of soil productivity, nor was a need for soil productivity rehabilitation identified. The JRAT report indicated some habitat losses for some species but also noted that useful habitat was created for many species. No effects were noted to Federally listed threatened or endangered species.

We agree it may be necessary to make changes to existing Forest Plan direction for the Jasper Fire area. However, none of the analyses of the fire effects issued thus far have noted the need for an immediate change to Forest Plan management direction in the fire area. The Forest intends to formally initiate a significant Forest Plan amendment effort (Phase II) in the near future, building on preparatory work already conducted. We believe that changes to Forest Plan management direction for the Jasper Fire area can appropriately be accomplished in the Phase II amendment process. Given the enormous resources of personnel, time and money needed to conduct a significant amendment to

the Forest Plan we believe it would be a poor use of these resources to initiate a separate effort outside of that context.

About 50% of the Jasper fire area is within Management Area 5.4 at this time and will remain so until a Forest Plan amendment is completed. The management emphasis in MA 5.4 is big game winter range high-quality turkey habitat, habitat for other species and a variety of multiple uses. MA 5.4 is included in the suitable timber base making timber harvest an appropriate multiple use. The Jasper Fire drastically altered the ability of the area to provide high quality big game winter range. However, the fires created suitable habitat conditions for snag-dependent species. Effects on those species and their habitat are considered in the EIS.

AP-5) Consistency with direction contained in the Phase I Forest Plan amendment.

(Letter 35, comment 25) The Forest needs to amend the Forest Plan before proceeding with projects that could impair wildlife viability. If a significant amount of suitable habitat has been lost any degrading activities within this burned area may affect Forest-wide viability. (Letter 303, comment 2) The proposed action (Alternative B) or Alternative C are inconsistent with the Forest Plan, would exacerbate wildlife habitat shortages on the Forest, and would further reduce wildlife populations and distributions.

Response: The Jasper Project complies with direction in the Revised Forest Plan as amended by the Phase I amendment. In addition, the Jasper Project implements national agency direction concerning treatment of burned areas (see Chapter 1, Purpose and Need for Action, and Appendix A to the FEIS). Agency direction is incorporated within Forest Plan direction.

AP-5.1) The Jasper Value Recovery EIS is inconsistent with Phase I direction.

(Letter 9, comment 10) The Phase I amendment to the Revised Forest Plan will not provide management direction for the Jasper Fire area, and the Revised Plan currently does not, either. The project will have nothing to tier to. (Letter 16, comment 9) Alternatives B and C do not comply with requirements of the Revised Forest Plan with respect to old growth, goshawk habitat, big game cover, visual quality, etc. (Letter 36, comment 16) Please identify in the FEIS the management area designations that apply to the project area, and discuss any deviations from the Forest Plan goals, objectives, standards and guidelines that would be required to implement this project.

Response: See Chapter 1, Section 1.3.1, Management Direction, for a synopsis of Forest Plan direction pertinent to the area including a description of Management Areas 5.1 and 5.4. We acknowledge a change in management direction for the area may be needed as a result of changes brought on by the fire. See response AP4 and AP4.1 for more information on this subject. See response WL-2 and WL-6 for more information on wildlife issues.

E Appendix

AP-6) Alternatives

(Letter 10, comments 4, 5, 7, 10) If neither action alternative is of consequence to range resources (per page 4-22 in the DEIS) why does the Forest range staff prefer any alternative? Alternative B is preferred (pg. 4-23) because trees will be removed around existing improvements. Why not do this in Alternative C as well? The DEIS says (pg. 2-7) that Alternative B will achieve Goal 3 in the Revised Forest Plan. Are there no goals that Alternative C would achieve? We feel the full range of alternatives was not explored. We suggest a third action alternative that accommodates reasonable salvage volume, snag management, and heritage surveys (blend of Alternatives B and C).

(Letter 13, comment 2) The Forest should pick either “No Action” or another alternative that preserves wildlife habitat, helps remedy the snag shortage, protects soils and does not involve extensive timber harvest or road construction. (Letter 16, comments 1 and 16) We strongly oppose the preferred alternative and Alternative C. Both action alternatives are massive commercial timber sales. This does not appear to meet the NEPA requirement for a reasonable range of alternatives. (Letter 17, comment 9) The DEIS is inadequate in that it does not explore reasonable alternatives. (Letter 35, comments 3, 4) Consider establishing a large portion of the area as a research natural area. You have no alternative that includes salvage harvest without construction of any new roads including temporary roads.

(Letter 9, comment 26) The DEIS failed to consider “action” alternatives that would prohibit logging in adjacent unburned mature stands in the Limestone, Crawford, Lemming, Uncle and Dumbuk Timber Sales. The primary reason for those sales was to create meadows. This is no longer needed.

Response: The preferred alternative from a range standpoint is based on the indirect effects of removing trees that will otherwise fall and impede movement of livestock. Trees will also be cleared around some improvements only because improvements are adjacent to proposed cutting units. Alternative C will have the same effects but to a lesser degree. Alternative B is preferred because it removes more trees than Alternative C.

Alternative C is a subset of Alternative B and therefore addresses the same Forest Plan goals.

The FEIS is not a decision document. Its purpose is to display the effects of a range of alternatives. The decision maker may select any alternative, or combination thereof, based on the effects analysis. This final selected alternative and the rationale for this choice will be displayed in the Record of Decision for this project.

The Purpose and Need for the Jasper Project includes the opportunity to save valuable wildlife habitat within portions of timber sales under contract within the burn perimeter

through exchange for burned areas of lesser habitat values. Such an exchange would be conditioned on mutual agreement with the purchasers since they hold contractual rights to harvest units under contract. Selection of either action alternative would allow us to pursue this opportunity. The Lemming project decision deferred harvest of future and then-existing big game thermal cover within big game winter range. We believe the opportunity to preserve habitats such as this, which are now scarce in the burn area, is valuable.

It is true that the sales mentioned included meadow enhancement actions. However, removal of encroaching conifers to enhance and restore meadows was a relatively small part of those projects, and was not their sole nor their primary purpose. The major project emphases remain appropriate and actions such as prescribed road closures will benefit resources as envisioned.

AP-6.1) The Forest should select one of the alternatives that was considered but dismissed.

(Letter 1, comment 1) The project area should be managed as a wildlife and plant sanctuary. (Letter 8, comment 31) The following alternatives were ignored or improperly dismissed in the DEIS: 1) designate the montane grasslands in the fire area as RNAs; 2) protect additional old growth and goshawk habitat in other parts of the Forest to compensate for losses in the burn area; 3) alternative mitigations including stronger wildlife protections; 4) closing/reclaiming all logging roads other than major transportation routes, and closing the entire area to off-road travel; 5) treatments other than commercial logging (prescribed fire, cut-to-waste); 6) return of ownership or management of this area to Native American tribes; 7) action alternatives logging less than 27 million board feet. (Letter 18, comment 7, 8) The USFS should pick either no action or another alternative that preserves wildlife habitat, helps remedy the serious snag shortage on the forest, protects soils, and does not involve extensive timber harvesting or road building. (Letter 18, comments 7 and 8; Letter 19, comment 2) The Forest Service should pick either Alternative A (No Action) or an alternative improperly dismissed such as the Native American land transfer or the bison preserve alternative.

Response: Chapter 2 of the FEIS discusses alternatives considered but eliminated from detailed study; and those alternatives considered in detail including the No Action alternative. Together these comprise the full range of alternatives considered in the FEIS, pursuant to CEQ regulations governing application of the NEPA process at 40 CFR Sections 1502.14, 1508.25(b), and others.

Several of the alternatives suggested by commentors were considered but eliminated from detailed study, as explained in the FEIS. Travel management (to be considered in a subsequent document), treatments other than commercial logging and developing the area as a bison preserve did not meet the purpose and need for the project, nor did designation of all or part of the area as research natural areas, which will be addressed in the upcoming Phase II Forest Plan amendment. The alternative to compensate for fire effects

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by reducing management activities outside the project area is beyond the scope of the project. Alternatives to manage the area as a bison preserve and return ownership to Native American tribes are both beyond the authority of the Forest Service to implement and do not meet the purpose and need for the project.

AP-7) Monitoring

(Letter 11, comments 1 and 2) The U. S. Department of the Interior supports the proposal to evaluate the effects of the fire by setting aside separate areas that will remain untreated. We recommend additional monitoring to evaluate the impacts of livestock/wildlife grazing on the regeneration of forest communities, specifically quaking aspen. (Letter 35, comment 17) The responses of wildlife to this burned habitat will never be measured because you do not intend to monitor this. Although you propose to have some undisturbed areas where wildlife can be studied, you may be missing the areas with the best potential.

Response: Since the DEIS was published several monitoring projects have been funded including wildlife/livestock grazing impacts on regeneration of grasses, shrubs, and trees, woodpecker habitat use study, and others. The FEIS has been edited to reflect these new developments. Monitoring areas to be protected from project activities were selected based on data obtained from research in other burn areas. “No treatment” areas were also selected by the researchers based on the area’s ability to provide a wide range of burn conditions and habitat diversity. This approach should help capture the areas with the best potential while still allowing some activities to proceed.

AP-8) Disagree with the Purpose and Need for the proposal.

(Letter 8, comments 6-9, 18) There is no need to “treat” dead or dying trees in the Jasper Fire area. The reasons in the purpose and need are not valid. The Revised Forest Plan did not foresee the Jasper event. The rush to cut in the Jasper area will cause considerable instability in the timber market and actually destabilize employment in the logging sector. The selection of just one goal in the Revised Forest Plan (Goal #3) for this project is entirely arbitrary. There is no longer any fire risk in the Jasper area, so fuel removal is unnecessary. The only dead trees that should be “treated” are those that are clearly dead, and even then, dead trees should only be removed or felled if there is a clearly demonstrable need to remove those trees.

(Letter 32, comments 2 and 3) The Forest should note the public calls for restoration work following wildfires. The EIS should address the potential impacts of the restoration work in response to a spectrum of forest conditions, rather than simply the post-fire conditions.

(Letter 8, comment 11) The purpose and need should not be to provide the timber industry with more timber, but rather to decide how to manage the area in the wake of the

fire, and how to amend the Plan to account for the significant changes in the forest environment.

Response: The purpose and need for this project are derived from a comparison of the existing condition in the Jasper Fire area with the desired condition for the Forest as expressed in the Forest Plan including national policy related to catastrophic fire. See Chapter 1 for more information on this subject. In the case of this project much of the burned timber remains merchantable at this time. National policy at Forest Service Manual (FSM) 2435 provides the means to recover volume of timber killed due to catastrophic events such as fire, and lists as an objective the timely removal of damaged or dead timber following such an event. Direction at FSM 2435.4 states that Regions should expedite salvage sales in roaded areas where a high risk of timber deterioration exists. We believe the Jasper Project fits these criteria. Further, we believe the timely removal of some of the burned timber in the area while it may still be economically valuable, within strict resource management constraints, is responsible stewardship of these resources.

The BAER and JRAT reports documenting post-fire analysis of resource conditions within the fire area identified no need for immediate emergency resource rehabilitation actions. Nonetheless there are some longer-term actions which we intend to develop and analyze as a separate proposal. These are shown in the list of reasonably foreseeable actions in the cumulative effects analysis and include travel management. We believe that it is correct to proceed first with the current action, however, to attempt to recover some value before it is lost to deterioration agents.

AP-9) Comments on technical aspects of the analysis.

(Letter 2, comments 1 and 5) Timber component codes and Forest Plan designated late succession sites should be one and the same; if not, there may be double counting. Stands that were designated for old growth management should be the identical stand that are included on the Forest Plan late successional map. There may be other stands that meet the criteria, but they are not designated for management for old growth conditions.

Response: There is no double counting of acres. We chose to include any and all stands that might have old growth characteristics regardless of whether they were included in the Revised Forest Plan for late succession management. The IDT felt that this better addressed the issue raised that these stands even after burned provided special habitat. Timber component codes represent stands that were designated for old growth management under the original Forest Plan because they had old growth characteristics.

(Letter 8, comment 11.1) The DEIS does not even mention the new Forest Service planning regulations at 36 CFR 219, much less use them to decide how to manage the fire area now.

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Response: The new planning regulations at 36 CFR 219 pertain to both forest and project planning, and were made effective November 9, 2000. Section 219.35(d) of that regulation states that project decisions beginning three years after this date must conform to the provisions of the new regulation. This current decision is promulgated under the 1982 regulations, as is the Phase I amendment to the Revised Forest Plan, with which this decision is consistent.

AP-10) Economic/social concerns.

(Letter 8, comment 33) Both action alternatives result in large net losses and have benefit-cost ratios of less than one, thus both alternatives are economically unsound and the project should not go forward.

(Letter 30, comment 5) We would like to see inclusion of positive economic outcomes as a result of not building or reconstructing so many miles of roads. Roads may technically be an asset to the Forest Service accounting ledger but maintenance costs, signage, obliteration and costs to fisheries, riparian areas and user satisfaction must begin to be accounted for. We wish to see a supplemental DEIS that considers other alternatives and their true relative economic merits.

(Letter 32, comment 15) We request you document how net public benefit is maximized by the selected alternative. Consider and document who benefits from these projects and who pays for them. Short-term earnings from salvage timber sales should be appropriately discounted in relation to longer-term ecological values of the forest. The long-term cost of maintaining existing roads and building new ones should be considered. (Letter 33, comments 1 and 2) The Forest Service must provide a full and fair accounting of net economic benefits. The current economic analysis is limited to net costs incurred by the Forest Service. It should consider a wide range of costs incurred by the public through loss of “ecosystem services”, such as increased flooding, increased risk from logging operations, and increased fire risk. The dollar value of existing uses and functions of the sale area (undisturbed forest or standing timber) should be calculated and used in the analysis.

Response: After the Draft EIS was issued the Forest assembled experienced cost and revenue data developed from implementing timber activities within the sales under contract within the burned area. This data has been used in the FEIS to revise the original economic efficiency analysis shown in the DEIS, which was based on estimated costs and revenues. We believe the current analysis shown in the FEIS is more accurate due to the experiential data on which it is based. The FEIS analysis demonstrates positive present net values and benefit/cost ratios of greater than one for both action alternatives.

Some commentors requested that a monetary expression of all known market and non-market benefits and costs. Such an analysis is generally used when economic efficiency is the sole or primary criterion upon which a decision is based.

The Forest Service does not endorse this use of economic efficiency analysis. The agency believes that many of the values associated with natural resource management are best handled apart from, but in conjunction with, a more limited benefit-cost framework. This concept is expressed in the NFMA regulations at 36 CFR 219 (1982 regulations – see response to comment #8 above), which states that the evaluation of Forest Plan alternatives “shall compare present net value, social and economic impacts, outputs of goods and services, and overall protection and enhancement of environmental resources.” [36 CFR 219.12(h)] Thus the Forest Plan “maximizes long term net public benefits in an environmentally sound manner.” [36 CFR 219.1] This approach is reasonable given the vast array of environmental and socio-economic considerations in establishing or revising a Forest Plan.

In implementing the Forest Plan through individual projects economic efficiency again plays a role but in a more limiting context. FSM 2430.3 states this as follows: “Operate timber sale programs and projects in the most cost efficient manner practicable within applicable standards and guidelines to achieve the objectives outlined in Forest Plans.” FSM 2430.2 focuses on individual sales by stating, “Select, design and implement timber project-level activities in an economically efficient manner, consistent with the objectives and guidance of the Forest Plan.” Many of the same environmental and social considerations not incorporated in economic analysis at the Forest Plan level are also not incorporated in economic analysis at the program and project levels. However, they are included in other quantitative and qualitative analysis as necessary. Thus, programs and projects do not use a fully comprehensive benefit-cost analysis as primary criterion for alternative selection, but subject the analysis to limits established in the Forest Plan.

Finally, NEPA does not require a monetary benefit-cost analysis at all. If an agency prepares an economic efficiency analysis, then one must be prepared and displayed for all alternatives [40 CFR 1502.23]. The analyses required by the Forest Service in timber sale NEPA documents [FSM 2432.22c] is prepared and displayed for all alternatives.

This project adds no new permanent roads to the existing road system. The low mileage of temporary roads needed would follow existing travel routes. These would be closed to public use when the project is completed.

AP-11) Heritage resources and tribal concerns.

(Letter 28, comments 1, 2, 3) The Black Hills is sacred land. To promote any portion of the Black Hills for any project similar to “Value Recovery” would distort the cultural and traditional values of the Native American Indian. I urge that the Black Hills be safeguarded for future generations, and that applicable law and policy be followed to

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protect cultural and traditional lands. The U. S. Government must meet the tribes on a government-to-government basis.

(Letter 9, comment 13) This EIS is the proper vehicle to transfer management authority or Black Hills ownership back to the tribes of the Great Sioux Nation.

Response: The Black Hills National Forest clearly recognizes the cultural importance of the Black Hills to a number of federally recognized Tribes. The Forest has a legally mandated trust responsibility to consult with these tribes in the context of a government-to-government relationship on policies, programs, and projects implemented in the Black Hills. This trust responsibility to consult has been articulated in Forest Service policy (FSM 1563), several Presidential Executive Orders (EO-13007, EO-13175), and a number of Federal laws including the National Historic Preservation Act, National Environmental Policy Act, Forest & Rangeland Renewable Resource Act, American Indian Religious Freedom Act, Archaeological Resources Protection Act, Native American Graves and Repatriation Act, and the Religious Freedom Restoration Act. Tribal consultations have been held on this project as displayed in the FEIS. Comments from tribal governments have been solicited during all phases of this project. Tribal representatives have provided comments.

The issue of the land claims by tribal governments has been going on for over 100 years. The consistent position by Congress and the Courts has been that the lands were taken by the United States when the Fort Laramie treaty of 1868 (15 Stat 635), was abrogated by Congress. This occurred when a 1876 special commission agreement with the Sioux Tribes was enacted into law by Act of Congress in 1877 (19 Stat 254).

In 1980, after almost 60 years of litigation, the Supreme Court in the U.S. v. Sioux Nation held that the 1877 Act was an unconstitutional taking. This decision also affirmed a 1976 Indian Claims Commission award to the Sioux Tribes of \$17.1 million plus interest in damages as a result of this unconstitutional undertaking.

In summary the United States taking of the lands in 1877 was affirmed and the Sioux Nation's claims for return of the land was denied. The exclusive remedy for the Sioux and all other Indian claims is provided for by Congress in the Indians Claims Commission Act of 1946. Further consideration of the Sioux Nation's land claims is a matter for deliberation by Congress.

AP-12) Comments of an editorial nature.

(Letter 8, comment 24) The DEIS says the Forest "should" leave a 500-foot buffer around cave entrances (pg. 4-11). This language does not appear to require this buffer. A 500-foot buffer must be maintained.

(Letter 8, comment 41) We request that our comments be reproduced, in their entirety, in an appendix to any final NEPA document.

(Letter 8.1, comment 1) We hereby incorporate by reference numerous records (described following the comment).

(Letter 10, comment 6) The Draft mentions on page 2-7 that Alternative B would achieve Goal 3 of the Forest Plan. Are there no Goals that would be achieved in Alternative C?

(Letter 36, comment 6) If temporary roads to be created in fact already exist as old unmapped roads, please describe the current state of these roads and the amount and type of improvement needed to facilitate their use. Please describe what is meant by the term, “closed”, and whether this includes activities such as seeding, re-contouring and obstruction. (Comment 8) The terms “road reconditioning” and “road closure” should be added to the glossary. (Comment 9) A mitigation on pg. 2-11 states, “Consider using snag falling to close temporary and non-system roads....” Eliminate the word, “consider” since it is unclear if or when this measure would be employed. If needed, include the conditions under which snag felling will be used.

(Letter 36, comment 11) It is assumed the treatments in the urban interface areas are the same as elsewhere. If the criteria are different please state that, and analyze the impact of different treatments.

Response: The CEQ regulations require the agency to analyze and disclose the effects of implementing the proposal. The FEIS complies with this requirement. The manner by which we intend to implement this decision is consistent with agency policy for implementing timber sales. Delineation of harvest unit boundaries is conducted by Forest personnel. The timber to be removed within harvest units is designated by description in the contract, in terms of diameter limits and mortality status (dead or green). Forest Service sale administration personnel will be on site daily to ensure that the terms of the contract are met. This process is not new, has been used successfully on the Forest and in other places, and continues to be an authorized tool for accomplishing resource management work.

The purpose and need for the Jasper Value Recovery Project is described in Chapter 1 of the EIS, and is to recover value from the Jasper Fire Area in the form of timber in a timely manner and in a way that protects and enhances other resources in the area. The need to continue or modify timber sales currently under contract in the area was investigated in supplemental information reports (SIRs) conducted for each of those sales. These evaluations were based on resource specialist reports written by agency personnel familiar with site conditions. The SIRs and supporting data are incorporated by reference as a part of this project.

The effects analysis for each alternative consider the habitat values within the area, as does the cumulative effects analysis, which reviews past, present and reasonably foreseeable actions including the planned harvest of the sales under contract. Additionally, the Jasper Project also presents the opportunity to save valuable wildlife

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habitat within timber sale areas under contract through exchange of burned timber of lesser habitat value. While actual exchange depends on the willingness of the purchasers and cannot be predicted we believe this opportunity is significant and should be provided by this project.

Concerning the buffer around caves, please see response to comments WL5.

See Comment Response RDS-1 regarding road reconditioning and use of temporary roads. The term road closure has been added to the Glossary. Road reconditioning was previously in the Glossary. The definition has been expanded. The provision for using snags to close roads has been eliminated.

Comment letter 8 has been reproduced in its entirety in Appendix D.

Alternative C responds to the same Forest Plan goal as Alternative B. This is included in the FEIS.

Treatments in urban interface areas are somewhat different in that these areas will be whole tree harvested so that fuels will be minimal. To prevent soil erosion, these areas will be seeded with weed-free native grasses or non-persistent non-natives. This is discussed in the Mitigation Measures section of the FEIS.

Goshawks- (GOS)

GOS-1) Save remaining goshawk habitat.

(Letter 9, comment 14) The Jasper FEIS is the proper place to address and resolve deficiencies in the Forest Plan concerning management direction for the northern goshawk and provide additional needed protections. (Letter 16, comment 11) Alternatives B and C fail to set aside additional goshawk nesting habitat (large structural stage 4C stands) to compensate for losses within the burn area. (Letter 8, comment 21) Logging adjacent to or near unburned areas would reduce the overall suitability of the unburned stands for goshawks. This will have an adverse effect on goshawks which is completely ignored in the DEIS. The DEIS also ignores cumulative effects of the fire and other past, present and reasonably foreseeable logging projects. //// (Letter 35, comment 16) The expert interviews conducted by the Forest for the goshawk identified the creation of large homogeneous patches of habitat as a management problem, yet this is exactly what would result from this project.

Response: The Forest disagrees; the Jasper EIS is not the appropriate place to address deficiencies in the Forest Plan. Deficiencies identified in the Forest Plan are being addressed through a process developed in conjunction with the plaintiffs, intervenors, and the Washington Office and documented in the Settlement Agreement for Civil Action 99-N2173. This project has considered the scientific information incorporated in Phase I of that process.

Noxious Weeds- (NOX)

NOX-1) Comments about equipment washing

(Letter 2, comment 4) Commentor cannot support noxious weed prevention measures that do not apply equally to all users. The timber sale contract provision, C6.27 – Noxious Weed Control, clearly expects that timber sale purchasers will be treated equally with all other forest users.

Response: Contract provision C6.27 has been dropped. (See response VR-3.1 for more information).

NOX-2) Spread of noxious weeds

(Letter 10, comment 3) Commentor doubts that seeding sites disturbed by logging is an accepted solution to noxious weed control, thus increasing the amount of salvaged area to reduce the spread of weeds is not valid. Please cite documentation that shows how salvage alone actually decreases the spread of weeds. Also, the DEIS lists grass species to be used for seeding disturbed areas; what brush species can be used for this purpose? Also, Section 4.4 in the DEIS and the tables are very confusing. Please clarify this section in the FEIS.

(Letter 13, comment 8) All measures should be taken to ensure noxious weeds do not populate or repopulate the Jasper Fire burn area. Since road building and logging are proven conduits for invasives, the FEIS must assess the extent to which the proposed logging and roads would exacerbate the noxious weed problems. (Letter 22, comment 1) Consider how roads, muddy tires, and many trips in and out spread seeds, in effect, plowing the earth and sowing it.

Response: Salvage operations do not decrease the spread of weeds, but seeding on skid trails, temporary roads and areas disturbed by salvage is a major tool to help establish grasses and forbs that provide competition to non-native species. Since seeding of the entire Jasper fire area was not identified as a need by the BAER team for emergency erosion control, and the JRAT report suggested seeding in areas of high concern for noxious weed control, salvage in Alternative B and C will require the seeding of trails and areas of disturbance. Therefore, the amount of seeding in Alternative B will be greater than that in Alternative C, and will provide additional competition for weeds in these outlying areas.

Reference materials for re-vegetation practices:

Biology and Management of Noxious Rangeland Weeds, Edited by Roger L. Sheley and Janet K. Petroff.

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Cooperative Extension Services 1999 – 2000 Weed Management Handbook,
Editors/Authors: Tom D. Whitson, University of Wyoming, Robert Stougaard, Montana State University, Steven A. Dewey, Utah State University.
Guidelines for Coordinated Management of Noxious Weeds: Development of Weed Management Areas, U.S. Department of the Interior, BLM; Department of Agriculture, Forest Service; Department of Interior, National Park Service.

Brush species such as chokecherry, mountain mahogany and lead plant will be used on sites where past success rates suggest the best chances of survival. They will be used in areas that are appropriate.

The effects of logging have been considered in the analysis of noxious weeds. Mitigation measures specific to salvage logging and disturbance created by logging will be incorporated into any timber sale contracts. Area closures within the Jasper fire area will restrict public road travel to main roads throughout the area. Public and internal information awareness specifically to noxious weeds will be a priority for this area as well as using an Integrated Weed Management approach.

Section 4.4 has been edited for clarity in the FEIS.

NOX-3) Control methods

(Letter 10, comment 3) Commentor doubts that seeding sites disturbed by logging is an accepted solution to noxious weed control, thus increasing the amount of salvaged area to reduce the spread of weeds is not valid. Please cite documentation that shows how salvage alone actually decreases the spread of weeds. Also, the DEIS lists grass species to be used for seeding disturbed areas; what brush species can be used for this purpose? Also, Section 4.4 in the DEIS and the tables are very confusing. Please clarify this section in the FEIS.

(Letter 36, comment 10) EPA is concerned that sufficient weed-free seed, mulch, straw, hay and grain products may not be available because of last year's intense fire season and the resulting increased demand for these materials. The Forest should commit to limiting its soil disturbing activities with this project to coincide with the amount of weed-free material available to protect soils and water quality. EPA supports the Forest's intent to aggressively prevent and control noxious weeds in the project area.

Response: The Black Hills National Forest is also concerned with limited supplies of noxious weed free materials for rehabilitation efforts. The only product that will be used in the salvage efforts in Jasper fire area is noxious weed free seed. Although some native weed-free seed mixes may be of limited availability, we anticipate that weed-free annuals (wheat, oats, triticale) will still be available.

NSP - Native Species

(Letter 8, comment 34) By cutting and removing trees still alive in the project area seed sources for tree regeneration will be removed and the area will be converted to grassland. This would change the tree diversity in the area and violate the NFMA. (Letter 32, comment 7) Potential impacts of logging-related disturbance on natural regeneration must be thoroughly analyzed, in reference to the potential natural forest post-fire regeneration that could be expected.

Response: The EIS does not propose removing trees that are likely to survive more than one year. This will not remove potential seed sources that might contribute to natural regeneration potential. The largest hindrance to natural regeneration is the long distance to a seed source throughout much of the fire area. This is an existing condition that will not be influenced by any salvage harvest.

Salvage harvest operations, with the mitigation measures included in the EIS, Chapter 2, will provide microsite conditions that improve the chances of successful establishment of natural regeneration. Leaving logging slash and woody debris on the site will provide small sheltered areas with microsite conditions conducive to pine regeneration establishment and survival. Areas of total mortality presently are not sheltered due to the lack of tree canopy and surface soil temperatures, especially on south and west aspects, will become too high for seedling establishment because of the black ash. Without any action, some shelter will eventually be provided in these areas as smaller trees fall over the next ten years. The areas of salvage harvest, with the resulting slash and woody debris left on site, will provide these more favorable conditions within the next few months.

Comments that were out of the scope of this analysis – (OS)

OS-1) General

(Letter 32, comment 11) The EIS must disclose who will be selecting fire-damaged trees for harvest and how this will be monitored. Loggers cannot be expected to make appropriate decisions relating to tree fire damage due to their obvious conflict of interest.

(Letter 32, comment 18) The reason for the Lemming, Uncle, Dumbuk and Crawford timber sales was to create more meadows. This is no longer needed in the area. The EIS should consider action alternatives that prohibit further logging in these sale areas because of this.

(Letter 32, comment 21) The EIS fails to adequately describe how the historic range of variability was determined. This is important because returning the project area to within the historic range of variability is a major component of the proposed project.

Response: The sale administration team comprised of Forest Service personnel will oversee and monitor harvest operations in the field on a daily basis. Any discrepancies

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between harvest prescriptions and actual cutting operations are dealt with under the terms on the timber sale contract. Punitive measures, including shutting down operations due to breach of contract, can be invoked if necessary.

The Forest recognizes that the fire created large areas devoid of live trees. However, removing dead trees will not add to these meadow areas. The purpose and need for this project is different from that of the original EAs and is documented in the FEIS.

The historic range of natural variability for the Black Hills is described in “A Century of Change in Black Hills Forest and Riparian Ecosystems” (U.S. Forest Service 1996). This document discusses the methods used to determine the historic RNV. The FEIS includes a discussion of RNV in Chapter 3. However, returning the project area to within the historic RNV is not a major component of the proposed project. The purpose and need is discussed in Chapter 1 of the FEIS.

OS-2) Research Natural Areas (RNAs)

(Letter 8, comment 16) We have requested that increased protection be provided for montane grassland sites and that they be given a special designation, such as research natural area, to ensure natural values would be protected from ground-disturbing activities. We have also requested a ½-mile buffer of no disturbance be established around these sites. These requests were ignored. (Letter 9, comment 12) Until the Forest prepares the RNA review no activities that could reduce the eligibility of potential RNA sites such as montane grasslands should be allowed, to ensure these areas are not removed from consideration.

Response: The Forest will conduct an RNA review during Phase II of the Forest Plan amendment process as discussed in the Settlement Agreement described previously. Under the Settlement Agreement, the Forest Service and timber sale purchasers (on listed sales including those within the Jasper fire) will work together to protect the values of the grassland sites until the RNA review is complete. Measures to accomplish this are listed in the Mitigation Measures section in Chapter 2 of the EIS.

OS-3) Allowable Sale Quantity (ASQ), or timber harvest volume projected by the Forest Plan

(Letter 8, comment 17) The Forest must adjust the ASQ and lands suitable for timber production as a result of the significant changes the fire has caused, in the decision for the Jasper EIS. (Letter 25, comment 1) You must readjust your estimates for timber, due to the losses of both timber and special habitats such as old growth areas.

(Letter 8, comment 17.1) The Forest is obligated under NFMA and its implementing regulations to reassess, once every five years, the acreage of land on the Forest that is suitable for timber production. Since that analysis was done for the Revised Plan in 1994 or 1995 it is now time to conduct this re-evaluation on the entire Forest.

Response: This issue is outside the scope of this analysis. This issue has been forwarded to the Forest Planning Team.

OS-4) Emergency Situation Determination (Exemption from Stay on appeal)

(Letter 5, comment 2) Supports the granting of the exemption from stay to allow the Forest to salvage more volume.

(Letter 8, comment 5) The agency is trying to rush the project forward under false claims of an “emergency”. But there is no “emergency” associated with the Jasper Fire proposal. A possible loss of economic value does not constitute an emergency. It is wrong and fraudulent to claim an “emergency” situation exists solely to deny the public their right to a legally adequate NEPA document, a careful and thorough consideration of how to manage the fire area, and the right to appeal any decision issued on future management of the fire area. (Letter 9, comment 4) There is no “emergency” in the Jasper Fire area. There is no existing unsafe or hazardous condition that cannot be addressed through continuation of the road and area closures now in effect in that area. (Letter 30, comment 3) We wish the Forest would begin to recognize the positive benefits of fire, and not always look at the value of the timber that would be lost if not removed.

Response: The request for emergency status was based on the limited timeframe that the agency had to negotiate trading green trees and/or green/dead stands currently under contract for dead trees to preserve goshawk habitat, snag replacements, and big game cover. Waiting for the administrative appeals process to run its course would not allow sufficient time for useful recovery of the burned trees covered by the DEIS. If an agreement could not be reached on trading volume in a timely fashion, then the opportunity to protect these habitat areas would be lost.

The agency recognizes the positive effects of fire to species but is mandated to manage this area for multiple resource objectives. This EIS attempts to balance timber harvest with soil and wildlife concerns.

OS-5) Alternatives considered and dismissed

(Letter 21, comment 6) If the Forest can show there is a clear and demonstrable need to remove trees from the fire area, they should do so through prescribed fire or non-commercial felling, limit treatment to those trees which are already dead or have experienced more than 60% total crown burn, and remove trees which are smaller than 14 inches in diameter (to maintain large snag habitat).

(Letter 33, comment 3) A non-commercial restoration alternative should have been analyzed.

Response: The purpose and need for the project is discussed in the EIS. Non-commercial harvest and prescribed fire do not contribute to this purpose. Harvest is

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limited to trees with greater than 75% crown scorch or greater than 50% bole damage. Mitigation is included to maintain large snag habitat. (See response SNG-1 for more information).

OS-6) Viability of species

(Letter 24, comment 1; Letter 9, comment 28) The Forest currently does not have viable or well-distributed populations of goshawks, martens, mountain lions, saw-whet owls, pygmy nuthatches, land snails of special concern, etc. Any logging, snag removal, or road construction will only exacerbate this unlawful and ecologically irresponsible condition. (Letter 32, comment 6) Population dynamics should be assessed to determine population viability. (Letter 35, comment 11) The impact of a salvage proposal cannot be determined without an analysis of burned, unsalvaged habitat availability across the Forest and what this implies for viability of associated wildlife.

Response: The Biological Evaluation for this project (included in project file) considered the availability of habitat for each sensitive species across the Forest, effects from this project, and cumulative effects across the Forest. The EIS addresses impacts to all sensitive species and MIS known or likely to occur in the project area. The saw-whet owl is not one of those species. However, a brief discussion of impacts on this species has been added to the FEIS. (See response WL-6 for more information)

OS-7) General

(Letter 1, comments 4 and 5) Designate much of the area as wilderness, or the proposed Jewel Cave National Park. (Letter 25, comment 4) The focus should not be only on timber: think also about restoration of the forest to remedy current fragmentation and lack of older age classes.

(Letter 8, comments 3 and 4) The Forest did not conduct a proper scoping process for the hazard tree reduction proposal and denied the public the right to appeal that decision. The supplemental information reports (SIRs) for the existing timber sales in the fire area were prepared without scoping, were not subject to public review and comment, and the public was again denied the right to appeal these decisions.

(Letter 9, comment 18) large scale, stand replacing events need to occur over time and space. These events are stochastic in nature, and are not only unpredictable, but may have dramatic effects to other species and natural resources. These issues should be addressed in the Phase II amendment.

(Letter 14, comment 2) Don't reward arson of the national forests by awarding timber sales in the aftermath.

(Letter 15, comment 5) If dead trees are not harvested they will fall down, pool water and create breeding grounds for mosquitoes. They will bother wildlife and visitors alike and may carry disease.

(Letter 24, comment 16) Any new roads in the BHNH should be wholly financed by the timber companies, not one cent from taxpayers.

Response: These comments request actions or analysis that are outside the scope of this analysis.

OS-7.2) Timber market stability

(Letter 8, comment 7) A rush to cut the burned timber will temporarily increase the labor demand, only to fade in a year or two. This is unsustainable and will cause considerable instability in the timber market.

Response: Recovering the value of fire-killed timber promptly will help maintain the stability of the timber market in the Black Hills and maintain jobs in timber dependent communities. Labor force will be shifted from harvesting green timber to salvaging black timber for about 6 months. This will help to stabilize the local timber market. The social and economic effects of implementing the Forest Plan were considered in the FEIS for the Revised Land and Resource Management Plan (LRMP), on pgs. III-473 through 506 (especially 481-483), and III-525 through 535. This proposal fits generally within the assumptions and effects of that analysis. (See also response AP-7)

OS-8) Comments requesting the Forest set aside areas outside of the fire to compensate for lost habitat.

(Letter 8, comments 14, 21) The Forest must protect additional old growth and interior forest habitat including goshawk habitat elsewhere on the Forest to account for the unexpected loss within the fire area. (Letter 9, comment 11) The Forest should set aside high quality goshawk habitat elsewhere on the Forest to offset the loss of goshawk habitat from the fire and proposed salvage logging.

Response: Effects of the Jasper Fire on goshawk habitat and interior habitat will be addressed in Phase II of the Forest Plan amendment process. This issue is outside the scope of this analysis.

OS-9) Other projects

(Letter 16, comment 15) Recently the Forest approved extensive roadside logging and expansion of four existing timber sales in the area without any NEPA analysis. None of these decisions were subject to public comment or appeal.

Response: Decisions made regarding hazard tree removal along roads and re-negotiation of existing timber sales were made in full compliance with existing

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regulations and contract language. Scoping for the hazard tree removal project complied with the provisions of the CEQ regulations implementing NEPA and Forest Service NEPA policy. Changes to the four timber sales mentioned were evaluated in supplemental information reports (SIRs) consistent with agency NEPA policy. No need for further scoping was identified.

Comments about roads within the project area – (RDS)

RDS-1) Requests to close roads; travel management; analysis

(Letter 8, comments 28 and 29) What about motorized vehicle use in the area? With less cover and the Forest's refusal to close existing roads in the area the burn area will be much less suitable for deer and elk. This reduction must be quantified in the NEPA document. The direct, indirect and cumulative effects of the massive road system "reconditioning" and new road construction in the two action alternatives must be analyzed and disclosed. (Letter 17, comment 7) Only major throughways should be left open in the fire area, and no new roads (not even temporary roads) should be constructed. Excess roads should be closed and obliterated. (Letter 25, comment 2) There is a restoration opportunity to ultimately eliminate roads.

(Letter 32, comment 8) Thoroughly describe and map any roads to be built or maintained as part of this project. Analyze and discuss impacts on soil health, current road density and condition of existing roads. Consider obliterating roads rather than maintaining them. Account for the future maintenance costs of any new or maintained roads.

(Letter 36, comments 6 and 7) EPA understands the temporary roads that would be created for this project already exist as older unmapped timber roads. We support the plan to close these temporary roads at the end of the project and we commend the Forest for not making these closures "contingent on available funds", as is often the case. The DEIS does not clearly define the term "road reconditioning". If reconditioning will result in improved environmental conditions, we recommend that the FEIS include an analysis and disclosure of these improvements. If road reconditioning could upgrade the use classification of the road, the FEIS should indicate what specific road segments will be upgraded to another class. Consider evaluating whether the existing culverts are of sufficient size.

Response: Maps and miles of road to be reconditioned are included in the EIS. Road reconditioning is defined in the glossary and will not upgrade the standard of any road. Temporary roads will primarily be existing two-track roads. In most cases, no additional roadwork will be done prior to use. These roads must be identified as temporary roads on timber sale maps so that purchasers can be required to close them after use. This will help reduce the amount of open two-track roads in the area. Thus open road density will remain the same or be slightly lower for the immediate future.

At the present time the burn area is closed to all motorized vehicles use except for those specially authorized to enter the area. A decision regarding future travel restrictions will be made under another environmental analysis later in 2001. Decisions on the location, type, amount, and season of motorized use will be made at that time. Consideration will be given to big game disturbance, overall road density, and opportunities to eliminate roads, and reduce overall road density.

RDS-2) Requests to prohibit use of off-highway vehicles (OHVs) in the project area.

(Letter 17, comment 7) Excess roads should be closed and obliterated. Off-road vehicle use should be prohibited on the closed roads.

Response: At the present time the burn area is closed to all motorized vehicles use except for those specially authorized to enter the area. A decision regarding future travel restrictions will be made under another environmental analysis later in 2001. Decisions on the location, type, amount, and season of motorized use will be made at that time.

RDS-3) Requests for no new road construction.

(Letter 9, comment 2) The Forest is unwilling to prohibit the construction of new “temporary” roads. (Letter 12, comment 1) The proposed Jasper logging, snag removal and road construction will only exacerbate the habitat deficits for goshawks, pine martens, mountain lions, saw-whet owls, pygmy nuthatches and other important wildlife. (Letter 16, comment 21) The DEIS fails to consider “action” alternatives that would not construct any new roads (including “temporary” roads)...the fire has eliminated the need for these roads. (Letter 30, comment 1) Building more roads and re-constructing an incredible 269 miles of old ones, in this area is ecologically and socially unsupportable.

(Letter 35, comments 7 and 23) There is no effective way to close temporary roads to the public after logging operations. Unless the roadbed is completely restored you will continue to use them in the future. They will remain motorized and/or non-motorized trails for decades and will have long-lasting impacts on wildlife. We are concerned about construction of such roads in MA5.4 areas. There is already a severe shortage of cover. The impact of new roads will be dramatic upon wildlife.

(Letter 35, comment 8) The tradeoffs between reconstruction and obliteration of roads has not been demonstrated.

Response: The trade-offs are analyzed against the No Action alternative. Obliteration is not one of the alternatives because that decision will be made once the harvest is completed. See response to RDS-1 and WL-6 for more information.

RDS-4) Comments concerning the new Forest Service roads policy.

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(Letter 8, comment 30) The Forest Service recently adopted a new Forest Road Management Policy and Rule. This rule “removes the emphasis on transportation development and adds a requirement for science-based transportation analysis.” Yet the DEIS for the Jasper project fails to meet the requirements of the new policy and rule.

Response: The commentor refers to the Forest Transportation System Final Administrative Policy, issued and effective January 12, 2001. In addition to incorporating a science-based roads analysis into decisions to construct, reconstruct, or decommission roads, the policy seeks to assure that road maintenance funding will be considered, and emphasizes reconstruction and maintenance or decommissioning of existing roads over new road construction.

The specific roads analysis process described by this new administrative rule is not required of project decisions prior to July 12, 2001. A transportation analysis was conducted for the Jasper Project. No new permanent roads will be constructed in conjunction with this project. Some road reconstruction is planned to improve transit and reduce environmental impacts of existing roads. Some temporary roads will be installed along existing two-track travel routes. These temporary roads will be obliterated upon project completion.

Rangeland Management –(RNG)

RNG-1) Comments about forage production and livestock access

(Letter 10, comment 4) It appears neither alternative is of consequence to range resources, so why is the one alternative preferred by the range staff? ... Alternative B is preferred in part because trees will be salvaged around existing improvements. Why not remove trees around existing improvements in Alternative C as well?

(Letter 11, comment 2) We recommend additional monitoring to evaluate impacts of livestock/wildlife grazing on the regeneration of the forest communities.

Response: Areas adjacent to water developments were not included as cutting units on that basis. However, it is more convenient to have the purchasers remove the trees rather than expend additional monies to have them removed. Alternative B removes trees from more acres including those around range improvements. Trees will be removed around existing water developments in Alternative C also, but fewer acres and improvements will be affected by Alternative C.

Since the DEIS was published several monitoring projects have been funded including wildlife/livestock grazing impacts on regeneration of grasses, shrubs, and trees. A monitoring plan is being developed for the Jasper area.

Snags and Down Woody Debris –(SNG)

SNG-1) Snags in General

(Letter 8, comment 12) The DEIS only considers leaving snags in the burn area to provide a modest population of snag-dependent species in the burn area. The agency must broaden its perspective and recognize that the burned trees are not “excess” that can be logged without consequence, but are needed to help sustained (and recover) populations of snag-dependent species across the Forest.

(Letter 10, comment 2) I support logging practices that leave woody debris on-site and skid cut trees to a landing.

(Letter 16, comment 7) Alternative B would leave only four snags per acre and provide no specific protection for wildlife. Although alternative C would leave more snags, the adverse impacts on wildlife habitat make it unacceptable as well.

(Letter 16, comment 8) If there is a clear and demonstrable need to remove trees from the fire area, the USFS should do so through prescribed fire or non-commercial felling, limit treatment to those trees which are already dead or have experienced more than 60% total crown burn, and removed trees which are smaller than 14 inches DBH (to maintain large snag habitat).

(Letter 16, comment 3) Large snags are now scarce on the Forest due to past extensive commercial logging and firewood cutting.

(Letter 35, comments 12 and 13) Green trees with over 50% canopy burned are most valuable snag resources for cavity nesting species in the long term because at least some of these will develop heart rot and cavities. Many of the fire-hardened trees will not provide cavities. Since there are no green replacement snags it is unclear how you will maintain snags over time.

(Letter 35, comment 18) You have not provided any quantifiable analysis to estimate what the levels of snag habitat will be in salvage versus unsalvaged units over time.

Response: It is true that the DEIS proposed action, or other action alternatives, do not protect all habitat for snag-dependent species. Alternative A represents the best available habitat without commercial value recovery. Both action alternatives compare effects on snag habitat to Alternative A. The purpose of the Jasper Value Recovery EIS is to retrieve a commercial timber product for harvest after a careful analysis of other socioeconomic, environmental issues, and public concerns. Only a portion of the 83,500 acres burned in the fire has been proposed for harvesting.

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Logs will be processed in the units leaving slash and cull logs in cutting units to decrease soil erosion and provide large downed wood for small mammals and other wildlife species dependent on down wood.

The purpose and need for the project is discussed in the EIS. Non-commercial harvest and prescribed fire do not contribute to this purpose. Prescribed burning in the next 5-10 years would reduce the smaller fuels but may affect the recovery of the area through natural succession. In addition, most young tree seedlings would be killed by prescribed fire. Non-commercial felling would only be accomplished where needed (e.g. soil stabilization, hazard tree removal) due to economic constraints.

Large snags are scarce on some areas of the Forest. However, the Jasper fire greatly increased the number of large snags within the burn area. The snag analysis in the FEIS shows that the cumulative effects of the on-going sales, road hazard tree removal, and proposed activities still maintains an average of 3.7 – 21.0 snags/acre greater than 10 inches DBH on north facing slopes on a watershed basis. The average for south-facing slopes is 4.1- 16.2 snags/acre. (See response OS-5 for more information)

The FEIS acknowledges that snag levels will decrease over time as trees fall. After about 30 years the burn area will not meet Forest Plan objectives regardless whether dead trees are salvaged or not salvaged. Only trees with less than 25% live crown will be harvested. This leaves trees with greater than 25% live crown to provide future snags and a seed source for replacement trees.

SNG-1.1) Seventeen snags per acre in Alternative 3 is too many

(Letter 2, comment 2) The recommendation for 17 snags per acre is absurd. There is no demonstration or research that indicates the need for an extreme number of snags. If Alternative C is to be considered viable, the snag requirement needs to be reduced to 4 snags per acre.

Response: Through recent research on large stand replacing fires, it has been found that the Lewis' woodpecker almost exclusively nested in partially salvaged logged units in Idaho. This species favors snags with larger diameters and snag densities of a minimum of 17 snags/acre of greater than 9" DBH (Saab and Dudley 1998, Wisdom et al. 2000, Saab et al. *In Press*, Tobalske 1997). There is no local research data that would invalidate this recommendation.

SNG-1.2) Not enough snags would be left

(Letter 9, comment 5) Only Alternative A can be supported until the Forest addresses the serious shortage of snags on the forest, especially large snags and large downed logs. Neither "action" alternative achieves these increased protections, and both continue unnecessary and degrading logging and road building activities in the Jasper Fire Area. (Letter 9, comment 15) The Forest Service continues to gloss over the severe shortage of large snags and quality snag habitat on the Black Hills National Forest. (Letter 9,

comment 17) The Jasper draft EIS continues to ignore the ... totally unscientific basis on which recruitment snag levels are projected.

(Letter 23, comment 1) (Leaving) 4 snags per acre is not enough. Snags tend to fall down faster than new snags are created, particularly in burned areas.

(Letter 32, comment 13) We are extremely concerned with the ecological implications of the low levels of snags that will remain in the project area following logging.

Response: The FEIS contains a more detailed snag analysis. See Response to SNG-1 above. The acknowledges that snags within the burn will fall before trees can grow to replace them and will result in a deficit of snag habitat after time.

SNG-2) Reason for leaving differing numbers of snags by Alternative

(Letter 36, comment 14) It is unclear why the proposed number of snags per acre differs between the action alternatives. Alternative B would leave the minimum 3 snags per treated acre while Alternative C leaves 17 snags per treated acre. We recommend that the decision include the higher figure in order to provide more protection for Management Indicator Species including Lewis' and Black-backed woodpecker. (Letter 10, comment 8) Explain recommendation for leaving 17 snags per acre.

Response: The actual number of snags left in Alternative B is 4 snags/acre. The theme of Alternative B was to emphasize value recovery while maintaining minimum snag levels considering the scientific information supporting the Phase I Forest Plan amendment. Alternative C was designed to recover value of burned trees but be more protective of wildlife habitat especially for snag dependent species. Lewis's woodpecker are known to prefer salvage logged stands with at least 17 snags/acres remaining (See Response SNG-1 above). Therefore this alternative included a different mitigation measure in terms of snags to be retained to provide habitat for Lewis's woodpecker in salvage logged stands.

Special Areas -(SP)

SP-1) Montane grasslands

(Letter 1, comment 3) Secure a Montane Grassland Preservation Plan.

(Letter 8, comment 16.1) The logging and road construction/reconstruction activities associated with the "value recovery" project could significantly impact these (montane grassland) communities. Logging adjacent to montane grasslands would alter the overall plant community associated with the grasslands and could change the hydrology and

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other conditions that help sustain the grasslands. These would constitute significant and irreversible impacts, yet the DEIS does not evaluate these impacts.

(Letter 8, comment 25) The DEIS does not assess and disclose the cumulative impacts to montane grassland communities. Specifically, while the DEIS recognizes these rare communities exist in the area, the DEIS ignores possible impacts that would be caused by logging in upland or adjacent areas. The DEIS also fails to evaluate the possible direct, indirect and cumulative impacts of introducing non-native plants into the grasslands....resulting from the fire, logging and roads in the burn area.

(Letter 8, comment 36) We can only support an alternative that involves no commercial logging and designates montane grasslands as RNAs with ½ mile buffers.

(Letter 10, comment 1) I agree that the montane grasslands be protected from certain logging practices.

(Letter 37, comment 7) Waiting until the Phase II amendment to consider the RNA option (for montane grasslands) will allow significant damage to occur to these grasslands, and this may reduce their eligibility for RNA designation.

(Letter 32, comment 17) The action alternatives provide no protection for the montane grassland sites.

Response: The Forest will conduct an RNA review during Phase II of the Forest Plan amendment process as discussed in the Settlement Agreement described previously. Under the Settlement Agreement, the Forest Service and timber sale purchasers (on listed sales including those within the Jasper fire) agreed work together to protect the values of the grassland sites until the RNA review is complete. Measures to accomplish this are listed in the Mitigation Measures section of the EIS. These measures include identifying and treating any noxious weeds invasion into the montane grasslands.

SP-2) Old growth

(Letter 1, comment 2) Save all old growth.

(Letter 2, comment 5) Any stands that were designated for old growth management should be the identical stand that are included on the Black Hills National Forest Land Management Late Succession Map. There may be other stands that meet the criteria, but they are not designated for management for old growth condition.

(Letter 32, comment 12) No logging should occur in Old Growth areas in connection with this or any other project.

(Letter 35, comment 14) No designated old growth stands should be salvaged logged, for whatever reason. These stands will have the best potential of providing black-backed

woodpecker habitat, provided these stands actually contain large old trees (over 14 inches dbh).

Response: Several old growth stands were not included in Alternative C for one of two reasons: 1) response to public scoping comments requesting no harvest in designated old growth, or 2) the need to provide large diameter snags for woodpeckers and other cavity dependent species. Old growth stands generally have numerous large diameter trees and would provide large diameter snag habitat. Old growth stands were identified as either stands designated in the Revised Forest Plan, and/or stands identified as being in Structural Stage 5, and/or stands designated in older project areas under the old Forest Plan.

The FEIS has been edited to make the old growth discussion more clear.

Timber Management – (TM)

TM-1) Comments about culmination of mean annual increment (CMAI)

(Letter 9, comment 20) The Forest Service fails to meaningfully respond to concerns that CMAI (culmination of mean annual increment) standards will be met, dismissing these concerns with the flip “[s]alvage operations are exempted from CMAI standards. Dead trees have culminated. [DEIS at B-4]. But nothing has been put in place to preclude cutting of surviving trees, no oversight by public officials is guaranteeing that live or recuperating trees are not being included in the salvage operations.

(Letter 9, comment 23) The Jasper draft EIS must not interpret the “culmination of mean annual increment” (CMAI) requirements of the National Forest Management Act as applicable only to even-aged stands. The CMAI requirements apply to all treatments, not just to regeneration harvests. These restrictions would apply to salvage treatments as well.

(Letter 9, comment 24) The only exemptions to the CMAI requirement allowed under NFMA are those developed under forest planning. We request that the Forest identifies where in the 1997 Revised Forest Plan NEPA documentation such CMAI exemptions are developed and presented to the public.

Response: **The requirement for stands to have generally reached culmination of mean annual increment (CMAI) prior to harvest does not apply to salvage harvest. The Forest and Rangeland Renewable Resources Planning Act of 1974 (16 USC 1600), Section 6, (m) specifically exempts salvage harvesting of stands that are substantially damaged by fire or are in imminent danger from insect attack from the CMAI requirement. Direction in the law and in the implementing regulations at 36 CFR 219.16 (1982 regulation) is articulated in the Forest Service directives**

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system at FSH 2409.13, Chapter 30, thus it is incorporated by reference in the Forest Plan.

Only trees that are dead or substantially damaged and highly likely to die within a year are included in any of the action alternatives. Timber sale contract provisions will specify which trees meet these criteria and the contracts will be administered by certified timber sale administrators to insure that only included timber is cut.

TM-2) Reforestation

(Letter 36, comment 15) We understand that the USFS does not yet know the extent to which the forest will naturally regenerate, and therefore cannot predict the exact location or amount of revegetation that will occur. The FEIS should include a fairly detailed discussion of the criteria USFS will use to determine which areas will be revegetated.

Response: The issue of reforestation will be addressed in a future restoration environmental assessment. This future document will specifically address the criteria to be used in selecting areas to be artificially regenerated. The FEIS includes a discussion of the monitoring efforts that will occur regarding regeneration and how that information will be used to guide reforestation efforts.

Value Recovery – (VR)

VR-1) General

(Letter 18, comment 2) I urge you to consider the value of nontimber forest products (NTFP), which include huckleberries, medicinal plants, floral greens (including beargrass), and other products. It is important to recognize the value of this fungi, whether or not you authorize a timber sale.

Response: Two of the NTFP mentioned above, huckleberries and beargrass, do not occur on this Forest. However, several medicinal and fungal species do occur. Nontimber forest products will be available in the unlogged portions of the burn. The issue of special forest products, such as mushrooms, is outside the scope of this decision. Special forest products can be addressed through the special forest product permit process.

VR-2) Definition of a dead tree

(Letter 8, comment 18) The USFS is using an arbitrary and ambiguous definition of “Dead tree”. The DEIS says that “all trees likely to survive” will be left standing, the DEIS defines “likely to survive” so narrowly that many trees could be logged, even if they would likely survive for many years. DEIS, page 2-9. However, the DEIS states “A dead tree is defined as those trees with no needles remaining, or all of the needles are scorched with no green needles remaining. Trees that are expected to die in the first year are those with less than 25% green crown and/or those exhibiting cambium damage on at

least 50% of the bole”. We agree that trees with no remaining green needles can be considered “not likely to survive”. However, trees with less than 25% green crown and/or more than 50% bole damage may survive. Indeed, ponderosa pine are hardy and are adapted to not only resist fire damage, but to recover following significant fire damage. The NEPA document must cite the sources relied upon for assumptions and conclusions. Also, what does the USFS mean by “Likely to survive”? The only trees that should be “treated” are those that are clearly dead, and even then, dead trees should only be removed or felled if there is a clearly demonstrated need to remove those trees.

(Letter 9, comment 22) Treatment should be limited to those trees which are already dead or have experienced more than 60% total crown burn, and are smaller than 14 inches DBH (to maintain large snag habitat).

(Letter 26, comment 1) Any trees that would be worth cutting are still viable and can contribute to the natural rehabilitation of the forest.

(Letter 32, comment 10) The DEIS fails to adequately describe how fire-damaged trees proposed for logging will be delineated. Scientific literature has shown that even trees that appear to be severely burned due to lost needles may regenerate green needles and regain vitality in subsequent years.

(Letter 33, comment 7) The EA fails to discriminate between small and large trees with respect to mortality predictions, despite the fact that larger diameter trees, especially fire resistant trees such as ponderosa pine, withstand proportionately greater stem and crown damage than smaller trees (McCulley 1950, Lynch 1959, Hare 1965, Martin 1965, Bevins 1980, Wyant et al. 1986, Harrington and Hawksworth 1988).

Response: Which trees are likely to die or not die is dependent on a wide range of factors. Amount of crown and bole scorch can both be important. Post fire factors, such as weather and insect activity can be important. Early season fires are more damaging than late season fires. Different studies have yielded different results regarding amount of scorch and subsequent tree death. As a general rule, crown scorch of 75% or greater leads to tree death. Other studies have shown ponderosa pine in Arizona, trees with greater than 60% crown scorch, only 5% survived (Burns and Honkala, 1990) and fire killed trees in Idaho had an average of 55% crown scorch (Weatherby, et al, 2001). Certainly, some trees with up to and in excess of 75% crown scorch will survive. The question is how many and which ones.

The EIS very clearly defines those trees proposed to be included in the salvage harvest. Obviously those trees with no needles remaining or 100% crown scorch are considered dead. Trees with greater than 75% crown scorch or exhibiting cambium damage on at least 50% of the bole are considered not likely to survive for more than one year. Trees not likely to survive more than one year will not be able to serve as a seed source for natural regeneration. Those trees that are likely to

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survive more than one year but may die within two to three years have the potential to produce a cone crop prior to their death and are not included in the proposed salvage harvest. Trees to be included in the salvage harvest will be designated by description (minimum diameter and % crown scorch) in the timber sale contract and those trees that are questionable as to their classification will be designated on the ground by the timber sale administration team.

The Forest Health Management staff made recommendations for the Jasper Rapid Assessment Team report as to which trees would not likely survive for several years. These recommendations were incorporated into the EIS. The staff estimated that trees with at least 50% crown scorch will not be expected to be alive several years from now. The Forest opted for a more conservative criterion in the EIS of at least 75% crown scorch in hopes those trees with between 50% and 75% crown scorch might survive for two or three years and that they might be able to produce a cone crop to aid in natural regeneration. This is consistent with observations made by Forest personnel following large fires in the Southern Black Hills from 1988 through 1992.

VR-3) Support for trading burned timber for green

(Letter 35, comment 10) We support the trading of burned timber for remaining unlogged green timber within existing timber sale areas.

(Letter 10, comment 10.1) We suggest that the Forest continue to trade green trees for dead trees (in the current sale contracts).

Response: The Forest will continue to pursue these trades wherever possible.

VR-3.1) Comments in support of the proposal

(Letter 2, comment 6) The Black Hills Forest Resource Association supports the selection of the preferred Alternative B provided the undercarriage cleaning adheres to the direction within the C clauses.

(Letter 4, comment 1) I wish to show my support for Alternative B on the Jasper Fire. We need to salvage as much wood as possible, as fast as we can, because we all know there isn't much time left before bugs and blue stain affect the burnt timber. It is useless then.

(Letter 5, comment 1) I am writing in support of Alternative B as the preferred alternative in the Jasper Fire DEIS. The benefits of salvage logging the volume amounts described in Alternative B far outweigh the benefits of leaving this volume to rot.

(Letter 6, comment 1) Support Alternative B. Why not use the timber to help pay the expense of fighting the fire?

(Letter 15, comment 6) The public forests and salvage sales have a role in good forest management and stewardship after fires. They can also provide school funds for local communities while still retaining sustainable growth rates with the forest.

Response: Contract provision C6.27, which would require undercarriage cleaning has been dropped from the mitigation measures because the appropriate supporting documentation was not available to implement this measure.

The laws governing timber sale receipts specify appropriate uses for these funds. The funds given to Counties are designated for schools and roads. Excess funds beyond required reforestation efforts and sale area improvements are returned to the U.S. General Treasury. These funds are disbursed in the annual federal budget by Congress.

VR-4) Comments about fire hazard and hazard reduction

(Letter 8, comment 9) The DEIS also claims (without stating so in the "purpose and need") that logging the fire area is needed to reduce risk of forest fire and insects. Much of the area has been burned so much there is no foreseeable fire risk. Moreover, the fire breaks constructed for the Jasper Fire will allow easy control of any future fire in the area.

(Letter 12, comment 2) There is no reason to believe that the standing and down wood is a serious fire hazard that would outweigh the very significant and certain negative effects of creating the additional roads, even if they are considered temporary, that are required by your current proposal.

(Letter 13, comment 5) The DEIS suggests salvage logging is needed to reduce fire risk of standing trees killed by fire. There is no evidence there is or will be an increased fire risk if salvage logging is not done. Most possible fire risk (undergrowth, dense understory layers, etc) have just been burned, it is the fire resistant material that is left. There is no "emergency" risk of fire.

(Letter 30, comment 2) Unfortunately, continued logging in the area will perpetuate the conditions that spawned the Jasper fire. Further removal of an already sparse understory will exacerbate exactly the conditions the agency says it is trying to prevent in the future.

(Letter 32, comment 9) The DEIS fails to substantiate statements suggesting that the project (will) reduce the intensity or frequency of future wildfire and fails to recognize contrary evidence. The DEIS fails to address a growing body of scientific knowledge and practical experience which demonstrate that logging does not help prevent or limit the severity of wildfire and often actually increases wildfire risks.

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Response: “Wildfire hazard” is a term used to describe how intense and how fast a wildfire would burn under certain conditions. It also considers how difficult a fire would be to control. Wildfire hazard is largely a product of fuels and topography.

“Wildland fuels” are any natural material that could ignite and burn in a wildfire. While the Jasper Fire has, in many areas, removed the slash, pine litter, and grass that would provide fuel for a ground fire, it has also left standing dead trees of all ages and size classes. Existing conditions present a low fire hazard, but this hazard will increase over the next five to ten years as areas revegetate and ground fuel loadings return to more natural levels. Once the standing dead trees begin to fall, ground fuel loadings could reach 20 to 60 tons per acre in untreated stands. Much of this material is greater than 3 inches in diameter and would not greatly contribute to the spread of a wildfire under normal conditions. Under drought conditions, however, large diameter fuels would ignite and burn readily and cause control problems for firefighters. Removal of some of this material through salvage logging would reduce the total fuel loading in logged areas. This in turn would reduce future fire intensity and control problems for firefighters – especially during drought periods.

Control lines that were constructed for the Jasper Fire have been reseeded and in some cases covered with slash to help control erosion. After one growing season, most of these lines will be revegetated. They will no longer be cleared of combustible material down to mineral soil and will no longer be capable of stopping the spread of a wildfire.

Past experiences with large fires on the Hell Canyon District support the conclusions of the Jasper DEIS with regards to fire and fuels. The Elk Mountain Fire was a 1700 acre wildfire that occurred in 1983. Like Jasper, this was a high intensity crown fire that killed most of the trees within its perimeter. No salvage logging was conducted after the fire. Trees killed by the fire have broken off and blown over and now contribute to the ground fuel load. Lightning caused wildfires are again common in the area with the deadfall from the 1983 fire contributing to their spread – especially during drought years.

Woodpeckers –(WDP)

WPD-1) Black-backed woodpecker

(Letter 2, comment 3) The EIS states that nesting habitat should be expanded to 130 acres (for black-backed woodpeckers). Black-backed woodpeckers need between 74 and 130 acres for nesting. There was no reason why all stands managed for black-backed woodpeckers should be expanded to a minimum of 130 acres. The range of 74-130 acres is very appropriate for consideration of nesting habitat.

(Letter 8, comment 23) There is no basis in the DEIS or BE for concluding there is no viability concern for the Lewis or Three-toed woodpeckers.

(Letter 35, comment 1) Your analysis of impacts to fire-dependent species, such as the black-backed woodpecker, is entirely arbitrary. You have failed to provide any quantified criteria by which you selected areas and levels of burned habitat to be maintained. Specifically, what habitat guidelines were you using to make these determinations, and how are these related to your expert interviews on this species?

(Letter 35, comment 5) You need to provide a well-developed habitat plan for this species (black-backed woodpecker) which ensures connectivity of habitat and retention of adequate sized burned patches. This should also include retention of unburned and partially burned habitat within black-backed woodpecker management areas. These areas should be several thousand acres in size, as recommended by your recent expert interviews with black-backed woodpecker experts.

(Letter 35, comment 20) It is unclear how the Forest determined that “excess” habitat will exist for the black-backed woodpecker, so that salvage can occur.

(Letter 35, comment 21) The DEIS notes that existing habitat for the Lewis woodpecker is only 7%, and will decline to 2-5% with salvage. Habitat for the black-backed woodpecker is currently 1%, and will decline with either harvest alternative. With such a limited amount of habitat, why have you made the decision to salvage habitat?

(Letter 36, comment 14) It is unclear why the proposed number of snags per acre differs between the action alternatives. Alternative B would leave the minimum 3 snags per treated acre while Alternative C leaves 17 snags per treated acre. We recommend that the decision include the higher figure in order to provide more protection for Management Indicator Species including Lewis’ and Black-backed woodpecker.

Response: Based on research in Idaho, the range from 74 to 130 acre stand size for black-backed woodpeckers was the most utilized by this species. However, this recommendation was on the microhabitat scale. On the landscape scale, these blocks of 74 to 130 acres should be contiguous with other blocks with an average size of 1000 acres (Saab and Dudley 1998). The recommendations to expand the size would allow on-the-ground changes to stands based on the density and average DBH of adjacent stands allowing more connectivity between nesting stands.

Viability of a species is outside the scope of this document and will be addressed through Forest Plan amendments. The basis for the determination for the species evaluated in the Biological Evaluation and Biological Assessment can be found in FSM 2671 and FSM 2672 and Region 2 FSM Supplement 2600-94-2.

The criteria selected for the woodpecker habitat analysis was based on the analysis done in Idaho using LANDSAT satellite imagery to assess fire-created habitat for cavity-

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nesting birds (Johnson et al. In Press, Saab et al In Press). Specific criteria used for the analysis, selection criteria (utilized pre-fire conditions Stage II stand information), and professional assumptions can be found in the project file.

The decision has not been made to harvest any habitat. The proposed action and its action alternative displays the range of options open to the decision maker. Through the NEPA process, environmental, social, and economic issues and concerns may be raised through scoping and analysis that allows the decision maker to make informed decisions. The Forest has not determined that “excess” habitat exists.

The number of snags varies based on the emphasis of each alternative. (See response to SNG-2).

General wildlife –(WL)

WL-1) General

(Letter 32, comment 5) The DEIS did not adequately account for the potential of wildlife species being hypersensitive to disturbance in their sensitive post-fire state. The USDA report (2000) finds that the removal of dead trees associated with post-fire logging has the potential for significantly changing wildlife habitat both structurally, through removing existing and future snags and large woody material, and functionally, by means such as reducing populations of insect prey. NEPA requires the Forest Service to consider biological corridors.

(Letter 18, comment 4) If burned trees are not logged this year, they will continue to provide wildlife habitat in future years. However, if the trees are logged this year, this will adversely impact the forest and wildlife right away

Response: The DEIS identifies the affected environment for wildlife habitat and species in Chapter 3. The Jasper Fire greatly altered the habitat and areas of use for most species that utilize forest ecosystems. In general, species were affected by loss of habitat, loss of food sources, and/or lack of security. The fire created a new type of habitat (earlier successional stage) of grasses, forbs, shrubs and pine seedlings. The Forest is not familiar with the term “hyper-sensitivity” with regard to wildlife. The FEIS discloses the potential for additional disturbance to some species, such as deer and elk, due to effects of the fire and the proposed harvest. At this time, there is a travel restriction for motorized vehicles in the Jasper Fire Area to address public safety. This travel restriction also helps wildlife adjust to their new habitat or allows migration to more suitable habitat.

The effects to wildlife of harvesting dead trees now are discussed in Chapter 4. The effects under Alternative A (No Action) represent the results of not harvesting trees now.

NEPA does not require analysis of corridors. However, corridors of connectivity habitat were considered for the black-backed woodpecker.

WL-2) Big game

(Letter 8, comment 27) The DEIS states that “Value recovery operations will not affect cover or forage levels in the burn area since only dead trees will be harvested”. DEIS at 4-13. This is an indefensible statement. First, commercial logging associated with the lumber “value recovery operations” will log more than just dead trees. The logging of these trees, as well as trees that are actually dead, will significantly reduce cover for deer and elk in the area for many years.

(Letter 8, comment 28) For cumulative effects to big game animals, the DEIS’s entire “assessment” amounts to a single vague sentence: “Cumulative effects of on-going sales and proposed harvest may cause additional disturbance for big game animals through the summer of 2001. This does not constitute any actual analysis and leaves ALL of the critical questions unanswered.

(Letter 10, comment 9) Retaining dense stands of snags primarily for black-backed woodpeckers may also benefit big game, which was not discussed in great detail in either action alternative.

(Letter 35, comment 22) You have not addressed the provision of cover for big game in your analysis, even within MA 5.4.

(Letter 35, comment 24) There is no information within the DEIS about where big game security and/or nondisturbance areas will be. You have not demonstrated how the proposed salvage activities, along with ongoing harvest activities, will affect the habitat effectiveness and vulnerability of big game species. What will open road densities be during logging? How do you know that impacts are not significant, or don’t need mitigation?

Response: The DEIS did not do an in depth analysis of big game habitat in the Jasper Fire Area. Most of the effects to big game occurred when the fire killed most of the trees inside the fire perimeter. This is discussed in Chapter 3. As a result of the fire, most of the cover (thermal and security cover) was lost. The proposed action will not further impact this species as discussed in Chapter 4 (page 4,13-14) in regard to forage and to cover since live green trees will not be harvested. Cover can also be topography (escape) and down dead wood (bedding). Approximately 11,067 acres is proposed for harvest in addition to the sold timber sales and hazard tree removal areas. This will leave approximately 31,000 acres of high or moderate intensity burn untreated where downed snags will provide bedding cover. This is in addition to the low intensity burn areas of about 24,000 acres for a total of 55,000 acres with bedding cover. At this time, a travel restriction is in place that will provide security for big game populations. A decision regarding future travel restrictions will be made under another environmental analysis later in 2001.

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WL-3) Snails

(Letter 8, comment 20) Despite the very precarious status of the Snail Species of Special Concern, the DEIS does not contain any real analysis of potential impacts to these species or their habitats. How many different colonies could be impacted by the wide-spread logging and other “value recovery” operations? How important are these colonies to the overall distribution and viability of the snail population(s) on the Forest? The DEIS does not attempt to answer any of these critically important questions. The DEIS claims “no additional cumulative effects are expected” from these operations. Since the snail species are currently believed to be threatened or endangered, even small impacts to the remaining colonies could be cumulatively significant. The DEIS claims “mitigation measures” would avoid impacts to the snail colonies. What “mitigation measures” are the DEIS talking about? On page 2-10, the DEIS reads “Protect all known snail colony locations with a 100’ buffer of no disturbance”. There is no evidence a 100-foot buffer would be adequate to protect snails. The USFS has also completely ignored the fact that the proposed 100-foot buffer would do nothing at all to protect snail colonies that were overlooked in previous surveys.

(Letter 8, comment 39) The Forest Service must protect all known snail colonies (and search for unknown snail colonies) from logging, road construction activities, motorized vehicles, livestock grazing and other potential impacts.

(Letter 19, comment 5) The DEIS states that there are seven known locations of snails in the project area and the Forest Service has only surveyed two of the known snail sites. The other five locations need to be surveyed to determine if there are still snails. A revised or supplemental draft EIS must be prepared to fully evaluate the cumulative impacts to the resident snails.

Response: There are two species of snails on the forest that have been identified as R2 Sensitive and several other species that are of concern (not enough information available). The proposed action will not further affect the known snail populations in the Jasper Fire Area since these areas will be avoided by logging equipment and tree removal. Only two locations were visited to validate the fire intensity that occurred in these locations using the Landsat Satellite Imagery process. Due to the time of the year and the drought conditions, in addition to the fire effects, it was impossible to determine the condition of the snail populations. Rehabilitation of the Jasper Fire area has begun. Fencing to exclude ungulates and monitoring of these snail sites is scheduled for this spring/summer. In the Expert Interview Summary (BHNF 2000), the experts felt that protection of known colonies was adequate to maintain overall stability of the population. However, Backlund acknowledged that there still may be some slight negative impacts to unknown colonies. Beauvais felt that a buffer might be helpful in protecting colonies from adjacent management activities but did not recommend any particular distance. The Settlement Agreement for the Veteran Salvage lawsuit provided for a 200-foot buffer for snail colonies in Category 2 sales.

The mitigation measure has been changed to a “200-foot buffer”.

WL-4) Federally-listed Threatened or Endangered species; Regional Forester-listed Sensitive species (TES species)

(Letter 11, comment 3) Page 4-15, 4.3.14. Threatened and Endangered Species - The Service (US Department of the Interior, Office of the Secretary) concurs with the Forest Service determination of “no effect” for the bald eagle. Page 2-16, 2.5. Section Monitoring Activities.

(Letter 33, comment 4) The ground-disturbing activities associated with timber harvest are likely to jeopardize the viability of species that find optimal habitat in forests with well-developed structures, and forests naturally disturbed by fire, disease and insect pathogens. These include threatened, endangered and sensitive species.

(Letter 8, comment 22) The DEIS does not include any analysis whatsoever on impacts to sensitive species. The public was not given the “biological evaluation” (BE) to review, and even if citizens had requested that document, the FOIA regulations only ensure the citizens would receive a copy of the document within 30 work-days, which means citizens would not necessarily receive the BE until it was too late for them to review and comment on that document. The DEIS is so inadequate on this issue that citizens cannot submit meaningful comments on possible impacts to sensitive species or on the adequacy of the USFS’s “analysis” because the analysis was not included in or even summarized in the DEIS. There is absolutely no basis for the BE’s determination that the proposed action “may adversely impact individuals but not likely to result in a loss of viability on the planning area, not cause a trend to federal listing or a loss of species viability range-wide” on any species. Without this key information (population data) there is no way for the agency to decide whether or not this proposed project – in conjunction with the fire and other logging activities – would reduce populations below viable or well-distributed levels.

Response: Viability of a species is outside the scope of this document and will be addressed through Forest Plan amendments. The basis for the determination for the species evaluated in the Biological Evaluation and Biological Assessment can be found in FSM 2671.44 and FSM 2672 and Region 2 FSM Supplement 2600-94-2. The BE is available upon request.

Species that would be affected by the proposed action were included in the BE/BA. Species that were affected by the Jasper Fire, but will not be affected by the proposed action, were not included since the basis for this analysis is the post-fire forest condition. Species such as marten and goshawk, which are forest dwelling species, were not addressed in the BE/BA because they would not be affected by the removal of dead trees.

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Species that may have benefited by the fire, such as pygmy nuthatch, black-backed woodpecker and bats were addressed with respect to the proposed action.

WL-5) Bats and caves

(Letter 8, comment 24) The DEIS does say the USFS “should” leave a 500 foot buffer around cave entrances. DEIS at 4-11. However, this does not actually require this minimum level of protect be provided during the Jasper Fire project. A 500 foot buffer must be maintained around all cave entrances. When areas are logged or roaded, this does change the subsurface hydrology and often results in less water percolating through substrate and into caves. The result is a drier cave micro-environment which can significantly impact the cave ecosystem. The DEIS ignores these potential impacts to caves and bat habitat in the fires area. This must be addressed.

Response: A buffer of 500 feet (no disturbance) will be provided around known cave entrances (see Chapter 2, Mitigations). However, this buffer may also be larger than 500 feet if it is necessary to protect the cave from collapse. Research indicates that the lack of live trees will increase water quantity in the watershed. Due to the porous condition of limestone, it is unknown at this time what effects the fire will have on water in caves in the fire area. The proposed action will not further impact these caves.

WL-6) Other species

(Letter 12, comment 1) The proposed Jasper logging, snag removal, and road construction will only exacerbate the Forest’s existing habitat deficits for goshawks, pine martens, mountain lions, sawwhet owls, pygmy nuthatches, and other important wildlife.

(Letter 33, comment 4) The ground-disturbing activities associated with timber harvest are likely to jeopardize the viability of species that find optimal habitat in forests with well-developed structures, and forests naturally disturbed by fire, disease and insect pathogens. These include management indicator species such as: goshawks, martens, mountain lions, sawwhet owls, pygmy nuthatches, land snails of special concern, etc. (See response OS-6 for more information)

Response: As with any catastrophic event that destroys habitat, the diversity of the landscape will increase through time as vegetation regenerates. Wildlife will return to the area as their suitable habitat becomes available again. The negative impacts to species that prefer late successional habitat occurred with the Jasper Fire. Their preferred habitat is no longer available in the Jasper Fire. The proposed action will not further impact these late successional species. However, species that are cavity dependent have been considered through the woodpecker analysis (See Chapters 2 and 3). Other sensitive species that would utilize the fire area have been reviewed and discussed in the FEIS BE/BA.

Most snags will fall long before trees have regenerated and grown. Down wood will provide habitat diversity longer than snags. High levels of both snags and down wood will remain in unlogged areas that were fire-killed (greater than 32,000 acres.).

WL-7) Insects

(Letter 8, comment 10) ...the DEIS –like all other timber sale documents the USFS has ever issued on the Black Hills – ignores the ecological values of native species such as the pine beetle. Sustaining the ecosystem also requires accounting for the roles of native insects, including the pine beetle.

(Letter 9, comment 16) The direct, indirect, and cumulative impacts upon insects and upon the niche of insects in the Forest ecosystem must also be thoroughly analyzed in the FEIS.

(Letter 16, comment 13) Mountain pine beetles, Ips beetle species, red turpentine beetles, and other wood boring beetles are all naturally occurring insects on the Black Hills, yet the USFS perceives these insects as a threat to the Forest ecosystem. These insects are native species that deserve the same impact analysis as any other species. These native species do less damage to the forest than the commercial logging program, which completely removes trees and nutrients from the ecosystem.

(Letter 19, comment 4) Ips will increase regardless of harvest level because they will use non-merchantable dead material as well as the merchantable material and that an IPS infestation with substantial loss of healthy trees is not likely even under these circumstances. Ips are not considered primary tree killing pest and rarely colonize and kill healthy trees. Logging may create conditions that are more favorable for outbreaks of IPS because Ips preferentially infests felled trees and slash. There is no justification for this salvage sale based on insect activity, but there is justification for NOT salvage logging to increase snags and insect trees for the black-backed woodpecker and other insect feeding birds.

Response: All insects do play a role in forest ecosystems. Currently there are high populations of all native bark beetle across many areas of the Black Hills. This means that they providing ecological function in many areas of the Forest. It is impractical to attempt to eliminate or exterminate insects, such as mountain pine beetle, from the Forest, and neither this project nor others propose to do so. Therefore, there is no risk that the viability of any of these species is threatened over the Forest. The Forest Plan stipulates that populations should be managed at levels to minimize the risks of spreading the infestation while still providing habitat for those wildlife species dependent upon the presence of insects. In regard to mountain pine beetle in the Jasper Fire area, this beetle does not preferentially attack fire-damaged or killed ponderosa pine.

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It is impossible to analyze the direct, indirect, and cumulative impacts upon insects and upon the niche of insects in the Forest. First, there are literally thousands of species of insects within the Black Hills. Second, we do not have information on the vast bulk of these insects in regard to their current or historical population levels or their habitat niches. We do know that insect populations characteristically go through wide population changes. Therefore, just because we see few individuals of a certain species in a given year, does not mean that its viability is threatened. Insects have a tremendous reproductive potential and most have the ability to migrate into new areas.

It is true that mountain pine beetle, *Ips*, red turpentine beetles, and wood borers are native insects to the Black Hills. Currently there are high populations of all bark beetle species native to the Black Hills. In contrast to the impact that timber programs have on the project area, impacts caused by insects such as bark beetle are difficult to predict or delimit. Because bark beetle populations have the potential to increase several levels of magnitude over a short period of time, there impacts can be extremely variable. We do know that *Ips*, red turpentine beetles, and wood borers will attack partially fire-damaged trees and will not use trees that have all their cambium destroyed by the fire. This means that these insects can kill trees retained for reseeded the understory that would otherwise survive fire damage.

***Ips* certainly will use trees down to 2 inch diameter size, which would be considered unmerchantable. It is more a point of doing reasonable treatments that limit the amount of breeding material for *Ips* to use. Also, *Ips* typically is not considered a primary tree killing insect. Populations of *Ips* can reach the point of becoming a primary tree killer when conditions are present that include a large number of highly stressed trees, such as blowdowns, fires, drought, slash or defoliation events. This is the case in the Jasper area, as there are large areas of highly stressed trees. Preceding Jasper, there was widespread occurrence of snap offs in April of 2000. *Ips* populations had already infested much of the snap off material and were already at high levels. The addition of fire-damaged trees will only increase this situation. Perhaps the biggest concern with *Ips* populations is in the stands of trees which were damaged but not killed. Much of this area is being left as seed sources to revegetate the area. These trees are susceptible to attack and so may limit regeneration in this area. The use of proper slash treatments, such as lopping and scattering, should minimize any *Ips* infestations after logging. Insect activity is not a major reason for this proposal, although post-fire insect caused mortality is a concern.**

Watershed and soils –(WS)

WS-1 (General)

(Letter 36, comment 1) We remain confident that if the mitigation measures are adhered to throughout project implementation, the Jasper Fire Value Recovery effort can be accomplished without significant impacts to water or air quality.

Response: We agree that when BMPs and mitigation measures are implemented water quality will be protected.

WS-2) Groundwater

(Letter 36, comment 2) Contact Anita Yen, South Dakota's Source Water Protection Coordinator regarding the status of the Jasper Fire Area, and for her input on measures that could protect drinking water through this project.

(Letter 36, comment 3) All project mitigation measures applied to protect surface water from the effects of sediment or herbicides should also be applied in sink holes and to intermittent stream courses.

(Letter 36, comment 4) We encourage the USFS to monitor the surface hydrology in the project area throughout the project period, and allow for any modifications to the project that would be necessary to protect water quality should significant hydrologic change be detected.

(Letter 36, comment 17) The DEIS does not provide enough information to determine potential for impacts to groundwater.

Response: Anita Yen of South Dakota's Department of Environment and Natural Resources (DENR) was contacted. Her concern was the possibility of fuel spills that could find their way into the groundwater. She recommended locating fuel trucks/tanks downhill from known sinkholes and caves to minimize the chance of adverse impacts from accidental spills. Also, need to have a plan in place to deal with fuel spills. She did not see any adverse impacts from sediment as long as our operations did not concentrate water flows and we should follow BMPs. She felt most of the sediment resulting from the fire and some movement would occur regardless of whether logging took place.

Fuel concerns are addressed in the Timber Sale Contract. Fuel hazard plans are required when certain fuel capacities are located on Federal lands.

All BMPs and mitigation measures will be applied over the whole project area, not just in areas to protect surface water. Our goal is protect soil productivity and protecting soil productivity will protect water quality and groundwater quality.

Impacts to groundwater from this project are not expected, hence the lack of discussion in the EIS. The only pollutant that can potentially be generated from this project is sediment; however it is anticipated to be minimal when BMPs are implemented. If

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sediment were to be generated, it will not be a contaminant of the ground water because it would be filtered out as the water infiltrates.

WS-3) Surface water

(Letter 36, comment 5) The FEIS should identify whether the project area is tributary to any impaired (Clean Water Act 303 (d) listed) stream segments, and should identify the pollutants of concern, and any potential adverse impacts to these waters from the project.

(Letter 8, comment 35) We believe the significant soil disturbance associated with the project (including logging, skidding, road construction and maintenance work and hauling) will significantly impact soils and hence water quality in the burn area. In addition, we believe the project may violate Clean Water Act and State Water Quality requirements.

Response: Operations will be monitored daily due the sensitivity of the area. When water or soils concerns are observed, the appropriate specialist will be called. Adjustments will be made, as needed.

The project area is tributary to Cheyenne River. The Cheyenne River has several stream reaches listed in the 2000 South Dakota Report to Congress, 305(b) Water Quality Assessment. This report includes the streams on the 303(d) Waterbody List. The nearest stream reach is from the Wyoming Border to Angostura Reservoir. The pollutants of concern are salinity, total dissolved solids, chlorides, suspended solids and conductivity. This stream reach is over 20 air miles from the project area. Stream miles below the project area were not calculated. Additional impacts to this stream reach are not anticipated because of the distance and also due to the implementation of BMPs.

The project is designed to protect soil productivity by staying off slopes greater than 30% for all soils, staying off soils with slopes greater than 20% when the soil erosion hazard is severe and staying off soils with mass wasting potential. Project implementation will avoid concentration of water, because once the water is concentrated, the soil does not have the capability of handling the concentrated water. This project design will provide minimal impacts to the soils and water quality and will not violate the Clean Water Act or State Water Quality Standards.

WS-4) Soils concerns

(Letter 8, comment 13) It is not enough to simply minimize soil erosion; the USFS must also ensure long-term soil health. Standing dead and downed trees and debris left by the Jasper Fire are and will be an important source of long-term nutrient input for the soil. There is no assessment of how the fire or proposed logging activities would reduce soil nutrients or otherwise impact soils in the burn area.

(Letter 18, comment 1) Soil compaction caused by heavy equipment, even when mitigated by frozen soil conditions, kills the fungal hyphae. Scientific studies show that this is an immediate and irreversible loss. While fungi will recolonize, the morels crop is lost.

(Letter 32, comment 4) The potential for the destabilization of soils associated with logging related ground disturbance, road construction, and the removal of partially live trees should be thoroughly reviewed. The potential for detrimental compaction of the sensitive post-fire soils caused by mechanical means of removing logs should also be extensively analyzed.

(Letter 33, comment 6) Erosion and sedimentation is already taking place in the areas of the fire, yet no attempts have been made to quantify these variables or make scientific predictions for future increases or decreases.

Response: The goal of the project design is to maintain soil productivity, by keeping the soil on site. The tops of the trees and all unmerchantable trees will be left on site and not hauled into a landing to be burned later. The tops will provide for roughness on the ground to slow down the water and also provide future nutrients for the soil.

There is always some impact when equipment drives over the soil. Logging is no exception. However, as outlined on the Soil and Water Conservation Practices Handbook, impacts are allowed and tolerable up to certain limits. As long as these practices are adhered to or provide fewer impacts, these minimal impacts are acceptable. The project design has taken this into account. The goal is to maintain soil productivity.

Quantifying erosion and sedimentation can be difficult. One model may have advantages over another; preferences between specialists will differ. Erosion and sedimentation is also dependent on precipitation, which can be variable from year to year and season to season. With these variables results can always be questioned. The Forest Service chose not to model erosion and sediment because the numbers do not lead to clear conclusions. We rely on project design, implementation of BMPs and mitigating measures to control erosion and sedimentation.

WS-5) BMPs

(Letter 32, comment 14) We would like to see a more thorough discussion of the BMPs and mitigation measures you would propose to ameliorate project impacts. This discussion must go beyond a mere listing and include 1) effectiveness, 2) funding sources, 3) failures and subsequent rehabilitation.

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Response: BMP monitoring on the Black Hills has been completed in 1996, 1997 and 1998. As documented in the Hydrology Report: Appendix A, BMPs have been implemented and effective for the timber sales that were monitored.

The monitoring that has been done and documented has shown BMPs are effective when implemented. The publication by Dissmeyer (1994), *Evaluating the Effectiveness of Forestry Best Management Practices in Meeting Water Quality Goals or Standards*, provides methodologies to monitor BMP effectiveness. It also cites several case studies on BMP effectiveness. In general it shows that if BMPs are implemented they are generally effective.

The Pacific Southwest Region of the Forest Service has had an active BMP effectiveness program, called BMPEP (Best Management Practices Evaluation Process). This region wide program was designed to statistically demonstrate if the BMPs for all resource areas are implemented and effective. This program was started in 1992 and summaries have been documented over several years. The last report that was prepared was in April 1998. Overall it was found that BMPs are implemented 83 percent of the time and are effective for 83 percent of the observations.

The literature generally indicates that BMPs are effective when implemented. This documentation is over different climate regimes, and these conclusions can be inferred to the Black Hills because of the monitoring that has been completed here.

Funding sources to monitor BMPs will be part of the general budget. The Forest Service has no control over the budget and does not have a line item for monitoring. It will be part of the Forest Service program of work.