



**File Code:** 1950

**Date:** October 27, 2000

Dear Interested Party:

This letter is to inform you that the Black Hills National Forest is proposing a non-significant amendment to the 1997 Revised Land and Resource Management Plan (Forest Plan), and to solicit your comments regarding this proposed amendment. The scope of the Phase I Amendment to the Forest Plan is to correct the deficiencies within the Plan that were identified in the Appeal Decision issued October 12, 1999. Specific deficiencies were noted regarding how the Forest Plan was meeting the National Forest Management Act requirements regarding species viability and diversity. The second phase (Phase II) will include a full re-evaluation for species viability and diversity. The Phase II effort is anticipated to take two to five years to complete. The intent of the Phase I effort is to ensure management options are maintained during the re-evaluation period (two to five years) for protection of species viability and diversity, while allowing some management actions to occur. For a brief history of how the amendment process came to be and what has transpired to date, see Attachment 1.

The purpose and need for the Phase I assessment is to address identified Forest Plan deficiencies which must be corrected to assure that projects implemented during the time period it takes to complete the re-evaluation of species viability and diversity (expected to be 2-5 years) will maintain viable populations of native and desired non-native species.

Two key issues identified for the Phase I assessment are the protection of species viability and diversity, and the resulting changes anticipated in program work, including outputs and services, over the short-term period.

Three preliminary alternatives have been developed. These preliminary alternatives include the no action alternative, and two action alternatives developed to respond to the purpose and need. Following is a brief description of the preliminary alternatives. Attachment 2 provides additional information on the proposed action and the preliminary alternatives while Attachment 3 provides preliminary information on the effects of the alternatives.

Alternative 1 is the No Action alternative. This represents implementing the Forest Plan as is. The October 12, 1999, appeal decision identified modifications necessary to reduce the level of risk and uncertainty regarding health of the land, including sustainability of its watersheds and of its plant and animal species. Under this alternative, the Forest has a risk of not meeting legal obligations related to species viability and diversity as required by the National Forest Management Act. It is likely the Forest would experience increased litigation impacts, which would adversely impact the ability to manage forest resources.

Alternative 2 incorporates the "General interim management direction" (interim direction) measures provided in the October 12, 1999 Appeal Decision. The interim direction measures were designed to reduce the level of risk and uncertainty regarding health of the land, including



sustainability of its watersheds and of its plant and animal species, while maintaining management options during the period until the re-analysis is completed.

Alternative 3 incorporates portions of the interim direction measures along with information from scientists and recent research to refine the measures for habitat conditions found on the Black Hills National Forest. The interim direction measures were reviewed by scientists and adjustments were made to further reduce the level of risk and uncertainty regarding health of the land, including sustainability of its watersheds and of its plant and animal species, while maintaining management options during the period until the re-analysis is completed.

The existing goals, objectives, standards and guidelines were reviewed. Alternatives 2 and 3 identify the guidelines which are environmentally protective, relative to conservation of species populations and habitats, to be treated as standards for the interim period. Alternative 3 includes additional measures to further reduce the level of risk to species diversity and viability. Additional alternatives that address the purpose and need may be developed in response to scoping comments.

In addition, the October 12, 1999 Forest Plan Appeal Decision directed the Forest to designate at least one aquatic Management Indicator Species (MIS). The Forest proposes to designate the following aquatic species as MIS: finescale dace, lake chub, brown trout, brook trout and mountain sucker. The Forest also identified the black bear as species appropriate to remove from the MIS list due to its absence.

In late August, the Jasper Fire burned approximately 83,500 acres, of which 79,404 acres of land are administered by the Black Hills National Forest. A future separate assessment will take an in depth look at the affected area and propose management actions. Two initial assessments of the Jasper Fire area have been completed. A Burned Area Emergency Rehabilitation (BAER) team assessed impacts to soils and water resources and if emergency measures were necessary for watershed protection. A Forest team of interdisciplinary specialists, the Jasper Fire Rapid Assessment Team, identified what actions may be appropriate to consider in the burned area, from immediate safety concerns to potential management actions. In addition, the Jasper Fire burned portions of four ongoing timber sales which were included in the Beaver Park settlement agreements. These areas are being reviewed to determine appropriate actions in light of the fire impacts along with the settlement agreement.

I am providing you a summary of the Phase I Amendment information available to date. This is your opportunity for public comment on this proposed amendment. Regulations (36 CFR 217) do not require a draft environmental assessment be issued for comment for non-significant amendments to Forest Plans that are not associated with a site specific project. Consistent with the appeal regulations and to accomplish this amendment in the interest of time, we are not planning to issue a draft environmental assessment. For these reasons I am providing you with as much information as possible to allow you to make informed comments regarding this proposed amendment.

All comments received will be read and significant issues identified through a content analysis that organizes the comments by their subject matter. These significant issues will be addressed

in the environmental assessment (EA). All comments and the Forest's responses to these comments will be published as an appendix to the EA.

To assist the Forest Service in identifying and considering issues and concerns on the proposed action, comments should be as specific as possible. To be most effective, comments being sought are those that: a) identify necessary modifications to the preliminary alternatives; b) would be helpful in developing or evaluating alternatives; c) provide additional information to improve or modify our analysis; or d) identify factual corrections.

Information regarding the Phase I amendment to the Black Hills National Forest Land and Resource Management Plan analysis will also be available on our website at [www.fs.fed.us/r2/blackhills](http://www.fs.fed.us/r2/blackhills). Documents that will be available on this site include: Expert Interview Summary for the Black Hills NF LRMP Amendment, Selection Report for Aquatic Management Indicator Species of the Black Hills NF, and the Standards and Guidelines for the proposed alternatives for the Amendment.

If you have access to the Internet and prefer not to receive a hardcopy of future documents pertaining to this analysis, please contact Peggy Woodward at 605/673-2251 (or email at: [pwoodward@fs.fed.us](mailto:pwoodward@fs.fed.us)) to remove your name from this mailing list.

Your written comments for the Phase I amendment may be submitted to: United States Forest Service, c/o Black Hills National Forest, PO Box 221090, Salt Lake City, UT 84122. The Responsible Official for this project is Lyle Laverty, Regional Forester for Region 2. Comments would be most useful if submitted no later than November 30, 2000.

Sincerely,

*/s/ Sylvia Arbelbide for*

JOHN C. TWISS  
Forest Supervisor

Enclosures

Black Hills National Forest Location Map  
Public Comment Form  
Attachment #1  
Attachment #2  
Attachment #3

## ATTACHMENT 1

### BACKGROUND INFORMATION

The original Land and Resource Management Plan for the Black Hills National Forest (Forest) was approved on August 19, 1983. Revision of the 1983 Land and Resource Management Plan was needed to satisfy regulatory requirements and to address new information about the Forest and its uses. On June 24, 1997, then Regional Forester Elizabeth Estill signed the Record of Decision for the Black Hills National Forest 1997 Revised Land and Resource Management Plan (Forest Plan) and accompanying Final Environmental Impact Assessment (FEIS). The Forest Plan and FEIS provide a programmatic framework for decision-making on the Forest for the next 10 to 15 years. The Regional Forester's decision was appealed. On October 12, 1999 the Reviewing Officer for the Chief of the Forest Service, James R. Furnish, issued his decision, affirming the Regional Forester's June 24, 1997, decision in part, with instruction for further actions concerning the issues of viability and diversity, and mining.

### From the summary of the appeal decision:

#### Decision Summary

My response to the appellants' substantive concerns includes a discussion of associated legal, regulatory, and policy requirements. This approach provides a focused response to contentions involving complex resource management issues. Although every contention made by appellants may not be cited in this decision, all of the concerns have been considered. My review of the concerns focused upon compliance of the Regional Forester's decision with those law, regulation, and policy requirements cited.

I identified a total of 27 key issues from the three appeals, which together constituted some 400 pages of contentions and related discussion from the appellants. The issues are listed in the Table of Contents and are addressed subsequently in this decision. Generally, the appellants request a thorough analysis of the issues be completed, further analysis be done, and, the ROD, Revised Plan, and FEIS be revised. I find that the majority of these issues had been addressed in the record in conformance with applicable law, regulation, and policy. However, I also find that additional evaluation of the sufficiency of the plan in providing for the diversity of plant and animal communities, and species viability, is needed. I believe that modifications are necessary to reduce the level of risk and uncertainty regarding health of the land, including sustainability of its watersheds, and of its plant and animal species. In accordance with the relevant regulations (36 CFR 217.16(b)), the Regional Forester's June 24, 1997, decision to approve the Revised Plan is affirmed in part, with instructions for further actions concerning the issues of viability and diversity, and mining.

The viability and diversity issue warrants adjusting some land management activities during an interim period, which begins with the issuance of this appeal decision and concludes with completion of any necessary adjustments to the Revised Plan. The rationale associated with the viability and diversity issue, and with the related instructions

for further action, is discussed later in this appeal decision. In summary, the primary deficiencies concern:

- Viability determinations for some species.
- Standards and guidelines to maintain viability of some species.
- Management indicator species (MIS) requirements.
- Monitoring direction for some sensitive species.

Although I am affirming the Regional Forester relative to the Migratory Bird Treaty Act issue raised by the appellants, I am directing the Regional Forester, as part of the re-evaluation of the sufficiency of the plan in providing for the diversity of plant and animal communities and species viability, to consider comprehensive bird planning efforts, such as Partners-in-Flight.

With regard to mining, a relatively minor adjustment would remove ambiguity associated with this issue which also is described in more detail later in this appeal decision. The Regional Forester is directed to clarify Forest Standard Number 1511 by incorporating a reference to 36 CFR 228 Subpart A - Locatable Minerals, rather than simply referring to the term "operating plan." (Appeal Decision, 10/12/99 p. 2)

Additionally the appeal decision included:

**“Decision**

After reviewing the record relative to the species diversity and viability concerns expressed by the appellants, I find that the Revised Plan does not fully meet all aspects of the intent and requirements of the NFMA and its implementing regulations at 36 CFR 219, with regard to the diversity of plant and animal communities, and species viability. Some of these concerns may be adequately addressed by supplementing the record; however, enough deficiencies were noted to warrant re-evaluating the sufficiency of the Revised Plan in relation to diversity and viability.

**Basis for Interim Direction**

Interim direction was developed to provide additional assurance that management options will not be foreclosed by the effects of projects during the period needed to re-evaluate the sufficiency of the Forest Plan in maintaining species diversity and viability. Much of the interim direction focuses on the need to have adequate information and thorough effects analyses for all sensitive and management indicator species within the area affected by a proposed project, and to design projects which will provide for conservation of species and their habits by protecting ecosystem integrity. Some of the interim direction focuses on specific species or specific types of projects, where concerns were identified in the appeal analysis. Overall, this direction lessens the level of risk for species for which there may be a viability concern by providing greater protection during the interim period, while still providing the opportunity to continue management activities. In the following discussion, the text in italics represents the actual interim direction.

*Apply the following interim direction to all projects or activities for which decision documents have not been signed as of the date this appeal decision is rendered. The interim direction will remain in effect until appropriate adjustments have been made to the Revised Plan, in accordance with the above Action Plan.” ... (Appeal Decision, 10/12/99)*

The complete appeal decision is available on the National Forest Service web site at:

<http://www.fs.fed.us/forum/nepa/lrmpdecisions.html>

### **Settlement Negotiations**

In October 1999 a lawsuit was filed against the Forest Service challenging the implementation of the Veteran Salvage Timber Sale in the Forbes Gulch area of the Beaver Park Roadless area, challenging certain deficiencies identified in the October Revised Forest Plan appeal decision. Settlement negotiations began in November 1999 and were finalized in September 2000. Several forest analyses, completed prior to October 12, 1999 were included in the scope of the settlement negotiations. The Phase I amendment to the Forest Plan is, in part, a result of the negotiations.

### **Planned Course of Action**

The Forest proposes to amend the Forest Plan in two phases. Phase I will incorporate additional measures into the Forest Plan, for a short period of time (2-5 years) while the Phase II effort is underway, to ensure species diversity and viability are protected and future management options are not foregone by actions taken until the re-evaluation for species diversity and viability is completed. **The purpose and need for the Phase I assessment is to address identified Forest Plan deficiencies which must be corrected to assure that projects implemented during the time period it takes to complete the re-evaluation of species viability and diversity (expected to be 2-5 years) will maintain viable populations of native and desired non-native species.** Phase I includes public involvement for the amendment proposed to the Revised Forest Plan in the short term, to address the deficiencies identified in the October 1999 appeal decision. Phase I prework efforts, including scientist interviews, have been underway for several months. The Phase I amendment is anticipated to be completed in early 2001. The Forest anticipates Phase I to be a “non-significant amendment” to the Revised Forest Plan. This amendment will be in effect for a relatively short time period, and projects to be planned under this amendment would involve a small percentage of the Forest. The Phase I amendment will allow the forest to go forward with management actions until Phase II of the amendment process is complete.

Phase II will fully address the issues of species viability and diversity. This phase will get underway the winter of 2000, and will take two or more years to complete. The Forest will prepare an environmental analysis (e.g., environmental impact statement) to further examine longer-term site-specific management strategies for species diversity and viability across the Forest. The Phase II analysis will build on information developed by the Forest’s technical teams and policy group, and will determine the type of amendments to the Revised Forest Plan, Regional guides or Forest policy that are necessary. The completion of Phase II is anticipated to result in a detailed draft amendment, with the associated draft environmental impact statement (DEIS), followed by a comment period and preparation for the longer-term amendment and final environmental impact statement.

## ATTACHMENT 2

### Proposed Action

The National Forest Management Act (NFMA) and implementing regulations require that changes to management direction in forest plans shall be accomplished through the amendment process, and that this shall include “appropriate public notification and satisfactory completion of NEPA procedures.” 16 U.S.C 1604(i). 36 CFR 219.10(f). Several courts in different Federal circuits have recently cited this direction in arriving at consistent decisions. Southern Timber Purchasers Council vs. Alcock, 779 F.Supp. 1353; House vs. USFS, 974 F.Supp. 1022; Kentucky Heartwood vs. Worthington, 20 F.Supp. 2d, 1076.

Within this legal framework changes to existing management direction are proposed, as described below.

The proposed action of this amendment is to make specific necessary changes to management for habitats related to the Northern goshawk, American marten, species associated with snags and other sensitive species that would reduce the risk of loss of resident populations or negative impacts to their habitat on the Black Hills National Forest. The management direction changes will be in the form of treating specified guidelines as standards (Note: where conflicts exist between standards/guidelines, the more environmentally protective would be adhered to), additional management direction and monitoring requirements. Specific management direction is included for the Northern Goshawk, American marten and snags. This action amends the management direction established in the Revised Forest Plan, except where existing Forest Plan direction would provide more protection.

The amendment direction is based on scientific information. This incorporates measures to ensure species viability and diversity is maintained for the native and desired non-native species that occur on the Black Hills National Forest. The Phase I amendment would be in place for the period of time needed to complete the Phase II re-evaluation of the sufficiency of the Forest Plan in maintaining species viability and diversity.

The purpose and need for the Phase I assessment is to address identified Forest Plan deficiencies which must be corrected to assure that projects implemented during the time period it takes to complete the re-evaluation of species viability and diversity (expected to be 2-5 years) will maintain viable populations of native and desired non-native species.

The Forest proposes to amend the 1997 Revised Forest Plan in the following ways:

- Changes to management direction (standards and guidelines), as appropriate, to assure that options to preserve species viability continue for the interim period of two to five years, at which time this may be superseded by the Phase II direction. The interim direction contained in the October 12, 1999 appeal decision will be considered, along with additional new information, to assure that options for providing species viability are maintained over the next two to five years. Specifically, existing guidance may be

changed to provide for the needs of the northern goshawk, American marten, and individual species of snag-dependent birds and other wildlife.

- Removal of Guideline 3201, representing a minimum viability threshold.
- Modify Appendix L, to reflect new information.
- Minor changes to the list of Management Indicator Species (MIS), in particular adding one of more aquatic MIS.
- Corrections in habitat effectiveness guidelines for deer and elk due to modeling errors that were discovered after the release of the 1997 Revised Forest Plan.
- Correct existing reference to recreational mining, as discussed in the appeal decision.

## **Preliminary Alternatives**

### **Alternative 1**

No-Action - 1997 Revised Land and Resource Management Plan:

This is the No-Action alternative required by the National Environmental Policy Act and the National Forest Management Act. The Forest Service Handbook requires the Forest Service to study the No Action Alternative in detail, and to use it as a baseline for comparing the effect of alternatives (Forest Service Handbook 1909.15, 14.1). Though this alternative does not respond to the defined purpose and need it is included here as a baseline to the action alternatives.

Alternative 1 reflects the management direction as provided in the 1997 Forest Plan. Under this alternative, project analyses would continue to tier to the Forest Plan, with site-specific Biological Assessment/Biological Evaluation (BA/BE). Forest Plan Goals and Objectives/Standards and Guidelines would remain as is. Under this alternative, the Forest has a risk of not meeting legal obligations related to species viability and diversity as required by the National Forest Management Act (NFMA), as identified in the October 1999 appeal decision. The outputs from the Forest in timber would remain around the existing levels of 60 to 83.8 million board feet per year (depending upon funding levels) and livestock grazing use would not change. It is likely the Forest would experience increased litigation impacts, which would adversely impact the ability to implement management plans for forest resources over the next two to five years, until the re-analysis for species viability and diversity is completed.

The preliminary action alternatives are based upon the purpose and need, proposed action, and in response to the issues raised in the October 12, 1999 Appeal Decision. They are designed to provide options for management of the Black Hills National Forest, with more protective direction to ensure species viability and diversity for plant and animal species present.

### **Alternative 2**

Alternative 2 incorporates the “General interim management direction” (interim direction) measures provided in the October 12, 1999 Appeal Decision. The interim direction measures were designed to reduce the level of risk and uncertainty regarding health of the land, including sustainability of its watersheds, and of its plant and animal species, while maintaining management options during the interim period until the re-analysis is completed.

The outputs from the Forest in timber are anticipated to be less than that anticipated under Alternative 1, and livestock grazing use would change as needed, by allotment to address site specific concerns. These impacts would be expected over the next two to five years, until the re-analysis for species viability and diversity is completed.

1997 Revised Land and Resource Management Plan, with specified adjustments:

- Changes to management direction (standards and guidelines), as appropriate, to assure that options to preserve species viability continue for the interim period of two to five years, at which time this may be superseded by the Phase II direction. The interim direction contained in the October 12, 1999 appeal decision will be considered to assure that options for providing species viability are maintained over the next two to five years. Specifically, existing guidance may be changed to provide for the needs of the northern goshawk, American marten, and individual species of snag-dependent birds and other wildlife.

Guidelines identified as environmentally protective related to species viability will be treated as Standards until the Phase II effort is completed.

For the Northern goshawk the main changes and additions are: 1) Change the requirement for 180 acres of nest stands and replacement nest stands to be located within one half mile of known nest sites, where appropriate habitat exists; 2) Change the no new disturbance zone around active nest sites from the nest stand to one quarter mile from the stand; and 3) Design treatments to enhance prey species habitat by maintaining vegetative diversity and achieving a balance of structural stages within goshawk fledging habitat (approximately 420 acres around each nest site).

For the American marten the main changes in management direction and additions are: 1) Prevent further decrease in patch size of late-succession forests within areas currently occupied by martens or with high potential for occupancy (e.g. spruce stands and pine stands with a significant spruce component) and 2) Maintain a sufficient number and size of sound logs per acre to provide den sites, resting sites, and prey habitat within areas currently occupied by martens or with high potential for occupancy (e.g. spruce stands and pine stands with a significant spruce component).

For snag dependent species the main changes in management direction are: 1) Change snag requirement of 1.08 snags per acre across the planning unit for Ponderosa pine from at least 15 feet in height and ten inches to retain 2 hard snags per acre on south and east facing slopes and 4 hard snags per acre on north and west facing slopes at least 25 feet in height with diameters greater than 10 inches, 25 percent of which must be >20" or from the largest size class available, across the watershed; 2) For other forest types retain six snags per acre >10 inches; 3) Snags chosen for retention should represent the largest diameter class available; and 4) Identify roads to be closed at completion of projects to protect snags from removal, especially in areas where snag densities are low.

- Removal of Guideline 3201, representing a minimum viability threshold.
- Modify Appendix L, to reflect new information.
- Minor changes to the list of Management Indicator Species (MIS), particularly adding one of more aquatic MIS.
- Corrections in habitat effectiveness guidelines for deer and elk due to modeling errors discovered after release of the 1997 Revised Forest Plan.
- Correct existing reference to recreational mining, as discussed in the appeal decision.

### **Alternative 3**

Alternative 3 incorporates portions of the interim direction measures, along with information from scientists and recent research to refine the measures for habitat conditions found on the Black Hills National Forest. The interim direction measures were reviewed by scientists and adjustments were made to further reduce the level of risk and uncertainty regarding health of the land, including sustainability of its watersheds, and of its plant and animal species, while maintaining management options during the interim period until the re-analysis is completed.

The outputs from the Forest in timber are anticipated to be in the range of 30 to 60 million board feet per year, and livestock grazing use would change as needed, by allotment to address site-specific concerns. These impacts would be expected over the next two to five years, until the re-analysis for species viability and diversity is completed.

1997 Revised Land and Resource Management Plan, with specified adjustments:

- Changes to management direction (standards and guidelines), as appropriate, to assure that options to preserve species viability continue for the interim period of two to five years, at which time this may be superseded by the Phase II direction. The interim direction contained in the October 12, 1999 appeal decision will be considered, along with additional new information, to assure that options for providing species viability are maintained over the next two to five years. Specifically, existing guidance may be changed to provide for the needs of the northern goshawk, American marten, and individual species of snag-dependent birds and other wildlife.

Guidelines identified as environmentally protective related to species viability will be treated as Standards until the Phase II effort is completed.

For the Northern goshawk the main changes and additions are: 1) Change the requirement for 180 acres of nest stands and replacement nest stands to be located within one half mile of known nest sites; 2) Change the no new disturbance zone from the active nest stand to one quarter mile from the stand and change the timing restriction from March 1 through September 30 to March 1 through August 31; and 3) Design treatments to enhance prey species habitat by maintaining vegetative diversity and achieving a balance of structural stages in Ponderosa pine forested portion of the landscape

*(The main differences between Alternative 2 and 3 is that Alternative 2 applies the balance of structural stages to the post fledging area (i.e. 420 acres), while Alternative*

*3 applies the balance of structural stages across the watershed.)*

For the American marten the main changes in management direction and additions are:

1) Prevent further decrease in patch size of late-succession forests, including not building new roads, within areas currently occupied by martens or with high potential for occupancy (e.g. spruce stands and pine stands with a significant spruce component); and 2) Maintain a sufficient number and size of sound logs per acre to provide den sites, resting sites, and prey habitat within areas currently occupied by martens or with high potential for occupancy (e.g. spruce stands and pine stands with a significant spruce component).

*(Alternatives 2 and 3 are essentially the same in respect to marten.)*

For snag dependent species the main changes in management direction are: 1) Change snag requirement of 1.08 snags per acre across the planning unit for Ponderosa pine from at least 15 feet in height and ten inches to retain 2 hard snags per acre on south and east facing slopes and 4 hard snags per acre on north and west facing slopes at least 25 feet in height with diameters greater than 10 inches, 25 percent of which must be >20" or from the largest size class available, across the watershed; 2) For other forest types retain six snags per acre >10 inches; 3) Snags chosen for retention should represent the largest diameter class available; 4) Identify roads to be closed at completion of projects to protect snags from removal, especially in areas where snag densities are low; 5) Consider cavity nesting species when determining appropriate salvage treatments in fire burned and beetle outbreak areas; and 6) Prohibit the cutting of standing dead trees for fuel wood.

*(The main differences between Alternative 2 and 3 is that Alternative 3 includes additional restriction on the cutting of snags for fuel wood.*

- Removal of Guideline 3201, representing a minimum viability threshold.
- Modify Appendix L, to reflect new information.
- Minor changes to the list of Management Indicator Species (MIS), particularly adding one of more aquatic MIS, and removing inappropriate MIS such as the black bear, which do not occur in the Black Hills.
- Corrections in habitat effectiveness guidelines for deer and elk due to modeling errors discovered after release of the 1997 Revised Forest Plan.
- Correct existing reference to recreational mining, as discussed in the appeal decision.

### **ATTACHMENT 3 - Preliminary Information**

To estimate differences between the preliminary alternatives, the interdisciplinary team conducted a review of a sample of four timber sales. The sample areas were selected to represent the variety of issues and wildlife habitat concerns that were expressed in the October 12, 1999 Forest Plan Appeal Decision. In addition, a review of the range allotments was completed to assess management changes specific to grazing. It is assumed that the results are representative for the forest. Alternative 1 is used as the reference point for change. The review conducted was to assess how management would differ between the preliminary alternatives, over the interim period. The results of that review, and contrast of the alternatives, are summarized by resource area below.

#### **Soils**

In general Alternative 2 and Alternative 3 will have less potential impact to the soils than Alternative 1.

#### **Groundwater Recharge, Water Yield and Streamflow**

Alternative 2 will have less potential for water yield and Alternative 3 will have no change as compared to Alternative 1.

#### **Flooding and Floodplain**

No change with either Alternative 2 or Alternative 3 as compared with Alternative 1.

#### **Water Quality**

Alternative 2 and Alternative 3 will have less potential to affect water quality as compared to Alternative 1.

#### **Riparian Areas and Wetlands**

No change with either Alternative 2 or Alternative 3 as compared with Alternative 1.

#### **Wildlife**

With Alternative 1 there would be fewer big trees, less road construction and related road maintenance, and less diverse, multi-storied forest structure. Goshawk post fledging area (PFA) habitat would be managed for a balance of pine forest stand structural stages under Alternative 2 and in some cases an increase in specific harvest prescriptions and road activities could occur. But collectively Alternative 2 treated less acres than Alternative 1.

Some suitable marten habitat would have been harvested with Alternative 1. These areas were deferred under Alternatives 2 and 3 as well as considerations regarding habitat connectivity and travel corridors.

Snags and (green tree retention) is expected to benefit with Alternative 2 and more so with Alternative 3. Permanent protection of existing snags from firewood gathering would be implemented with Alternative 3. The balance of structural stages under Alternative 3 and to some degree with Alternative 2 will encourage larger diameter trees that could be available for snag recruitment.

Snail colonies identified in the 1993 Frest report would be protected from adverse impacts with Alternatives 2 and 3. However, in reality these colonies are being protected in current project level decisions. So in effect there is no change.

Critical bat habitat (maternity and hibernation roost sites) will be further protected with Alternatives 2 and 3. With guidelines implemented as standards and increased habitat buffers (under Alternative 3) the effect on bats will be positive.

Reptiles could see positive effects from a new standard (under Alternative 3) that avoids creating barriers from the hibernation site (known location) to suitable wetland breeding habitat.

Amphibians would benefit from increased coordination with State game agencies on release of predatory game fish in areas, on the forest, that are not stocked and that serve as amphibian breeding habitat.

Table #1 summarizes the relative effects anticipated.

TABLE #1

	Goshawk	Marten	Snags	Snails	Rep/Amphib	Bats	Roads
Alt 1							
Alt 2	P	P	P?	NC(P)	NC	P	NC
Alt 3	P?	P	P	NC(P)	P	P+	N

**NC-** No Change in effects in discernable between alternatives comparing these PSG timber sales.

**P** - A positive effect is anticipated as compared with Alternative 1.

**N** – A negative effect is anticipated as compared to Alternative 1.

**P?** – Unknown if a clear positive effect will occur. However a positive effect is expected based on results of stand modeling and/or recommendations from scientific experts.

**N?** – Unknown if a clear negative effect will occur. The relative amount of change from Alternative 1 is small.

‘+’ or ‘-’ are used to differentiate between levels of effects.

### Road Operations

Alternative 2 shows a decrease in miles of roadwork required to support timber haul. This change occurred in only one sale; the others were unchanged. Forest wide, this change will be

seen only in areas where there would be a significant decrease in timber cut. However in most areas of the forest, the existing transportation system provides access to multiple units. Total miles of roadwork would be similar with only slight increases or decreases in cutting areas. New construction would remain unchanged.

Alternative 3 shows an increase in roadwork needed to accommodate timber haul. Additional reconstruction and maintenance to the existing transportation system would be needed to access treatment areas. Some new construction would also be needed to access new areas.

Reconstruction and maintenance work on haul roads is needed to stabilize the road and prevent damage. In areas where these repairs would not be accomplished with timber sales, other means would be used to perform some of the work. This work is needed to meet standards and guidelines in the Forest Plan. The majority of the guidelines for roadwork are already considered and implemented in site-specific projects. Additional considerations for certain species will result in increased mitigations, including relocation of road segments to avoid sensitive sites. Very few of these mitigations were indicated in the project sample group, and the effects are expected to be minimal.

### **Travel Opportunities**

Neither alternative shows a change in travel management from the original Forest Plan direction. Changes occurred in only one of the project sample group areas, and those additional road closures are still well within the objectives for travel and access management in the original Forest Plan. One project area would restrict off-road travel within a management area, which currently allows off-road travel. However, this affected a small portion of one planning area. Some adjustments to travel can be expected from either Alternative 2 or 3, but neither would necessitate a change to the existing Motorized Travel Opportunities as presented in the original Forest Plan. Additional road closures may be expected under Alternatives 2 and 3, especially to protect snags from firewood cutting.

### **Impacts from Roadless Area Policy**

National Roadless Area Policy may become effective during the life of the Phase I amendment. Existing roadless areas on the Hills would see no change under any of the alternatives. The potential to evaluate new areas for roadless designation may be required in planning area analysis, but the effects under all alternatives would be the same.

### **Impacts from the New Roads Analysis Process**

Planning regulations to incorporate the Roads Analysis Process may become effective during the life of the Phase 1 amendment. Most of the requirements of the process are already incorporated in NEPA analysis required for individual planning areas. Additional documentation would be required under the process. The effects for all preliminary alternatives would be the same.

### **Range**

Under Alternative 1 there would be no change in effects from timber harvest. Alternative 2 is

anticipated to affect fewer acres than Alternative 1 and Alternative 3 and could result in less forage availability. Alternative 3 treats more acres than Alternative 1 with an increase in structural stage 1, but treatment methods shift toward uneven age management with an increase in group selections so effects to grazing management from goshawk, marten and snag species/timber management are expected to be minimal for the interim period.

Effects from roads: The total miles of road under Alternative 1, 2, and 3 does not change significantly and there should be minimal effects/impacts to range management.

### **Range Review Relative Effects by Alternative**

For Alternatives 1, 2, and 3 criteria will be designed at the project level for ongoing grazing activities and project level decisions will address site specific concerns for riparian and wetland areas including MIS and/or sensitive species issues. The Permittee Monitoring Guide developed by the Forest will be used to monitor representative areas as needed.

Under Alternative 1 the conservation of habitat at snail colonies identified in the Frest 1993 report is required. Livestock grazing management would remain unchanged. Under Alternative 2 protection of all known colonies of two sensitive snail species (Cockerell's striate disc and Cooper's Rocky Mountain snail) identified in the Frest 1993 report is required. Under Alternative 2 some site-specific mitigation will occur as/if needed at the project planning level to ensure protection of these species. Under Alternative 3 protection of all known colonies of seven snail species (including the two sensitive species) identified in the Frest 1993 and a subsequent report would be required. Under Alternative 3 site-specific mitigation will occur as/if needed at the project planning level to ensure protection of these species. There is only a slight difference between Alternatives 1, 2, and 3 in regard to changes in project level grazing management needed to ensure the protection of these snail species.

### **Noxious Weed:**

Under Alternative 1 the rate of noxious weed spread related to timber harvest and road activities would remain unchanged from the current rates of spread. Alternatives 2 and 3 may result in very slight decreases in noxious weed infestations from timber harvest. The amount of roadwork is not anticipated to vary significantly between Alternatives 1 and 2, so negligible change in noxious weed spread from roadwork would be expected. Under Alternative 3 weed spread may increase very slightly due to a very slight increase in road work associated with timber harvest. There appears to be only a slight difference between the three alternatives in regard to changes in amount of noxious weed infestation potential.

### **Fisheries**

The following is for short term impacts of erosion from ground disturbing activities: Based on the assumption that timber harvest has the potential to disturb vegetation and soils, which can lead to soil erosion and loss which may make their way to streams and negatively affecting fish habitat, it is concluded that the least amount of ground disturbance would have the least amount

of impacts to fisheries. According to the total difference of acres harvested as queried from the Project Sample Group, there is a 30% increase of acres harvested with Alternative 3, and a 17% decrease for Alternative 2 in comparison to Alternative 1. A relative conclusion is that there will be fewer impacts to fisheries with the implementation of Alternative 2 compared to Alternative 1, with Alternative 3 having the most amount of impact of the three alternatives.

Long-term impacts could be beneficial for fish from any alternative as ground cover returns to the disturbed areas, serving as a filtration and interception areas for sediments flow. Also, the removal of trees that intercept and remove water from the water table through evapotranspiration could possibly have the impact to increase water flows to streams and springs. This could have long-term benefits to the fisheries in the Black Hills.

Trees within a close proximity of streams provide shade and thermal regulating to the stream and riparian areas, which creates a micro-climate that has fewer temperature fluctuations than areas with thinner canopies and cover. There would be fewer acres disturbed near streams in Alternative 2 (22%) and 3 (16%) than compared to Alternative 1. The fewer acres disturbed in Alternative 3 and 2 compared to Alternative 1 could have a positive impact on stream resources, as mentioned above, as well as through the reduction of erosion and sediments that enter the streams and affect the fish and other organisms within the streams. Overall, Alternative 1 would have the most impacts to fisheries, followed by Alternative 3, with Alternative 2 having the fewest impacts to fisheries resources from acres of trees harvested around streams.

In general, there is an overall reduction of impacts from road reconstruction and maintenance to stream systems with Alternative 2 compared to Alternative 3 and 1, with the most disturbance from roads occurring in Alternative 3 compared to the other alternatives. When taking into account other Forest activities, such as annual road maintenance, the discrepancy between Alt. 2 and Alt. 3 would not be as large, as roads not improved with timber activities would be maintained by other means.

The volume of timber harvested should equate to the number of log trucks hauling timber to final destination. There is a markedly decrease in the amount of volume harvested with Alternative 2 from Alternative 1 (21% decrease). There is not much of an increase of timber volume (4%) under Alternative 3 compared to Alternative 1. Overall, Alternative 2 would have the least amount of impact to fisheries due to the reduction of heavy load traffic that would need to travel on roads, thus reducing the overall potential of sedimentation into streams, as compared to the other alternatives.

Overall, Alternative 2 would contribute the least amount of impacts to fisheries considering harvest acres around streams, amount of roads and stream crossings. Alternatives 1 and 3 each have areas of larger impacts and areas of fewer impacts, thus making it difficult to make an overall assessment between these two alternatives as they apply to fisheries resources from impacts created from timber harvest.

### **Botanical Resources**

Sensitive plant surveys are conducted at the project level. Project specific mitigation measures

are incorporated to avoid adverse impacts to sensitive plant populations. There are no anticipated differences of impacts between the preliminary alternatives for sensitive plants.

### **Heritage Resources**

Historic and prehistoric heritage resources dating between 12,000 years and 50 years ago are found throughout the Black Hills. A review of findings from intensive pedestrian surveys indicates that site density ranges roughly between 1 site per 66 acres and 1 site per 182 acres (Black Hills National Forest Cultural Resources Overview 1996:1a-3<sup>1</sup>). However, 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 Native Americans and other inhabitants of the Black Hills over time.

With regard to the Phase I analysis as displayed in the preliminary alternatives, increased amounts of ground disturbance will increase the potential for adverse effect to heritage resources. Site-specific avoidance or mitigation measures can be implemented in order to protect known heritage resources.

### **Land Adjustment Program**

A review of the preliminary alternatives concerning the land adjustment program for the Forest indicates there will be no change among the alternatives. Each land adjustment proposal is evaluated against the criteria in the Forest Plan. The preliminary alternatives would not have any affect on the criteria.

### **Fire and Fuels**

The preliminary alternatives would not vary greatly between alternatives in regards to fire and fuels related management. The fire and fuels programs should be able to be continued; however, site specific mitigation measures will need to be designed to ensure habitat elements are provided for Goshawk and Marten habitat. Many of the impacts can be mitigated through project design and implementation.

### **Mountain pine beetle risk based on Project Sample Groups**

If the Project Sample Groups are representative of the variation in the Black Hills National Forest, the effects of each alternative forest wide can be estimated by compiling the Project Sample Groups together. Table 2 presents the combined results of three of the four individual analyses. For all alternatives combined, the high risk category comprises less than 10 percent of the total acreage. Conversely, the low risk category makes up more than 50 percent of the total. The moderate category contains the remaining one-third of the acreage. As a whole, alternative 2 has the greatest acreage in the moderate to high categories. Therefore, mountain pine beetle population increase and ponderosa pine mortality would be predicted to be the highest under the

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<sup>1</sup> Black Hills National Forest Overview: Volume I-Synthetic Summary.

1996 Lance Rom, Tim Church, and Michele Church Editors. Ms. on file, Forest Supervisors Office, Black Hills National Forest, Custer, South Dakota.

proposed alternative 2 compared with alternatives 1 and 3. In contrast, the risk of beetle increase and pine mortality would be the least under alternative 3. However, as the variation between Project Sample Groups illustrates, there can be either relative increases or decreases in the amount of high risk area for a given planning unit depending on the current stand conditions and the desired future outcome.

**Table 2.** Summary of mountain pine beetle (MPB) risk by Forest Plan alternative for all Project Sample Groups (PSG) combined.

Alternative	MPB Risk	Total PSG acres	Percent of total
1	Low	14,890.1	57.3
	Moderate	8,870.6	34.1
	High	2,243.3	8.6
2	Low	14,656.0	56.4
	Moderate	8,978.2	34.5
	High	2,369.8	9.1
3	Low	15,115.8	58.1
	Moderate	8,816.0	33.9
	High	21,02.2	8.1

## Timber Management

### *Harvest unit changes in marten habitat*

No treatments can be expected in marten habitat in Alternatives 2 and 3 in order to not decrease patch size of late successional forests within areas currently occupied by martens, in areas of high potential for occupancy, or in areas connecting these habitats. While Alternative 1 provided adequate protection of marten habitat for some areas of the forest, in other areas it did not. Therefore, a slight reduction in harvest volume and acres treated will occur in some areas of the forest as a result of Alternatives 2 and 3. These areas will be primarily on the limestone plateau in the north central portion of the Hills where high potential occupancy sites and connectivity areas exist. Individual stands that meet the high potential occupancy and connectivity definition that exist scattered elsewhere throughout the Hills may also be affected. The Bearlodge District should not be affected, as it contains minimal to no high potential habitat or travel corridors (minimal to no spruce component).

Treatment types may change from intermediate harvests to selection treatments or precommercial treatments in marten habitats in order to provide sufficient number and size of sound logs per acre for denning and resting sites or for marten prey in Alternatives 2 and 3.

No change in logging systems occurred in the analysis of project sample group data. There may be instances, however, during project level analysis where whole tree harvesting systems may need to be restricted in order to provide sufficient amounts of down woody material.

### *Harvest unit changes within 1/2 mile of goshawk nest stands*

Active and alternate/replacement nest stands should not be affected by alternatives 2 and 3. During project sample group analysis, no changes in nest stand designation were made, because it may have been considered more environmentally protective to maintain nest stand designations further than 1/2 mile from the nest. These stands could have already possessed the appropriate nest stand attributes. Designating stands within the 1/2 mile radius that did not currently possess the appropriate attributes would not have ensured species viability in the short term.

Interim direction (Alternative 2) and the Southwest Guidelines (Alternative 3) both contain language that allows enhancement treatments in alternate/replacement nest stands. This does not change from Alternative 1. The main difference between Alternative 1 and Alternatives 2 and 3 is that enhancement activities are directed towards alternate and replacement nest stands. Active nest stands should not be treated in Alternatives 2 and 3.

#### *Harvest unit changes within PFA's*

To increase structural diversity and to maintain or increase tree size classes within PFA's (where active or historically active nests occur), additional treatments are necessary in Alternatives 2 and 3. Treatment types will change from traditional shelterwood and even-aged methods (shelterwood seed cuts, seed tree cuts, and overstory removals) to uneven-aged prescriptions and commercial thinning (from below or from all diameter classes). Uneven-aged prescriptions will involve group selections to attain the younger structural stage classes. Commercial and precommercial thinning will involve thinning from below to improve growth to attain a larger structural stage classes.

#### *Harvest unit changes within goshawk foraging areas*

To increase structural diversity and to maintain or increase tree size classes within foraging areas, additional treatments are necessary for Alternative 3. Treatment types change from traditional shelterwood and even-aged methods (shelterwood seed cuts, seed tree cuts, and overstory removals) to uneven-aged prescriptions and commercial thinning (from below and from all diameter classes). Uneven-aged prescriptions will involve group selections to attain the younger structural stage classes. Commercial and precommercial thinning will involve thinning from below to improve growth to attain larger structural stage classes and thinning from all diameter classes to maintain certain structural stage classes.

In simulations conducted for the forest wide analysis, treatment acres (for sales in the five-year action plan) for commercial harvest treatments increased by about 30,000 acres a year. There is potential for increase in the amount of precommercial and POL thinning that will occur in the forest, particularly in watersheds that contain a large amount of pole timber and are short on the larger diameter classes. This could also occur in watersheds where shelterwood seed cuts were the predominant treatment during the last entry. Thinning treatments can coincide with fire protection treatments to be conducted around private land or near structures.

In simulations conducted for the forest wide analysis, the volume range proposed for Alternative 3 (30-60 MMBF) falls at the midpoint of simulated volumes for Alternative 1 (45 MMBF). Volume distribution, however, will not be equal across sales in the five-year action plan. Sales in the northern Hills are predicted to produce more commercial volume than sales in the southern Hills. POL distribution should be relatively even across sales in the five-year action plan.

Application of Alternative 3 would result in additional time to analyze, prepare, and harvest approximately the same amount of volume as predicted in Alternative 1.

Project sample group data indicated that treatments in Alternative 3 slightly modified logging systems. A slight increase in cable and mechanical whole tree harvest methods were noted. Additional economic analysis would need to be performed at the project level in order to ensure economic viability of these treatments, particularly cable treatments. The increase in mechanical whole tree systems would probably depend on the distribution of treatment types across the landscape.

#### *Harvest unit changes within habitats of other species of concern*

No change is expected from Alternative 1 for either Alternative 2 or 3. Adequate protection was already applied in Alternative 1. No additional measures were necessary for Alternatives 2 or 3.

#### *Effect of green tree retention rates on volume and harvest methods*

For Alternative 2, watersheds with a low number of trees per acre in the larger diameter classes may see significant volume reductions. Variations will occur depending on past management activities and existing site-specific conditions. Watersheds that have more trees in the larger diameter classes (most likely in the northern Hills, limestone plateau and on the Bearlodge district) may have a slight volume reduction. Reductions would occur in these areas to provide for continual recruitment into the larger diameter classes. These areas (as indicated by project sample groups) lacked trees in pole and small saw timber classes to provide recruitment into the larger classes over time.

For Alternative 3 the same treatment, volume, and acreage effects from maintaining the goshawk foraging area balance will exist. These treatments are designed to maintain 3-5 large diameter trees per acre across the landscape.

### **Differences from the Forest Plan FEIS for Timber-Related Items**

#### *Projected change in basal areas removed by treatment type where green trees are left for retention.*

For Alternative 2 a reduction of approximately eight square feet of basal area per acre occurred in commercial thins. Seed cuts and overstory removals were eliminated from treatment (leaving 20-30 square feet per acre on site) or were reduced by 2 square feet per acre of basal area.

For Alternative 3 a reduction of approximately 10-25 square feet per acre of basal area occurred in commercial thins. Shelterwood seed cuts and overstory removals were eliminated from treatment (leaving 5-13 square feet per acre on site). Selection (group selection) treatments removed 36-60 square feet per acre of basal area. Basal area will be removed in groups where selection treatments are performed; basal area removal will not be evenly distributed throughout the entire site.

#### *Projected acreage change in white spruce cover type.*

No change is expected from Alternative 1 for either Alternative 2 or 3.

*Projected acreage change in pine cover type.*

No change is expected from Alternative 1 for either Alternative 2 or 3.

*Projected acreage change in mixed spruce/pine cover type.*

No change is expected from Alternative 1 for either Alternative 2 or 3.

*Projected acreage change in ponderosa pine mature and late successional structural stages. Projected acreage change of ponderosa pine structural stages 3A, 3B, and 3C. Projected acreage change of ponderosa pine structural stages 4A, 4B, and 4C.*

For Alternative 2 the original 10-year projections of an increase in 3A and 4A in the FEIS will change to a decrease. The original 10-year projections of a decrease in structural stage 4B in the FEIS will change to an increase. The original 10-year projections of a slight decrease in structural stage 4C in the FEIS will change to an increase. No change in structural stage 5 is expected.

These changes reflect that a trend towards mature structural stages for the balance of structural stages for the PFA. This alternative also reflects that additional stands would not have some treatments performed to meet green tree retention requirements (overstory removals, commercial thins, shelterwood seed cuts and seed tree cuts reduced).

For Alternative 3 the original 10-year projections of an increase in 3A, 3B, 3C, and 4A in the FEIS will change to a decrease. The original 10-year projections of a decrease in structural stage 4B in the FEIS will change to an increase in 4B. The original 10-year projections of a slight decrease in structural stage 4C in the FEIS will remain the same. No change in structural stage 5 is expected.

These changes reflect that a trend towards mature structural stages for the balance of structural stages for the foraging area. The decline in 3A, 3B, 3C, and 4A indicates that some stands moved to the earlier or later structural stages to maintain the foraging area balance. The decline in 4C in Alternative 3 reflects that simulations maintained between 40 and 70% canopy closure as described in the Phase I Goshawk Analysis document. During project level analysis, however, all stands greater than 70% canopy closure may not be proposed for treatment. This is because timing considerations were not taken into account during goshawk simulations; all stands that hit approximately 70% canopy closure were treated to move the stand back to approximately 40% canopy closure. In reality, all stands at 70% canopy closure should not be treated in order to provide a range of canopy closures across the landscape. The higher canopy closures would retain the option of providing nesting habitat for unknown goshawk territories that may occur. Species other than the goshawk or its prey may also benefit by maintaining stands of higher canopy closure. Therefore, the reduction in structural stage 4C may not occur as depicted in project sample group data.

*Projected acreage change in structural stage mix in PFA's.*

A movement towards attaining the balance of structural stages was gained in Alternatives 2 and 3. The balance needed was not attained in the time period of the Phase 1 Amendment. An increase in structural stage 2 may not be fully represented, as some of structural stage 1 may

represent structural stage 2. Structural stage definitions were altered to determine the balance of structural stages. The altered structural stage 1 includes trees in the 0-1 inch class, while the Regional structural stage 1 does not. Therefore, the acreage of structural stage 1 may also include some structural stage 2.

*Projected acreage change in structural stage mixes in foraging areas represented by project sample group sales.*

For Alternatives 3 an overall gain in the earlier and later successional stages is achieved, specifically in structural stages 1 and 4B. The gain in structural stage 1 actually represents a gain in the 1 and 2 Regional classes, as described for the PFA summary. This is consistent with the definition of the balance of structural stages, which show 20% of the balance should be in the 1 and 2 class (altered structural stage definition), while 60% should be in the mature classes (altered structural stage definition) with a minimum canopy closure of 40%. A decline in structural stage 4C was shown, as simulations for the foraging area balance maintained between 40 and 70% canopy closure. During project level analysis, all stands greater than 70% canopy closure may not be proposed for treatment. This is because timing considerations were not taken into account during goshawk simulations; all stands that hit approximately 70% canopy closure were treated to move the stand back to approximately 40% canopy closure. In reality, all stands at 70% canopy closure should not be treated in order to provide a range of canopy closures across the landscape. The higher canopy closures would retain the option of providing nesting habitat for unknown goshawk territories that may occur. Species other than the goshawk or its prey may also benefit by maintaining stands of higher canopy closure. Therefore, the reduction in structural stage 4C may not occur as depicted in project sample group data.

While the designated balance was not attained at the first entry, some movement towards attaining that balance occurred. It is difficult to assess what percent was achieved, since project sample groups focused on sale boundaries, while goshawk analysis focused on watershed boundaries.

*Projected acreage change in conifer mature and late successional structural stages.*

See structural stage summary for ponderosa pine listed above. For white spruce, a decrease in 3A and 4A is noted while an increase in 3B, 4B, and 4C is noted. Structural stages 1 and 2 remain constant or will decline slightly. This would reflect a decrease in treatments in white spruce stands maintained for high potential for marten occupancy or in marten travel corridors. Successional processes will continue to occur in these stands, moving them to a higher density and canopy closure of white spruce.

*Projected acreage change in conifer structural stage 5 or late successional designations.*

No change is expected from Alternative 1 for either Alternative 2 or 3. No changes in late successional designation were proposed in project sample groups for any alternative.

*Projected acreage change in enhancement treatments in late successional stands.*

No change is expected from Alternative 1 for either Alternative 2 or 3. No enhancement treatments were proposed in project sample group sales for any alternative.

*Projected acreage change in selection treatments.*

Selection treatments increased slightly in Alternative 2 over all the project sample group sales. Selection treatments show a large increase over all the project sample group sales and in the forest wide analysis for Alternative 3. Overall, an increase in selection treatments will occur in ponderosa pine. The increase in selection treatments will be group selections to achieve the earlier structural stage classes for ponderosa pine in order to attain the balance of structural stages for northern goshawk. A decrease in selection treatments in white spruce stands will occur in order to maintain sites of high potential for marten occupancy and for marten travel corridors.

*Projected acreage change in hardwood restoration.*

No change is expected from Alternative 1 for either Alternative 2 or 3. Adequate protection was provided for other species of concern in Alternative 1. No additional protection measures were needed for alternatives 2 or 3.

*Projected acreage change in other treatment types.*

In Alternative 2 a slight reduction in all treatment types in project sample groups occurs overall. Traditional even-aged and shelterwood treatments (shelterwood seed cuts and seed tree cuts) decline slightly, while overstory removals decrease dramatically. This is primarily because of green tree retention requirements or conversion to other treatment types to meet the balance of structural stages for the PFA. Selection treatments also increase in ponderosa pine as described above due to providing goshawk balance of structural stages in PFA's. Selection treatments decline for white spruce stands due to protection of marten habitat. Commercial thinning declined by about half in this alternative, due to protection of marten habitat, conversions to other treatment types for goshawk balance of structural stages in PFA's, and for green tree retention requirements. A dramatic increase in precommercial thinning occurred. A slight reduction in conifer removal from hardwoods occurred due to protection of marten habitat.

An increase in all treatment types (in project sample groups) occurs in alternative 3. Traditional even-aged and shelterwood treatments (shelterwood seed cuts, seed tree cuts, and overstory removals) are near non-existent. These treatment types were switched to other treatment types in order to provide a balance of structural stages across the foraging area for northern goshawk. A dramatic increase in precommercial thinning occurs in this alternative. Commercial thinning in project sample groups declines somewhat for the same reasons described in Alternative 2. Simulations conducted for the forest wide analysis, however, indicate that the majority of treatments conducted to maintain or to improve the balance of structural stages will be precommercial, POL, and commercial thinning. This indicates a dramatic increase in the amounts of these treatments as compared to Alternative 1 in the 1997 FEIS. A slight reduction in conifer removal from hardwoods occurred due to protection of marten habitat.



# BLACK HILLS NATIONAL FOREST Forest Map





