

# *Canyon/Nest Project*

## *Decision Notice/FONSI and*

### *Final Environmental Assessment*



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*Black Hills National Forest – Hell Canyon Ranger District*  
*Custer County, SD*  
*June 2002*



# CANYON/NEST FINAL EA

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# CANYON/NEST PROJECT FINAL ENVIRONMENTAL ASSESSMENT

Custer County, South Dakota  
April 2002

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## **Abstract:**

This Environmental Assessment (EA) discusses alternatives considered for vegetation and transportation management within the Canyon/Nest Project Area. Elements of the purpose and need for action include: thinning overstocked stands, restoring meadows, restoring aspen communities, increasing grass/forb structural stage within forested communities, removing commercial timber, and implementing needed transportation system. Mitigation measures and monitoring items for wildlife, snags, water, soil, and other resources are also considered. The Canyon/Nest Project follows direction contained within the 1997 Land and Resource Management Plan for the Black Hills, as amended. Three alternatives were considered in this analysis, representing a range of treatment levels for the area. The Forest Service has identified Alternative B as preferred. Alternative B includes a project-specific amendment to the Forest Plan, which reduces the elk winter Habitat Effectiveness value from the existing 34 percent to 20 percent. This alternative fully meets the purpose and need for action while protecting resources consistent with Forest Plan Standards and Guidelines, as amended.

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# CHAPTER 1

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## PURPOSE AND NEED



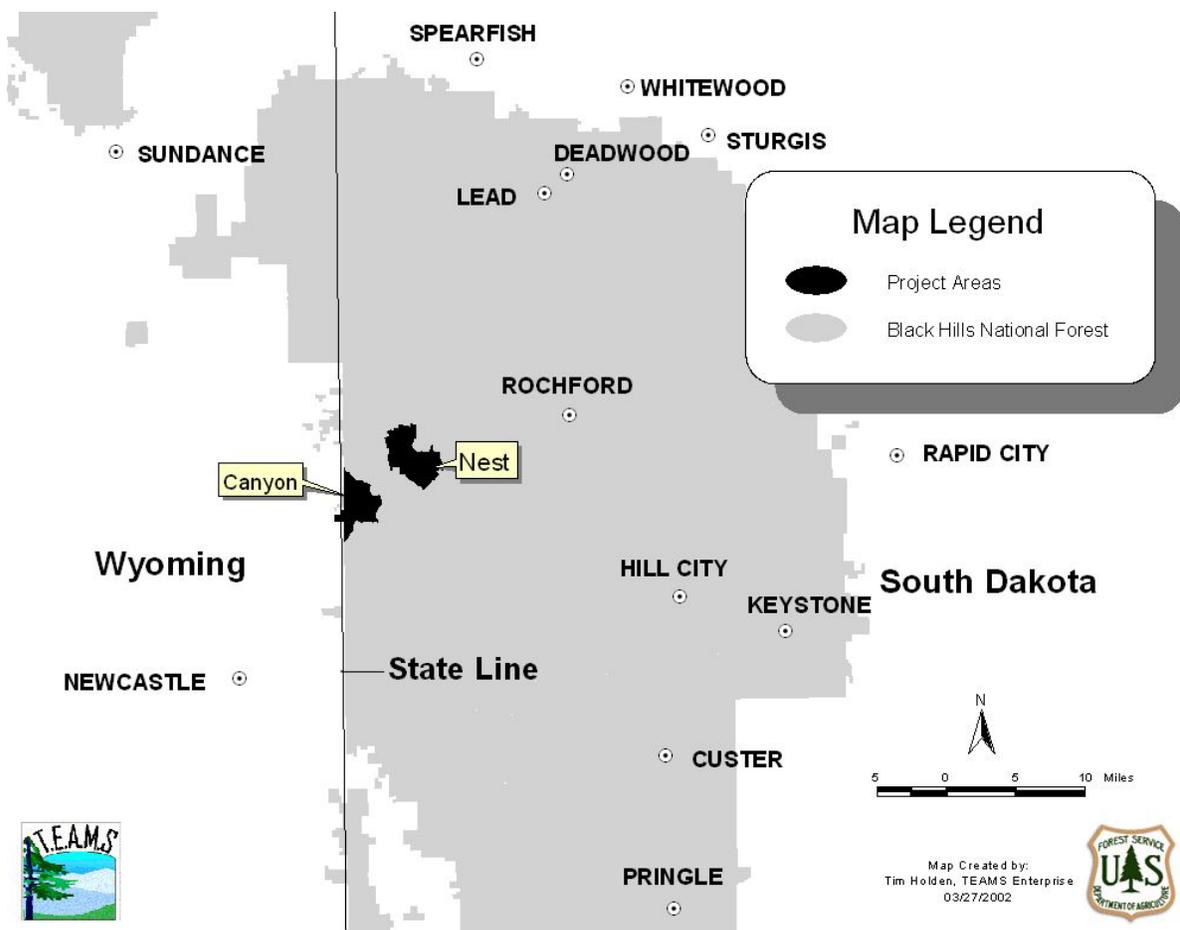


## Chapter 1 – Purpose of and Need for the Proposed Action

### 1.1 Introduction

This Environmental Assessment (EA) discloses the expected direct, indirect, short- and long-term, and cumulative environmental impacts of a proposed action and alternative actions for vegetation and road management, and associated activities on the Hell Canyon Ranger District of the Black Hills National Forest (BHNF) in Pennington County, South Dakota and Weston County, Wyoming. The Canyon/Nest project contains two separated blocks of BHNF, primarily in South Dakota. They are called Canyon and Nest. They are located about 13 and 18 air miles northeast of Newcastle, WY, and about 27 and 26 air miles northwest of Custer, SD. See Figure 1-1 for project locations. A small portion of Canyon extends into the state of Wyoming. This project would be expected to begin implementation in late 2002 or early 2003. This EA is not a decision document; it discloses the expected impacts if the proposed action or an alternative to that action were to be implemented. After public review of this document, the Forest Supervisor will document their decision in a Decision Notice.

Figure 1-1: Canyon/Nest Project Vicinity Map



Development of this document is based on direction contained in the National Forest Management Act (NFMA), the National Environmental Policy Act (NEPA) and the revised 1997 Land and Resource Management Plan, as amended, and associated Final Environmental Impact Statement for the Black Hills National Forest (hereafter referred to as the Forest Plan). The NFMA planning for this project was initiated in the fall of 1998. Following public review and comment on this EA, a decision will be made.

All numerical values presented in this document are based on the best available information. However, minor variations from these values are likely to occur in implementation due to: 1) changes in on-the-ground conditions, 2) use of more accurate measuring techniques, or 3) the occurrence of unforeseen obstacles. Therefore, the values presented in this document are considered to be approximations. Minor variations occurring at implementation will be documented.

### 1.1.1 Proposed Action Summary

The Proposed Action would silviculturally treat vegetation on about 2,660 acres in the Canyon portion and about 2,730 acres in the Nest portion of the project area. About 10.4 Million board feet (MMBF) of timber (5.3 MMBF in Canyon & 5.1 MMBF in Nest) would be removed primarily using ground based yarding systems, with a small percentage of Canyon requiring a sky-line yarding system. Various silvicultural prescriptions would be used to manage the vegetation towards desired conditions.

In addition to the vegetation management, the existing transportation system would change substantially within the project area. Currently the open road density is 4.1 miles per section in Canyon and 2.9 miles per section in Nest. This is derived from 26.3 miles of open National Forest System Road (FSR) and 39 miles of open unclassified road within the project area. The Proposed Action would convert many of the unclassified roads to FSR and would keep them open or close them, depending upon resource protection needs. Other unclassified roads would be decommissioned. In order to successfully manage all parts of the project area about 5.8 miles of FSR and 3.0 miles of temporary road would need to be constructed.

The Proposed Action would also implement an Area Closure containing the entire project area. This Area Closure would restrict wheeled vehicle travel by the public to roads specifically posted open. No off-road wheeled vehicle travel would be allowed. All closed roads would remain on the FSR inventory and be available for future management actions. These activities would result in an open road density of 2.2 miles per section in Canyon and 2.1 miles per section in Nest.

**Note** – No private roads were used in the open road density calculations.

A Project-specific Forest Plan Amendment would be part of the Decision, to allow reduction in big game habitat quality in the Nest portion of the project area.

## 1.2 Purpose and Need

**Why Here?** Areas that are proposed for vegetation treatment: have a moderate to high susceptibility risk to mountain pine beetle (due to over dense stand conditions); are historic meadows being encroached by conifers; needs to have aspen revitalized; would help move the percentage of grass/forb structural stage from the existing 3.6 percent towards the Forest Plan desired 5 percent; would help attain the Allowable Sale Quantity (ASQ); or a combination of these. Conducting vegetation management that thins overstocked stands not only reduces the potential for loss from mountain pine beetle, improves individual tree quality, but also reduces the potential for stand replacing, high intensity, wildfire events that could substantially change the vegetative composition across the project areas. The existing transportation system will not provide adequate current or future access within the project area. However, the existing transportation system is also reducing the habitat effectiveness rating for deer and elk beyond Forest Plan Standards.

**Why Now?** A recently completed Roads Analysis of the Canyon and Nest project areas has revealed several things; many open roads exist that are not part of the National Forest System roads (FSR) and need to be converted to FSR, reclassified as trails, or decommissioned (FSM – 7700); open road density is substantially higher than was previously believed to exist; there are sections of FSR that cross private property that either need to be relocated onto National Forest System land, or an easement needs to be acquired; and additional roads are needed in areas to provide economical management of the vegetation.

The Black Hills National Forest has been in a drought condition for the last three years. Several large, uncharacteristic stand replacing wildfires have occurred in the last two years as a result of extreme weather conditions, overstocked stand conditions, and contiguous vegetative canopy across large areas. Treatment of over-dense stands could help reduce the potential of additional uncharacteristic stand replacing events under normal weather conditions. Restoration of aspen clones would also help reduce the risk of stand replacing events and provide beneficial wildlife habitat, which could be lost if not treated in the near future. Treatment of these stands will help attain meeting the Forest ASQ. These actions are needed to reduce the risk to loss of capital investments (existing plantations, spring developments, and various other investments), and Forest resources (soil productivity, recreation opportunities, visual quality, and wildlife habitat).

### 1.3 Objectives of the Action (with Rationale and Measurement Method)

#### 1.3.1 Objective #1 – Thin Overstocked Stands (FP Guideline 2409(b)):

- a. To reduce risk of susceptibility to mountain pine beetle;
- b. To promote individual tree quality and vigor;
- c. To reduce risk of uncharacteristic stand replacing wildfire under normal weather conditions;
- ❖ Percentage of project area in overstocked condition will be used to measure success.

#### 1.3.2 Objective #2 – Restore Meadows:

- a. To move project areas towards meeting Forest Plan Objective 205 – Restore grassland communities across the Forest by 10 percent over 1995 conditions...;
- b. To improve wildlife habitat and vegetative diversity.
- ❖ Number of acres of meadow communities within the project area will be used to measure success.

#### 1.3.3 Objective #3 – Restore Aspen Communities:

- a. To move project areas towards meeting Forest Plan Objective 201 – Restore historic hardwood communities...;
- b. To improve wildlife habitat and vegetative diversity;
- c. To protect the genetic diversity of the individual aspen clones;
- d. To reduce the risk of uncharacteristic stand replacing wildfire events under normal weather conditions;
- ❖ Number of acres in hardwood communities within the project area will be used to measure success.

#### 1.3.4 Objective #4 – Increase Grass/Forb Structural Stage in Forested Areas:

- a. To move project areas towards meeting Forest Plan Objective 209 – Manage at least 5 percent of a timber harvest project area for the grass/forb structural stage...;
- b. To improve foraging habitat throughout the project areas;
- ❖ Percentage of grass/forb structural stage within forested areas within the project area will be used to measure success.

#### 1.3.5 Objective #5 – Remove Commercial Timber:

- a. To promote diameter growth of residual trees;
- b. To provide wood products to the area economy;
- c. To reduce risk of uncharacteristic stand replacing wildfire under normal weather conditions;
- ❖ Volume of commercial timber generated will be used to measure success.

#### 1.3.6 Objective #6 – Implement Needed Transportation System:

- a. To provide for current and future travel management objectives;
- b. To ensure and provide safe access for forest users and managers;
- c. To provide for the most efficient and economical access into the project areas, while also providing protection of sensitive areas;
- d. To move the project areas towards meeting or exceeding Forest Plan Guideline (5.1-3201) – Habitat effectiveness ratings for deer and elk;

- e. To move the project areas towards meeting the Roads Analysis Recommendations (March 2002);
- f. To reduce road maintenance costs.
- ❖ Open road density, total road density (open and closed roads), and habitat effectiveness ratings for deer and elk will be used to measure success.

## **1.4 Scope of This Environmental Analysis**

### **1.4.1 History of the Planning and Scoping Process**

#### **1.4.1.1 Background**

The Record of Decision for the Black Hills National Forest 1997 Revised Land and Resource Management Plan (1997 Revised Forest Plan) and accompanying Final Environmental Impact Statement (1996 FEIS) was signed on June 24, 1997 by then Regional Forester Elizabeth Estill. The 1997 Revised Forest Plan and 1996 FEIS provide a programmatic framework for decision-making on the Forest for the next 10-15 years.

A number of groups and individuals appealed the Record of Decision for the 1997 Revised Forest Plan. On October 12, 1999, Deputy Chief James R. Furnish, the reviewing Officer for the Chief of the Forest Service, issued his decision (hereafter referred to as the 1999 Appeal Decision) on three of the appeals. His decision affirmed the Regional Forester's June 24, 1997 decision in part, with instruction for further actions concerning the issues of species viability and diversity, and mining.

In November 1999, a lawsuit was filed against the Forest Service on the implementation of the Veteran Salvage Timber Sale in the Forbes Gulch area of the Beaver Park Roadless Area, within the Black Hills National Forest, challenging certain deficiencies identified in the 1999 Appeal Decision. Settlement negotiations began in November 1999 and were finalized in September 2000.

In order to address the deficiencies identified in the 1999 Appeal Decision, the Forest will amend the 1997 Revised Forest Plan in two phases. The Phase I Amendment, which was signed on May 18, 2001, amends the Forest Plan for the short term (two to five years) until the Phase II process is complete. This amendment revised some of the management objectives, standards, and guidelines in the Forest Plan. The Phase II process will re-evaluate the sufficiency of the 1997 Revised Forest Plan in relation to species viability and diversity. A Decision Notice for the Canyon and Nest Project Areas was signed 9-30-99 and legal notice 10-15-99. This Decision was withdrawn on January 12, 2000 due to questions concerning the sufficiency of documentation in the project record.

This EA documents the original analysis for the Canyon and Nest Project Areas, and the changes to that analysis resulting from the 1999 Appeal Decision, and Phase I Amendment.

#### **1.4.1.2 Public Involvement**

Public involvement was extensive throughout the planning and analysis process leading to this document. The NFMA planning for this project was initiated in the fall of 1998 with the original project planning effort. A scoping package describing the vegetation in the project area was mailed to 149 individuals and/or groups in November 1998. In response, written comments were received from 11 interested parties (Planning Record, Volume 1, Scoping).

In addition to public announcements in the *Rapid City Journal* (July 30, 1999), a pre-decisional (DRAFT) EA was distributed to 56 individuals and/or groups for a 30-day public review and comment period in July 1999. Another 53 letters were sent to individuals and/or groups announcing that the EA was available for review. Six letters were received commenting on the EA.

In addition to public announcements in the *Rapid City Journal* (October 15, 1999), a Decision Notice (DN), Finding of No Significant Impacts (FONSI), and Final EA were distributed to 33 individuals and/or groups in October of 1999. However, in January of 2000 the Forest Supervisor withdrew that decision due to questions about the sufficiency of documentation in the project record, with intentions of re-issuing a decision after further Forest review.

Using comments received from the original planning effort and new direction from the Forest Plan, this EA has been prepared and will be distributed to about 60 individuals and/or groups for a 30-day public review and comment period; another 80 letters will be sent to individuals and/or groups announcing its availability. Based upon the information disclosed in this EA, associated planning record, and public feedback, the Forest Supervisor will make a decision. That decision will be documented in a Decision Notice and FONSI.

#### **1.4.2 Relevant Planning Documents**

##### **1.4.2.2 Black Hills National Forest Land and Resource Management Plan (Forest Plan)**

The Black Hills National Forest is implementing the 1997 Revised Land and Resource Management Plan, as amended, and associated Final Environmental Impact Statement for the Black Hills National Forest (hereafter referred to as the Forest Plan) as required by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA, P.L. 93-378). This EA is tiered to the Forest Plan. Information from the Forest Plan has been referenced and incorporated into this document. The Forest Plan established long-term management direction for the Forest and contains management standards to achieve Forest-wide multiple-use goals and objectives. Management areas were also established based on similar management themes. Each management area has specific goals, objectives, and standards that supplement Forest-wide standards listed in Chapter Three of the Forest Plan. During the course of this analysis the Interdisciplinary Team reviewed and utilized where appropriate, the Phase I Amendment.

The Canyon/Nest Project Area is entirely located within Management Area 5.1 (Resource Production Emphasis), described in the Forest Plan on pages III-65 through III-69.

##### **1.4.2.2.1 Management Area 5.1 Theme (Forest Plan, page III-65)**

These areas are managed for wood products, 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.

##### **1.4.2.2.2 Management Area Desired Future Condition**

Management direction emphasizes production of forest products and protection of management investments, while providing forage production, visual quality, wildlife habitat, recreational opportunities, as well as other goods and services. Some motorized vehicle use may be restricted for management area purposes.

##### **1.4.2.3 Canyon and Nest Environmental Assessment (1999)**

Because this area was previously analyzed with the completion of an EA and Decision Notice, an old file exists. Portion of this analysis were used for the 2002 document. Specifically, those resource areas that were not modified by implementation of the Phase I Amendment or have not likely changed since the original analysis. The file titled "Analysis and Evaluation of the Canyon/Nest Project Area" (hereafter referred to as the Project File) is also referenced. The Project File documents the original Interdisciplinary Team's (IDT) analysis of this project area.

#### 1.4.2.4 Phase I Amendment

The Phase I Forest Plan Amendment added new standards, changed some guidelines to standards, treated some guidelines as standards, and revised others. Resource specialists assigned to the Canyon/Nest IDT have reviewed their analysis for this EA for consistency with the Phase I Amendment. Their review is documented here, and is included in the Planning Record. Based on the consistency review, the original Canyon and Nest analysis adhered to most of the changes that resulted from the Phase I Amendment. However, changes regarding management of goshawk, marten, and snag habitat were substantial. These changes required re-analysis of the project for these habitat components, and the re-analysis is included in this environmental assessment.

#### 1.4.2.5 Canyon/Nest Roads Analysis (March 2002)

A roads analysis was completed for both Canyon and Nest Areas of the project. That analysis follows the six-step process identified in national guidance document *Roads Analysis: Informing Decisions About Managing the National Forest Transportation System* (USDA Forest Service, August 1999, Misc. Report FS-643). This document is referenced and is incorporated as part of the Planning Record. However, the roads analysis documented the existing condition of National Forest System Roads (FSR) using invalidated data. Since that time, an updated, validated roads layer was made available and was the primary roads information used for this EA. As a result of this validated data being available, road density and other numbers do not match what was documented in the roads analysis.

#### 1.4.3 Issues

Scoping and public involvement are used to identify issues about the effects of the proposed action. An initial scoping was conducted in November of 1998. Additional public comments came from the 1999 EA, and appeal of the original Decision Notice and FONSI. Chapter 4 contains the list of individuals, groups, organizations, and agencies notified of the proposed projects and invited to comment. A copy of scoping letters and persons who commented is available in the Planning Record.

Comments identified during scoping were evaluated against the following criteria to determine whether or not the concern would be a major factor in the analysis process.

- ◆ Has the concern been addressed in a previous site-specific analysis, such as in a previous Environmental Impact Statement or through legislative action?
- ◆ Is the concern relevant to and within the scope of the decision being made and does it pertain directly to the Proposed Action?
- ◆ Can the concern be resolved through mitigation (avoiding, minimizing, rectifying, reducing or eliminating, or compensating for the proposed impact) in all alternatives?
- ◆ Can the issue be resolved through project design in all alternatives?

An issue is an unresolved conflict concerning a physical, biological, social, or economic resource. An issue is not an activity; instead, the projected effects of the activity create the issue. The Interdisciplinary Team reviewed these issues and categorized into three groups:

1. Issues significant to the analysis (Significant Issues)
2. Issues not considered significant, but still important to track (Tracking Issues)
3. Issues that could be eliminated from detailed analysis.

Additionally, an indicator for each issue is used to allow comparison of effects among the alternatives. Each issue/indicator will be listed in the alternative comparison table at the end of Chapter 2, and will also be discussed in detail in the resource section noted after the identification of the issue indicator.

### 1.4.3.1 Significant Issues

Significant issues provide the focus for the analysis. Significant issues are those that influence the decision, suggest new alternatives, or require different actions and mitigation. The following issues were determined to be significant and within the scope of the project decision as prescribed in 40 CFR 1502.2. These issues are studied in detail and are addressed through the proposed action, alternatives to the proposed action, mitigation measures, and design criteria. As a result of effects on resources by the proposed action, the following are significant issues relevant to this analysis.

#### 1.4.3.1.1 Sensitive and (MIS) Management Indicator Species (Wildlife)

- A. The Phase I Amendment was initiated to help protect various wildlife species. However, there could be a range of how the project would meet the intent of the new standards or guidelines (minimally to excessively). It was felt by the (IDT) Interdisciplinary Team that the proposed action met the intent of Standard 3215 for Marten habitat, but a wider forested connectivity corridor would improve future options.
- B. There was also a concern that habitat quality and quantity for two MIS species was changing too much as a result of the proposed action.
- C. There are both public and Forest Service concerns about big game habitat needs, including cover, forage, browse, and open road densities. Alternative B would require a Project-specific Forest Plan Amendment to reduce the elk winter HE value, due to reduction of cover.
- D. Alternative B would require a Project-specific Forest Plan Amendment to reduce the elk winter HE value, due to reduction of cover.

- ◆ **Indicator:** Quality of forested connectivity corridor for marten (*Wildlife Section*)
- ◆ **Indicator:** Habitat Capability (HABCAP) values for brown creeper and golden-crowned kinglet (*Wildlife Section*)
- ◆ **Indicator:** Expected Habitat Effectiveness (HE) Values (*Wildlife Section*)

### 1.4.3.2 Tracking Issues

Tracking issues are issues that were not considered to be significant, but were determined to be important to track. Tracking issues are generally of high interest or concern to the public or are necessary to understand the full extent of the alternatives. Tracking issues provide additional information for the analysis but do not drive the formulation of alternatives. Project design features or mitigation measures for each alternative address these concerns. The following are tracking issues relevant to this analysis.

#### 1.4.3.2.1 Travel Management

Public concerns regarding travel management include opinions that road density is too high and that minimum road standards should be utilized for timber harvest. Also, there is concern regarding whether access to harvest units includes any private land. There are also commenters who want no road closures. Additional issues regarding travel management include road maintenance needs and safety. An internal issue is to develop and maintain a road system, which will provide access needed for administrative and public use.

- ◆ **Indicator:** Open Road Density (*Travel Management Section*)
- ◆ **Indicator:** Total Road Density (including closed and private roads) (*Travel Management Section*)

#### 1.4.3.2.2 Fire and Fuels

There is a public and Forest Service concern that prescribed burning could jeopardize investments in future timber stands (regeneration, thinning investments). Internally, access to the rugged state-line country for suppression activities is a concern.

- ◆ **Indicator:** Number of acres of prescribed jackpot to broadcast burning proposed (*Fuels Section*)
- ◆ **Indicator:** Adequacy of access to state-line area (*Fuels Section*)

#### **1.4.3.2.3 Aspen**

Aspen provides for diversity across the landscape, which benefits both wildlife habitat and visual quality. Retention of existing aspen clones and possible expansion of those clones is both an internal and public issue.

- ◆ **Indicator:** Acres of pure hardwood (aspen) communities (*Vegetation Section*)

#### **1.4.3.2.4 Visual Quality**

There are both public and Forest Service concerns regarding visual quality. Public concerns include effects to visual quality from private lands and protection of the dense spruce stands along Castle Creek in Nest. Forest Service concerns include visual impacts of cable harvesting along the Wyoming, South Dakota boundary.

- ◆ **Indicator:** Level at which Visual Quality Objectives (VQO) met (*Visual Section*)

#### **1.4.3.2.5 Noxious Weeds**

There is a concern that the proposed action and alternatives to the proposed action may have an effect on the spread of noxious weeds within the project area. The indicator below will be used to measure impacts (both positive and negative).

- ◆ **Indicator:** Amount of disturbed acres, both short- and long-term, post project implementation (*Range/Noxious Weeds Section*)

#### **1.4.3.3 Issues Not Studied in Detail**

The following issues or resource concerns were considered in the determination of significant or tracking issues. However, they were determined to be requests for information or other process concerns, were already resolved through existing law, regulation, or policy, or are beyond the scope of this analysis. Some are already addressed through other processes such as the Forest Plan. The complete analysis of issue identification and resolution is located in the Planning Record.

##### **1.4.3.3.1 Grazing on National Forest System lands**

There is a concern that the Forest Service allows grazing on National Forest System lands.

- **Resolution:** Grazing on public lands is authorized on National Forest lands and the Black Hills NF Forest Plan. This concern will not be studied in detail or discussed in the analysis.

##### **1.4.3.3.2 Increased off-road ATV use**

There is a concern that the road building (new and temporary) activities in the proposed action may create new routes and increase illegal ATV off-road use in the area.

- **Resolution:** By creating area closures throughout the project area, all areas are closed to on- or off-road travel unless posted open. All created temporary roads will be slashed in or blocked using natural barriers. This concern will not be studied in detail or discussed in the analysis.

##### **1.4.3.3.3 Inventoried Roadless Areas (IRAs)**

There is a concern that the proposed action and action alternative(s) to the proposed action may have an effect on IRAs.

- Resolution: There are no IRAs in or adjacent to the project area. This concern will not be studied in detail or discussed in the analysis.

### 1.5 Decisions That Must Be Made

Based on the analysis documented in this EA the Forest Supervisor will make decisions on this project. The decisions to be made include:

- ◆ Should forested vegetation be managed within the Canyon/Nest Project Area at this time, and if so; which stands within the project area should be managed and what silvicultural prescriptions should be used?
- ◆ Should roads be constructed to facilitate vegetation management, and if so, how many miles of each type (FSR and open, FSR and closed, or Temporary) should be built?
- ◆ Should the reclassification, decommissioning, and year-round closures of existing unclassified roads be implemented at this time, and if so, how many miles of each type?
- ◆ Should an Area Closure be placed on the entire project area to protect resource values at this time?
- ◆ What design features and/or mitigation measures should be applied to the project?
- ◆ Should a Project-specific Forest Plan Amendment be included in Alternative B? This Amendment would change the wording of Guideline 5.1-3201 (Treat as Standard) on page 88 of the Revised Forest Plan, as amended. The Elk Winter HE value would be changed from 34 to 20 percent for the Nest portion of the project area only.

### 1.6 Regulatory Requirements and Coordination

The Proposed Action was developed to meet the pertinent laws, regulations, and requirements relating to federal natural resource management. Several of the design features presented in Section 2.4.2 were developed and incorporated to insure these requirements are met. The Interdisciplinary Team found the Proposed Action to be consistent with all the pertinent laws, regulations, and coordination requirements. Although all requirements would be met, the following were considered to be most relevant to this project. The following is a summary of the results of the analysis. Further details are documented in Chapter 3 and/or the project planning record.

#### 1.6.1 Clean Air Act

The Federal Clean Air Act is a legal mandate. It is intended to set limits on air pollution, thus safeguarding human health, air visibility, and welfare from air pollution. Forest Service policy is to integrate air resource objectives into all Forest Service planning and management activities. For the Canyon/Nest project area analysis, the stage would be set for cooperation with the states of Wyoming and South Dakota as implementation of site preparation and fuel management prescriptions are carried out. State fire agencies would be notified that burning is to occur, following the procurement of the appropriate permits to proceed. Due to the westerly flow of winds in the project area, the main cities of interest in burning would be Hill City, Custer, Deadwood, Wind Cave, and Rapid City. Due to the distance from the project area, and the mixing and dispersal normally generated, it is unlikely that project burning would intrude on any of these cities. Rapid City is identified as a non-attainment city. Cautions must be taken to meet air quality objectives for burning.

Prescribed burning of activity created fuels, dust, and vehicle emissions associated with either action alternative would temporarily degrade air quality in the project area and surrounding airshed. For areas projected for broadcast and/or jackpot burning an average of 0.227 tons/acre of PM-10 particles and 0.192 tons of PM2.5 are projected to be generated. (PM-10 and PM 2.5 are size classes of particles suspended in the air used to measure air quality.) Lower levels

would be generated for areas identified with other burning treatments. The states of Wyoming and South Dakota would have to be coordinated with to determine how and when these particulates can be released. It is likely that forest roads 117 and 110 in the local area would have to be patrolled and/or signed to keep forest visitors informed on what is happening. It is unlikely there would be any significant health or environmental impacts of particulate emissions, and the intent of the Clean Air Act could be met (Planning Record, [Air Quality](#)).

### **1.6.2 Clean Water Act**

The analysis presented in this document for Alternatives B and C indicates there would not likely be any additional sediment yield delivered to streams. These alternatives would be consistent with the Clean Water Act and the goals of the *Protocol for 303(d) Listed Waters* (USFS, BLM, EPA 1999), which call for designing land management activities so that existing levels of water quality and beneficial uses are maintained and protected in waters not currently listed as water quality limited water-bodies (Planning Record, [Water Quality](#)).

### **1.6.3 Endangered Species Act**

Determinations disclosed in Chapter 3 for endangered and threatened species have concluded that implementation of Alternative B or C would have no effect on listed species (Planning Record, [TES Plants & Wildlife](#)).

### **1.6.4 Migratory Bird Treaty Act**

Implementation of either action alternative may result in unintentional take of individuals. However, the project complies with the U.S. Fish and Wildlife Service Directors Order #131 related to applicability of the Migratory Bird Treaty Act to federal agencies and requirements for permits. In addition, these alternatives are compliant with the Executive Order (Jan. 11, 2001), because the analysis meets our obligation as defined under the Memorandum of Understanding (Jan. 16, 2001), and specifically because it meets sections 2a. and 2b. (Planning Record, [Wildlife](#)).

### **1.6.5 National Forest Management Act**

Stand examinations conducted in 1998 verified the physical suitability of lands within the project area. None of the alternatives propose harvest activities on physically unsuited lands (Planning Record, [Annual Growth](#)).

Alternative B or C would not include any clearcutting prescriptions of entire stands, only small openings of up to 2 acres would be created, nor would these alternatives require tree planting. All treated acres would remain fully stocked, following treatment.

The silvicultural prescriptions in the action alternatives were selected based on the existing conditions of the stands and the need for treatment, the potential effects on the residual trees and adjacent stands, as well as other resource concerns and project objectives.

The economic analysis completed for the action alternatives discloses that revenues generated would exceed costs to prepare and administer the project.

### **1.6.6 National Historic Preservation Act**

A Level III cultural resource inventory was completed for the area in 1999. Sites of historic significance would be protected under any action alternative. The State Historic Preservation Offices for South Dakota and Wyoming reviewed the resource report and concurred with the no adverse effects determination for the original Canyon and Nest Project in 1999. The re-analysis of this project did not introduce any different prescriptions or activity areas than were discussed in the original 1999 documents and would therefore have the same conclusion and concurrence.

## 1.7 Document Organization

This document is tiered to the Final EIS for the Forest Plan and the Forest Plan as amended by the Phase I amendment and the supporting documentation for that amendment. Documented analyses in the Forest Plan Final EIS have been referenced rather than repeated in some instances. Detailed information that supports the analyses presented in this document, unless specifically noted otherwise, is contained in the project planning record located at the Hell Canyon Ranger District Office.

The document consists of the following main chapters:

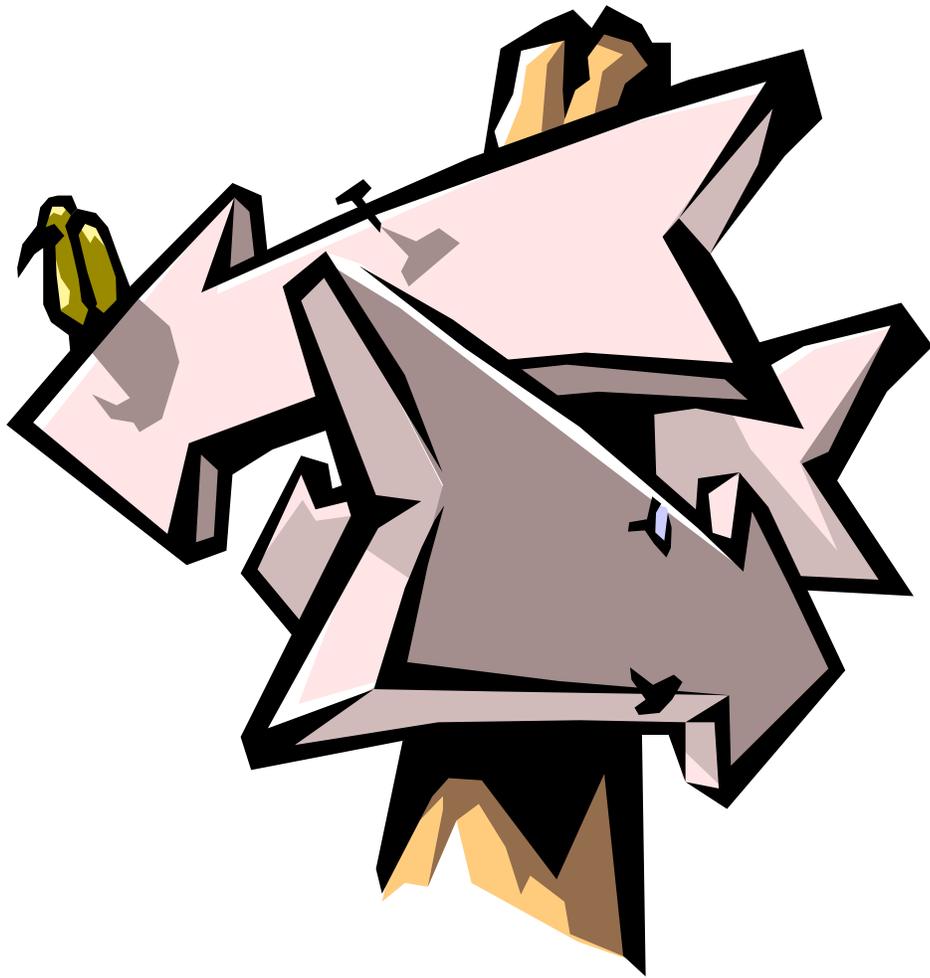
- **Chapter 1 – Purpose and Need:** Describes the Proposed Action, purpose and need of the action, objectives of the action, scope of the EA, identification of significant issues, decisions to be made, and regulatory requirements.
- **Chapter 2 – Alternatives:** Includes design features common to all action alternatives, descriptions of the alternatives considered in detail, alternatives considered but eliminated from detailed study, and a comparative summary of the environmental consequences, activities, and outputs.
- **Chapter 3 – Affected Environment and Consequences:** Describes the existing conditions of the resources within the analysis area, and expected impacts of the alternatives on the resources.
- **Chapter 4 – Consultation and Coordination:** Provides a list of the preparers of this document; a summary of the scoping and public involvement efforts; and a list of agencies, organizations, and persons to whom copies of the EA have been sent.



# CHAPTER 2

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## ALTERNATIVES





## Chapter 2 – Alternatives Including the Proposed Action

### 2.1 Introduction

This chapter describes and compares the action alternatives that fully or partially meet the purpose and need identified in Chapter 1, and a No Action Alternative. Each alternative reflects a different response to the major issues identified through the scoping and analysis process, and each alternative produces different environmental effects. This chapter concludes with a comparative summary of the alternatives considered in detail. This comparison, combined with the more detailed disclosure of impacts in Chapter 3, provides the information necessary for the decision-maker to make an informed choice between alternatives.

### 2.2 History and Process Used to Formulate the Alternatives

The Interdisciplinary Team using the 1999 Canyon-Nest Proposed Action as a starting point refined it using the Standards and Guidelines set forth in the Phase I Amendment developed the Proposed Action. The Interdisciplinary Team developed alternatives to the Proposed Action in response to significant issues identified through internal and previous external scoping. To the extent possible, all action alternatives were designed to fully or partially meet the purpose and need for which the project was proposed.

#### 2.2.1 Issues Used in Alternative Development

There was only one significant issue identified. It was the expected effects on Sensitive and Management Indicator Species. There were three elements to the concern: 1) Width of the forested connectivity corridor to occupied marten habitat (Standard 3215); 2) Change in habitat quantity and quality for various MIS species; and 3) Further reduction of the Elk winter HE value below the Forest Plan Standard. This issue could not be resolved without substantial changes in the types or locations of activities in the Proposed Action (Alternative B), nor could the suspected impacts be mitigated.

### 2.3 Alternatives Considered But Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). In addition to internal comments, public comments received in response to the 1998 Proposed Action and EA provided suggestions for alternative methods for achieving all or portions of the purpose and need. Some of these alternatives may have been outside the scope of the project intent, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary environmental harm. Therefore, a number of alternatives were considered, but dismissed from detailed consideration for reasons summarized below. The alternatives studied in detail and those described in this section comprise the range of alternatives considered for this project.

#### 2.3.1 Use of Prescribed Fire Only

An alternative was proposed that would use only prescribed fire as a management activity. This alternative was considered, but eliminated because many of the forest stands in the project area that need thinning are overly dense, and conducting a prescribed fire without pre-treatment by thinning and fuels reduction would result in unacceptable tree mortality; among the mid-aged size class of trees. The risk of escapement would be high using prescribed fire only. For these reasons, this alternative was eliminated from detailed study.

#### 2.3.2 Non-commercial Thinning Only

An alternative was proposed that would use only non-commercial harvest (trees less than 8 in. diameter) to accomplish management objectives. By removing only non-commercial trees, the remaining vegetative structure in the forest stands would still be susceptible to the hazard of a canopy wildfire, mountain pine beetle attacks, and health and vigor would not be attained. Non-commercial thinning alone would not meet the purpose of and need for action. A non-commercial

thinning alternative would not generate economic outputs, which would also not meet the purpose and need for action. For these reasons, this alternative was eliminated from detailed study.

### **2.3.3 No New or Temporary Road Construction**

An alternative was proposed that would not use any new road construction or temporary road construction. The project area has many existing roads (FSR and Unclassified). However, these would not provide adequate access to many stands in need of treatment in both Canyon and Nest portions of the project area. Without the new and temporary roads, these forested areas would be maintained out of desired conditions for many decades and would continue to present a higher risk for a stand replacing fire event. For these reasons, this alternative was eliminated from detailed study.

### **2.3.4 No Road Closures (Existing, New, or Temp)**

An alternative was proposed that would have similar vegetation management prescriptions as the Proposed Action, but would leave all existing and newly created roads open to the public. The existing open road density is 4.1 miles per section in Canyon and 3.3 miles per section in Nest. With the addition of new roads, these levels would increase to 4.8 miles per section in Canyon and 3.5 miles per section in Nest. This would result in impacts to resources that would violate many Forest Plan Standards. In addition, FSH 7700 directs us to complete a roads analysis in planning areas. This was completed in March 2002 for the Canyon/Nest Project Area. As a result of this Roads Analysis, all unclassified roads identified, need to be converted into FSR, trails, or decommissioned. For these reasons, this alternative was eliminated from detailed study.

### **2.3.5 Uneven-aged Treatments in Ponderosa Pine**

The IDT considered and dropped from detailed analysis an alternative that would have managed the ponderosa pine as well as the white spruce components of the project area primarily through uneven-aged treatment. The Forest Plan EIS (FEIS 11-20) considered such an alternative. That analysis determined that uneven-aged management was generally not the appropriate treatment method for the Forest. This finding is included as Guideline 2408(e) "The preferred silvicultural system used for treating ponderosa pine on suitable lands will be shelterwood. Other systems may be used to meet specific resource objectives". Ponderosa pine is best managed under a shelterwood system. Uneven-aged cutting methods could lead to lowering of tree productivity. In addition, such treatments are less economical. The Forest Plan eliminated the alternative from further analysis. For the project area, all opportunities identified could be met with the shelterwood system in *pure* ponderosa pine stands. The consideration of this alternative was generated internally, there was no public input requesting such an alternative. The action alternatives considered in detail include uneven-aged management for white spruce and pine/spruce mixed stands.

## **2.4 Alternatives Considered in Detail**

### **2.4.1 Silvicultural Treatments**

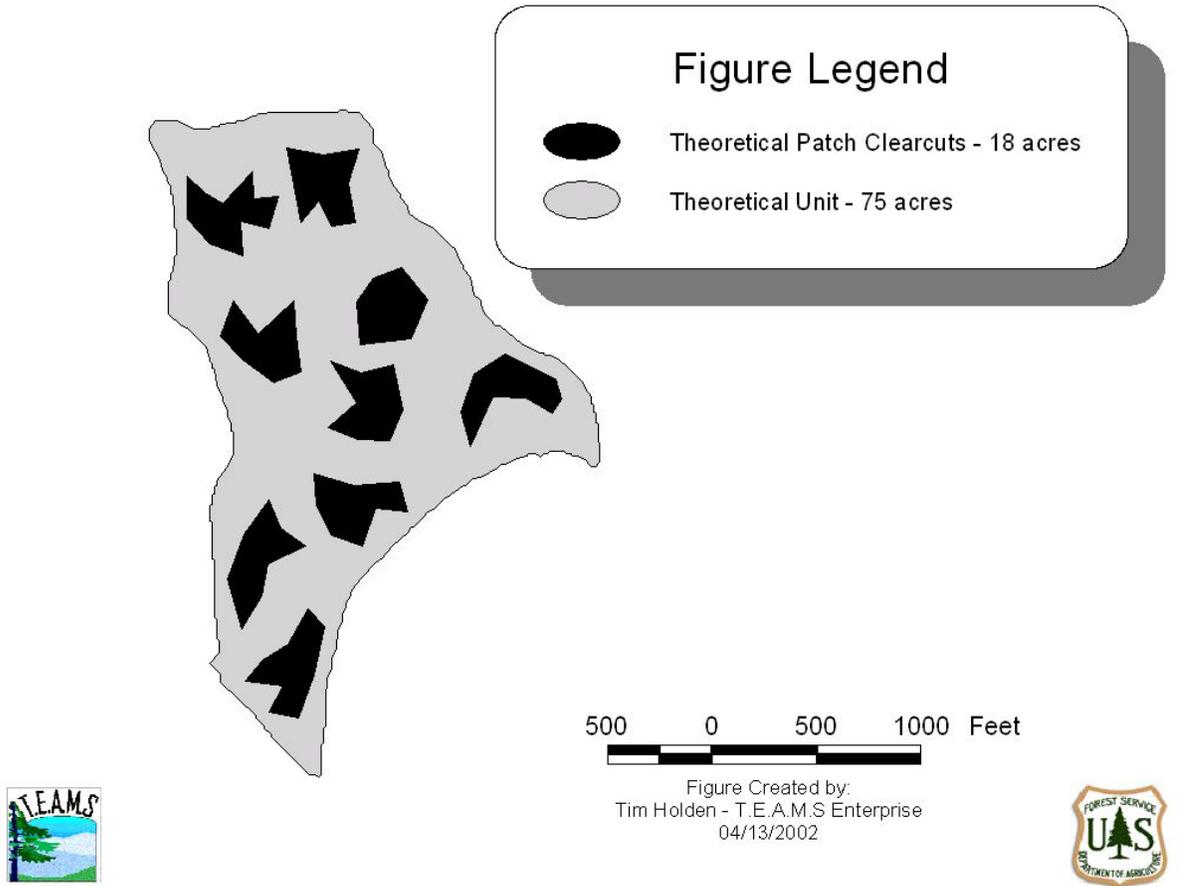
A variety of silvicultural treatments would be employed by the action alternatives. Although each action alternative proposes differing amounts of these prescriptions, stand conditions following implementation would be similar. To avoid repetition a brief summary of the prescriptions is provided here.

- **DEFER:** No Treatment at this time; either the stand was not in need of density management or it was already meeting the objectives for wildlife and other resources
- **DEFER-OG:** No Treatment – keep existing condition for late-successional/old-growth habitat
- **DEFER-M:** No Treatment – keep existing condition for marten habitat
- **PCT:** Pre-Commercial Thinning – This prescription would be applied as a post-sale treatment in overstory removal units, and as a stand-alone treatment in dense stands

with an average dbh less than 9 in. Based on the Black Hills National Forest (BHNF) stocking level curves for mountain beetle risk, a stand with an average dbh of 8 inches would be thinned to between 100 – 250 trees per acre.

- **CC:** Patch Clearcut – This prescription has been proposed for mature white spruce, mixed conifer, and ponderosa pine stands that have been previously thinned. This prescription would create small clearcuts (about 2 acres) across about 25 percent of each stand. These clearcuts would be scattered throughout the entire stand. This prescription would be applied in order to create small openings for forage production within forested areas. It would help move the area towards meeting the Forest Plan Objective for percentage of grass/forb structural stage. Wildlife species preferring secure foraging areas, such as deer, elk, and turkeys, would benefit from this prescription. However, these openings are short-term (less than 15 years), as they would naturally regenerate with conifers and aspen (if currently present). Figure 2-1 is a depiction of how this prescription might be laid out in a theoretical stand.
- **PC:** Prep Cut Shelterwood (commercial thinning) – This prescription has been proposed for immature ponderosa pine stands as well. However, the trees are somewhat larger in these stands than those proposed for PCT. Trees greater than 9 in. dbh would be thinned to between 80-120 sq. ft. of basal area per acre. Trees between 5 and 9 in. would also be thinned out.
- **SC:** Seed Cut Shelterwood – This prescription has been proposed for mature ponderosa pine stands. This is a regeneration harvest where most of the mature overstory is removed to create conditions favorable for the regeneration and growth of new ponderosa pine. Between 10 and 20 of the largest, healthiest overstory trees per acre would be left.
- **OR:** Overstory Removal – This prescription has been proposed for mature ponderosa pine stands that have already attained a well-stocked understory either resulting from a planned Seed Cut Shelterwood or from previous disturbances that created conditions favorable for natural regeneration. Removing most of the overstory now will allow the established trees in the understory to grow faster. Generally about 10 or more of the largest overstory trees per acre would be left for snag recruitment.
- **DEFER/CC:** combination of deferring treatment and patch cut as described above
- **OR/CC:** combination of overstory removal and patch cut as described above
- **OR/SC:** combination of overstory removal and shelterwood seed cut as described above
- **OR/PC:** combination of overstory removal and prep cut as described above
- **MR:** Meadow Restoration – This prescription is proposed to restore historic meadows that have become encroached by trees, over time. All trees, mainly pine, would be removed and the site designation changed from a timbered site to meadow.
- **SEL:** Single Tree Selection – This prescription would harvest trees from all age and size classes and result in uneven-aged stand conditions. About 30 percent of the merchantable trees would be removed.

Figure 2-1: Theoretical Depiction of Patch Clearcut Prescription



- **PE:** Pine Encroachment – This prescription has been proposed for designated meadows that have been encroached with pine over the years. This prescription would remove all trees, primarily pine, from natural meadows.
- **PSCC:** Pine & Spruce Clearcut (Aspen Cleaning) – This prescription has been proposed for areas with immature to mature aspen occupying the stands. It would remove all pine and spruce from within aspen stands. It could result in commercial or non-commercial harvest depending on size and market for removed material.
- **AR:** Aspen Regeneration – This prescription has been proposed for stands of mature, senescing aspen to create conditions for vegetative re-sprouting. This will essentially entail clearcutting the stand, but would probably not yield any merchantable products.
- **PSCC/AR:** combination of aspen cleaning and aspen regeneration as described above
- **POL:** thinning of small diameter trees (post and pole harvest) generally less than 9 inches diameter

#### 2.4.2 Design Features Common to All Action Alternatives

In addition to Forest Plan standards designed to mitigate adverse impacts, the Interdisciplinary Team identified the following measures that would be applicable to all action alternatives. These

design features have been incorporated to reduce or prevent undesirable effects resulting from proposed management activities. Design features specific to individual alternatives are discussed in the Description of Alternatives section of this chapter and are in addition to design features common to all action alternatives.

#### **2.4.2.1 Physical Elements**

Standard management requirements would include Watershed Conservation Practices (WCP's), Best Management Practices (BMPs), and Forest Plan Standards (S) and Guidelines (G).

#### **Soils**

Roads, skid trails and landings are the primary source of sediment from vegetation management activities. Ripping of temporary roads, landings, and skid trails after yarding and hauling operations have been completed. The ripping provisions will include the following specifications:

1. Unless otherwise agreed in writing, all temporary roads, landings and primary skid trails used by the contractor shall be ripped. Primary skid trails are skid trails over which equipment had skidded three or more turns.
2. Ripping shall be accomplished by equipment that will lift and fracture the soil by vertical and lateral shattering, leaving soil loosened through the full width and depth to the compacted layer with the topsoil remaining substantially in place rather than being turned over. Rigging shall extend to a depth of 16 inches on temporary roads and primary skid trails, to a depth of 24 inches on landings. Forest Service may agree to lesser depths when excessive rock or other limiting site conditions are encountered.
3. Perform an on-site slope stability analysis on slopes over 55 percent ([Figure 2-2](#)) prior to activities that remove most of the timber canopy. Limit ground-disturbing activities on unstable slopes identified during slope stability analyses.

Construct roads and other disturbed sites to minimize sediment discharge into streams, lakes, and wetlands (S 1113).

All newly constructed FSR and temporary roads will avoid wetlands.

Drainages may be crossed at right angles; however, they may not be used as continuous skid trails.

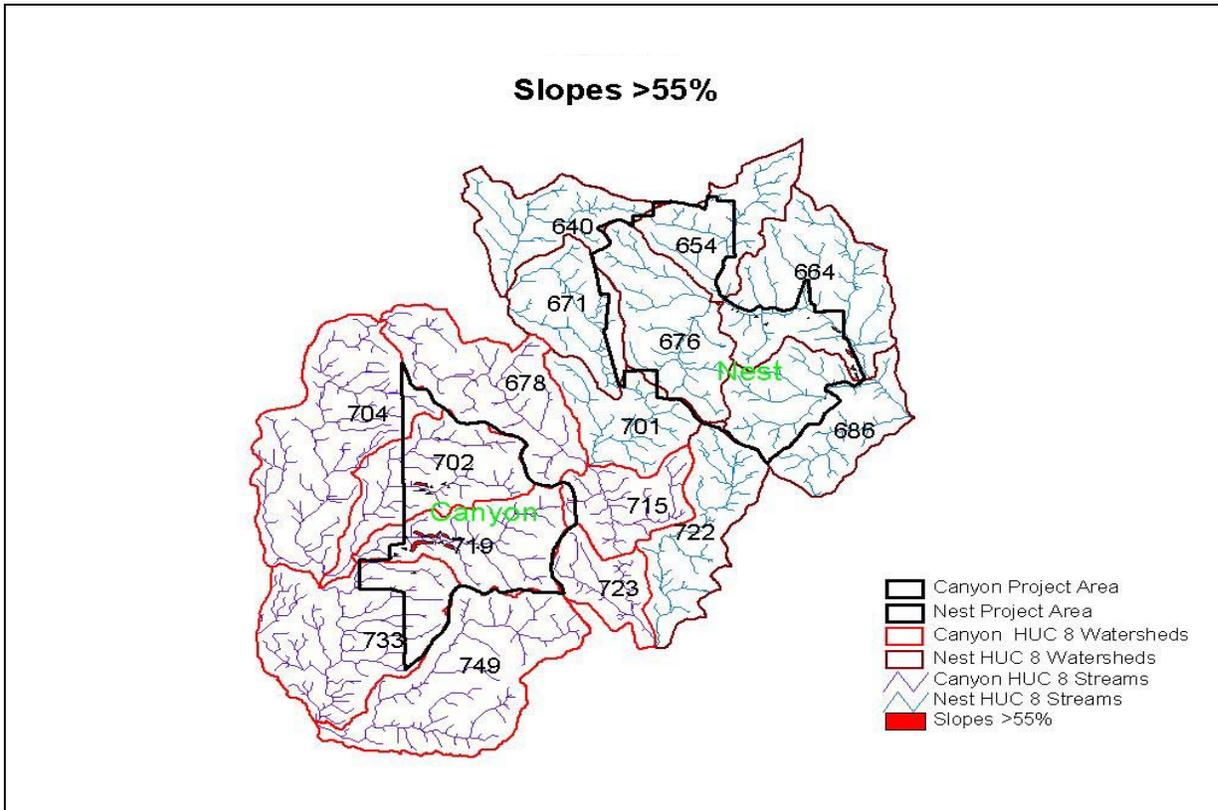
Drainage structures would be added and improved as needed to FSR 110, to prevent sediment movement into stream-course.

Protected stream-courses include Castle Creek and the perennial flow within Wet Parmlee Canyon, Bear Canyon, and from Oatman Spring.

Utilize skyline cable harvesting to avoid skidding and hauling in the bottom of draws.

Manage land treatments to limit the sum of severely burned and detrimentally compacted eroded, and displaced land to no more than 15 percent of any land unit (S1103). 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.

Figure 2-2: Slopes Greater Than 55 Percent



Initiate revegetation as soon as possible, not to exceed 6 months, after termination of ground-disturbing activities. Revegetate all disturbed soils with native species when available in seed/plant mixtures that are noxious weed-free. On areas needing the immediate establishment of vegetation, non-native non-aggressive annuals, non-aggressive perennials (such as alfalfa), or sterile perennial species may be used while native perennials are becoming established. This is used to prevent the spread of noxious weeds and prevent erosion. If mulches are used they are to be weed-free (G 1110). (repeated under noxious weed mitigations)

Retain, where available, five tons/acre of fuels less than 11 inches diameter.

Retain, where available, 10 – 15 tons/acre of the largest down logs greater than 11" diameter. (e.g. a log 20"x20' you retain 20 logs/acre and a log 15"x 10' retain 33 logs/acre).

No activity would occur within 400 feet of snow survey site (40403-125) in Blind Park.

**Yarding**

1. During yarding, tractor entry will not be allowed within order 4, 5, and 6 stream buffers (Figure 3-2) except at designated tractor crossings (BMP's 1-10, 1-19, and 2-1.). These crossings will be few in number and will not be bladed or sub-soiled. They will be back bladed to restore the natural relief as necessary to reduce erosion. This practice has been incorporated into the standard Forest Service contract within Region 5 for over 30 years, and has been shown to be effective in reducing sediment movement to streams; maintaining channel stability and preventing debris flows.

2. Do not locate landings within stream buffer areas. If a new or existing landing must be located within a stream buffer area, defer the volume from harvest or consult the hydrologist/soil scientist to approve the landing and prescribe treatment that will include re-contouring, and some combined treatment of spreading slash, tilling, mulching, or seeding the landing to improve infiltration and minimize erosion. Reference: BMP 1-12.
3. Logging slash must be cleaned out of protected stream courses as soon as practicable, but not to exceed 48 hours. This practice is effective in reducing the potential for debris flow and in maintaining dissolved oxygen levels at or near saturation.
4. Insure that springs, riparian areas, and wet meadows shown on the timber sale map are not disturbed. Through the proper location of skid trails, keep equipment at least 25 feet away (or a distance equal to the height of one site potential tree) from springs, riparian areas, and wet meadows identified on the sale area map.
5. Do not locate skid trails parallel to the bottom of swales. Treat the bottom of swales as stream courses skidding away from these features. Cross swales at right angles. Favor the ridge and upper slopes when designing and building skid trails. Mechanical disturbance of these features during harvesting and site preparation activities can lead to long-term surface and channel erosion increasing sediment loads downstream. Avoidance has been shown to be effective in minimizing disturbance to springs and swales.
6. A harvester may work adjacent to order 4,5 and 6 stream buffers and select trees from the buffer for harvest. The residual should not be damaged and soil will be left undisturbed. Limbing should occur outside of the stream buffer. Activity generated slash should be hand-piled for burning.

***Heritage Resources***

There are two (2) sites in Canyon and three (3) sites in Nest that have been determined to be eligible for listing on the National Register of Historic Places (NRHP). No activities are planned in these sites. However, site locations (project file) must be reviewed prior to layout to insure that cable harvesting-systems will avoid them. Also, post sale projects for Oatman spring must review heritage resource mitigations prior to implementation.

**2.4.2.2 Biological Elements – Flora**

***Forested Landscapes***

All proposed harvest would occur on lands determined to be suitable and available for harvest.

All designated late successional habitat (152 acres in Canyon and 646 acres in Nest) would be maintained untreated.

Locate landings within timber stands, whenever feasible.

Maintain big game screening cover in the following sites along FDR 109, 110, and 117 to meet Forest Plan guideline 3203:

Canyon: 40903 – 103, 107, 112, 117, 119, 125, 130, 133, 217

Nest: 40401 – 103, 114

40402 – 107, 111, 122, 128, 137

40403 – 101, 102, 103, 106, 108, 109, 119, 128, 135, 136, 137, 138, 141, 143

Coordinate pre-commercial thinning layout with big game cover needs

Remove conifers from aspen clones, where they occur within harvest units. Retain only conifers that area expected to develop into hard snags within 5-10 years. These trees must display quality characteristics such as broken tops or fading foliage.

Leave large slash in place around aspen sites that are regenerated to discourage grazing. This would specifically apply to all AR, SPCC, and SPCC/AR prescriptions, although this would apply to small clumps of aspen within other treatment areas as well.

#### ***Snags and Down Woody Material***

Do not harvest any trees greater than 20" to meet the need for one large green replacement tree per acre on a watershed basis.

Prescription shall be developed prior to timber harvest to identify the amount, size(s), and distribution of down logs to be left on site. On conifer forested sites (ponderosa pine and white spruce) retain an average of at least 50 linear feet per acre of coarse woody debris with a minimum diameter of 10", where available.

In all treated sites (commercial and non-commercial), maintain ~1 pile of woody material per 2 acres to create near-ground structure for marten prey species. Piles should be about 10' in diameter and about 6' high.

Create about 2 snags/acre on all commercially treated sites. Snags should be created at the time of harvest when possible. It is not expected that 2 snags would be created on every acre; they would be clumpy in nature and well distributed across the treated areas.

Restrict cutting of standing dead (snags) for firewood.

All soft snags should be retained unless they are a safety hazard (G 2305). Hard snags should also be retained unless they are a safety hazard.

Provide 10 or more, green-tree replacements (recruitment snags) per acre in overstory removal units. These trees will be representative of the existing stand in size. Recruitment snag needs will be determined on a site-specific basis by the Silviculturist at the time of prescription writing. Where possible, clump recruitment snags in overstory removal units.

Cull logs should be left in the woods when ever possible (S 2308).

#### **2.4.2.3 Biological Elements - Fauna**

##### ***Endangered, Threatened, or Sensitive Species***

Sensitive species located after contract formation would be appropriately managed by active coordination between contractor or purchaser, Forest Service line officer, project administrator, and biologist. Viable solutions need to be based on circumstances surrounding each new discovery and must consider the individual sensitive species needing protection, contractual obligations and costs, and mitigation measures available at the time of discovery (S 3115).

Planned timber harvest should be restricted so that activities occur only on one side (north vs. south) of the designated PFA in Canyon at any one time. Timber harvest within ½ mile of the PFA should be completed prior to beginning harvest activities on the other side from March 1 to September 30.

“From March 1 to August 31, minimize additional (new) human-caused disturbances and disruption beyond that occurring at the time of nest initiation (e.g. road traffic, timber harvest, construction activities) within 1/4 mile of active goshawk nests.”

Protect any bald eagle perch or roost site identified during project layout and implementation.

A 100-foot buffer would be implemented around springs and ponds to protect riparian species that are discovered during or after unit layout.

Repair the section of FSR 110, along Castle Creek, that is eroding and contributing sediment directly into Castle Creek to a point that it no longer adds sediment or gravel into the creek.

### **General Wildlife**

Provide at least 2-6 turkey roost sites per section consisting of mature trees with an average dbh of 10-14 inches, widely spaced horizontal branches, and basal areas at least 90 square feet per acre. Sites should be at least 1/4 acre in size and not isolated from adjacent forested stands. Emphasis should be on the upper third of east facing slopes when available (G 3205).

To assure compliance and maintain distribution of turkey roost tree groups, at least one turkey roost tree group (minimum of 1/4 acre) would be designated during sale layout in each of the following stands planned for seed cut or overstory removal. These sites are east facing slopes and within 1/2 mile of known water sources.

- Canyon – 040903- 110, 147,
- Nest – 040402-111

Protect existing turkey roost sites identified during sale layout.

Protect snail colonies located in sites: 40403-136 (Nest), 40401-130 (Nest), 40903-144 (Canyon), and 40903-129 (Canyon). This will be accomplished by providing a minimum of a 100-foot no activity buffer around these sites.

Any cave or mines discovered during project layout or implementation will be reported to the wildlife biologist for evaluation.

### **2.4.2.4 Disturbance Processes**

#### **Fire and Fuels**

Promote revegetation of prescribed burned area:

1. Following broadcast burning, seed to initiate revegetation if ground cover is 60 percent or less and slopes are 30 percent or more;
2. If piled and burned fuel creates ash piles deeper than three inches, scatter the ash, scarify and mix it with mineral soil, or bury it (G4106).

Locate slash piles that are scheduled for burning, 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 (G 4111).

Reduce threat of wildfire to public and private developments by following standards in National Fire Protection Association Publication 299, Protection of Life and Property from Wildfire, and reduce fuel loading to acceptable standards (S 4113).

In vegetation management units with fuels prescriptions that include lop and scatter treatments, slash height will not exceed 18 inches.

Along FSR designated as collectors (FSR 109), manage activity fuels to meet adopted Scenic Integrity Objectives. Where conflicts arise with soils requirements, this visual standard takes precedence.

Remove 70 to 90 percent of activity fuels seen from the edge of arterial roads, up to a maximum distance of 300 feet. Treat debris within 1 year of harvest completion. This would apply to harvest areas along FSR 110, 111, and 117. (Repeated in Scenery Management)

Remove activity generated limbwood and small boles from all stream channels, but leave existing material in place to provide sediment catchment and stability.

Where concentrations of slash are heavy within order 4, 5, and 6 stream buffers and fire is expected to burn intensely hand-pile and burn these fuels or remove the slash from the stream buffer.

Hand piles should be placed above the high water line.

Jackpot/Broadcast Burning: If possible, keep fire from within 50 feet of the order 4, 5 and 6 stream channels. Do not ignite fire within this 50 foot zone instead allow the fire to creep down into the area. The objective is to retain at least 90 percent of large woody debris in the channel and leave 50 to 75 percent of the ground unburned within the interior 50 feet of the stream buffer. Within this core area the burned areas should appear intermittent and should not be concentrated within given areas, as conditions allow. The large woody debris will maintain channel stability, and the ground cover will filter sediments originating on the hillsides. Within the core zone, of the burn area, retain at least 75 percent of the "effective organic ground cover.

### ***Noxious Weeds***

When seeding disturbed areas, use only certified noxious weed-free seed, feed, and mulch (S 4306).

Known noxious weed sites will be avoided as areas for equipment parking or for authorized contract camping areas.

Revegetate all disturbed soils along skid trails, landings, burn piles, logging decks, contract camping areas, temporary roads, road reconstruction, and new road construction with a native seed mix when available. The seed mix shall be certified noxious weed free. (S 4306)

All mulches, straw, or other soil erosion mitigation treatments should be certified noxious weed free (G 1110)

Post-project inventories will be accomplished and existing and new noxious weed populations will be treated with chemical, mechanical and biological control methods.

Initiate revegetation as soon as possible, not to exceed 6 months, after termination of ground-disturbing activities. Revegetate all disturbed soils with native species when available in seed/plant mixtures that are noxious weed-free. On areas needing the immediate establishment of vegetation, non-native non-aggressive annuals, non-aggressive perennials (such as alfalfa), or sterile perennial species may be used while native perennials are becoming established. This is used to prevent the spread of noxious weeds and prevent erosion. If mulches are used they are to be weed-free (G 1110). (Repeated under soils mitigations)

### 2.4.2.5 Recreation

#### **Scenery Management**

1. Avoid cut slopes when building roads or reconstructing roads.
2. Cutting units on steep terrain should attempt to blend into uncut stands and private lands.
3. Use visual marking along FSR 109, 110, 111, 117, and around private lands
4. Utilize whole tree harvesting within the immediate foreground of primary roads and private lands with developments
5. Vary tree spacing and size in the immediate foreground of FSR 109, 110, 111, and 117.
6. Avoid slash piles and landings within the foreground of FSR 109, 110, 111, and 117.
7. Design vegetative treatments to blend with private lands vegetation on private lands.
8. Constructed skid trails within the foreground of FSR 109, 110, 111, and 117 should be obliterated and returned to a natural condition.
9. On roads constructed for cable harvesting, leave islands/clumps of trees directly below the road, when possible, to screen the road and minimize the “hard edge” form.
10. On skyline cable harvest units; shape edges of units like the surrounding forest. Clumps of trees, of various sizes and shapes, should remain on site to mimic surrounding landscape patterns.
11. Remove 70 to 90 percent of activity fuels seen from the edge of arterial roads, up to a maximum distance of 300 feet. Treat debris within 1 year of harvest completion. This would apply to harvest areas along FSR 110, 111, and 117.

#### **2.4.2.6 Timing of Activities**

No hauling or wheeled vehicle travel would be allowed on designated snowmobile trails from December 15 through March 31 as deemed by the Forest Travel Order. Logging activity is restricted from December 1 through December 15, but may be allowed under rare circumstances if expressly agreed to by a Forest Service representative. About 10 miles of road in Nest are designated snowmobile trails. Therefore, no harvest activity would be allowed during this time, in Nest. The Canyon area does not contain designated snowmobile trails. However, if haul routes head north rather than south, as expected, this timing restriction would also apply.

#### **2.4.2.7 Protection of Improvements**

All improvements, such as existing authorized fences, land survey monuments, and water developments shall be protected.

Gates will be kept closed when there are cattle in an area where timber harvest activities are occurring. This is necessary to keep cattle from wandering off an allotment.

#### **2.4.2.8 Monitoring**

Detailed monitoring plans will be developed for the selected alternative and disclosed with the project’s decision document. Monitoring plans for the wildlife, watershed/fisheries, and timber/silviculture resources would be designed to determine the implementation and general effectiveness of Best Management Practices, design features, and regeneration activities. Monitoring is designed to accomplish all or some of the following goals:

- ◆ Determine if assumptions made for effects analysis were correct
- ◆ Verify implementation of design features and the degree of particular effects
- ◆ Determine if resource objectives are being achieved

### **2.4.3 KV Opportunities**

The following post-sale projects are included and accomplishment would depend upon funding. Environmental impacts of all post-sale projects were analyzed as part of this assessment. These are not mitigation measures, as the effects of the project are not dependant upon these actions being completed. They are additional opportunities to enhance or improve the project area for one or more resources.

***Spring Protection and Enhancement included:***

1. Kawkiasier Spring (Canyon): enlarge existing fence around spring to about ¼ acre using a buck and pole or 4-wire barbed wire fence.
2. Perino's Pond (Soholt Reservoir) (Nest): develop stock watering system (pipeline and tank) and buck and pole or 4-wire barbed wire enclosure fence to protect pond and emergent vegetation. Fenced area would be about 200 feet by 100 feet.
3. Castle Creek (Nest): fence the entire headwaters of Castle Creek using 4-wire barbed wire or buck and pole fencing to exclude livestock use (about 10 acres); project includes the development of a stock watering system (pipeline and tank) at least 200 feet away from stream-banks.
4. Knutson Spring (Nest): Re-set existing water tank to improve water flow and construct an enclosure, about 25 feet by 25 feet, of barbed wire or buck and pole fence to protect spring.
5. Bear Spring (Canyon): develop stock watering system including a pipeline and tank to allow stock watering away from the spring, and fence an area about 50 feet by 50 feet around the spring using buck and pole or barbed wire fence.
6. Oatman Spring (Nest): fix and extend closure fence to about 1 acre to protect wetland area using either a buck and pole or barbed wire fence. Replace existing tank and add overflow tank; eliminate 2-track road and revegetate stream-bank.

***Vegetation Improvement Opportunities***

1. Regeneration surveys on harvested sites with the following prescriptions: CC, SC, OR or SEL.
2. Post-sale pre-commercial thinning on all Overstory Removal (OR) prescriptions, or combination of OR with another prescription
3. Aspen enhancement – removal of non-commercial conifers and regeneration of aspen clones on 393 acres
4. Protect aspen regeneration in treatment areas from grazing using slash or other means (fencing)
5. Shrub seeding of about 20 percent of all CC acres in Canyon to improve wildlife browse.
6. Pre-commercial thinning – There are a total of 454 acres in Canyon, and 3 acres in Nest. 106 acres of the 454 acres in Canyon are within a designated goshawk PFA. These stands are all within Location 040903 – 180, 185, 186, 238, and 240.

***General Opportunities***

1. Develop and maintain about 2-3 helispots near the Wyoming, South Dakota state-line.
2. Create and Install an Interpretive sign for public education regarding harassment of big game and the importance of security habitat. Two signs would be placed at the intersections of FSR 117 and 110 in Nest and the second sign at the intersection of 117 and 109 in Canyon.
3. Monitor effectiveness of snag creation and retention following all activities.
4. Noxious weed treatment, including seeding, on up to 300 acres per year for 5 years.
5. Maintain about 30 acres of existing fuel breaks in the project area.

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## 2.4.4 Description of Alternatives

### 2.4.4.1 Alternative A – No Action

This is a required “no action” alternative that provides a baseline against which impacts of the various action alternatives can be measured and compared. Under this alternative no new management activities would occur. The open road density would remain at 4.1 miles per section in Canyon and 3.3 miles per section in Nest. General maintenance on these roads would occur according to maintenance level. Suppression of wildfires would continue to occur within the project area. A variety of monitoring activities related to timber stands and wildlife would continue within the project area. Natural succession would continue to take place. Vegetation would become denser. Pine would continue to encroach into meadows and hardwood stands. Overstocked stands would become more susceptible to stand replacing wildfire and attack by insects. Insect infestations could result in more mortality of green trees creating more snags. Grazing would continue to occur throughout the project area at existing approved levels. Designated snowmobile routes along FSR 110, 111, and 117 would continue to be closed to wheeled vehicle traffic from December 15 through March 31 annually.

### 2.4.4.2 Alternative B – Proposed Action

This alternative was developed to fully meet the project objectives stated in Chapter 1. It represents the Forest Service’s best recommendations prior to detailed analysis of the environmental effects. The proposed action was designed to harvest timber by thinning overstocked stands, removing the overstory from successfully regenerated areas, and removing encroaching pine from meadows and hardwoods. Some patch clearcuts were included to create more grass/forb openings in forested stands. This alternative was modified from the 1998 Proposed Action to maintain habitat for goshawks and marten in accordance with the Phase I amendment. Reduction of roads and open road density are also planned. [Figures 2-3 through 2- 6 along with Tables 2-1 and 2-2](#) display proposed activities for this alternative.

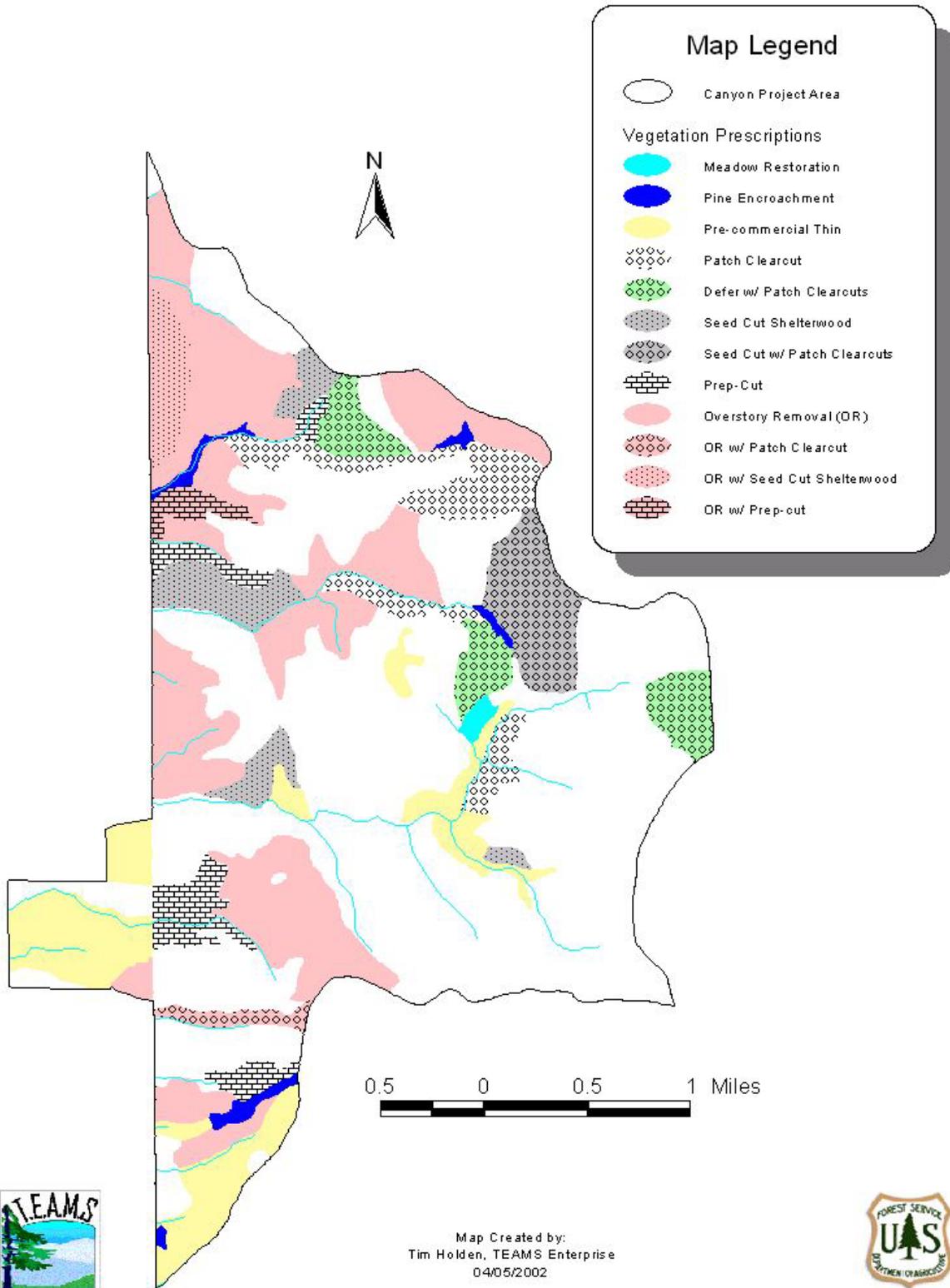
#### 2.4.4.2.1 Canyon Area

##### Vegetation Management / Harvest Prescriptions

About 2,660 acres would be managed through various harvest prescriptions to meet the objectives, see [Figure 2-3 and Table 2-1](#).

1. Thin Overstocked Stands through: Overstory Removal with Seed-Cut Shelterwood (85 acres), Seed-Cut Shelterwood (180 acres), Prep-Cut (155 acres), Overstory Removal with Prep-Cut (40 acres), Seed-Cut with Patch Clearcut (169 acres), and Pre-commercial Thinning (454 acres) prescriptions.
2. Restore and maintain Meadows through: Meadow Restoration (14 acres) and Pine Encroachment (50 acres) prescriptions.
3. Increase Grass/Forb Structural Stage within Forested Stands through: Patch Clearcut (241 acres), Defer with Patch Clearcut (185 acres), and Overstory Removal with Patch Clearcut (36 acres) prescriptions.
4. Remove Commercial Timber through: all prescriptions mentioned in 1 and 3, except pre-commercial thinning, and overstory removal (1,051 acres), resulting in about 5.3 million board feet (MMBF) of commercial volume towards the ASQ.
5. As a result of these vegetation management activities, about 2,660 acres would require follow-up fuels treatments (lop and scatter, machine pile, and/or jackpot to broadcast burning) to keep fuel levels at or below Forest Plan Standards.

Figure 2-3: Canyon Alternative B Vegetation Treatments



**Transportation System / Access Management**

1. Establish an area closure within the project area – all roads and off-roads would be closed to all public motorized wheeled vehicles unless posted open for public use (i.e. snowmobile and administrative use would not be prohibited).
2. Maintain all existing National Forest System roads (FSR), about 10.9 miles, as open to all wheeled vehicles.
3. Construct/Convert about 7.9 miles of existing unclassified road to FSR and maintain their open status to the public.
4. Construct/Convert about 5.7 miles of existing unclassified road to FSR and close them to public wheeled vehicle use.
5. Construct about 4.4 miles of FSR and close them to public wheeled vehicle use.
6. Construct about 1.3 miles of Temporary road and decommission following proposed activities.
7. Decommission about 15.4 miles of unclassified roads.
8. Reconstruct about 3.8 miles of existing road (FSR) for use to implement the proposed vegetation treatments. [Figure 2-4](#) and [Table 2-1](#) display these activities.

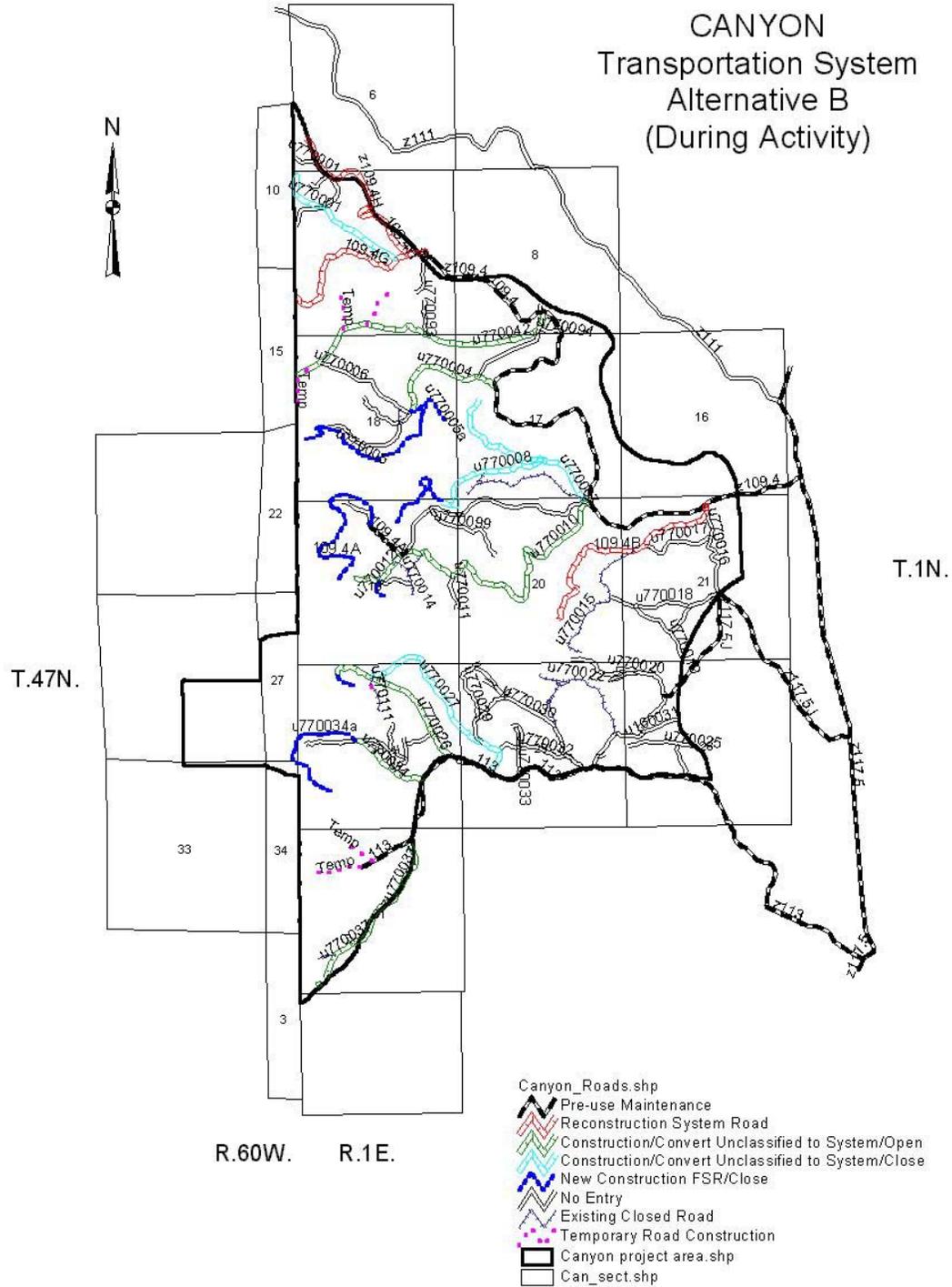
**Table 2-1: Canyon Alternative B – Proposed Action**

<b>PROJECT AREA SUMMARY (Canyon Portion)</b>		
Total Acres Treated – 2,660 acres	Area Closure – Entire Project Area (5,329 acres)	
Open Road Density – 2.2 miles/square mile	Total Existing Road Closing or Decommissioning – 21.1 miles	
Total Road Construction * – 19.3 miles	Total Road Reconstruction – 3.8 miles	
Projected Volume – 5.3 MMBF		
<b>Harvest Methods (acres)</b>		
Tractor – 1,641	Tractor/Cable - 232	Cable/Skyline – 333
<b>Silvicultural Prescriptions (acres)</b>		
Patch Clearcut – 241	Primarily Deferred with Patch Clearcut – 185	Overstory Removal – 1,051
Overstory Removal w/ Seed-Cut Shelterwood – 85	Seed-Cut Shelterwood – 180	Prep-Cut Shelterwood – 155
Overstory Removal w/ Patch Clearcut – 36	Overstory Removal w/ Prep-Cut Shelterwood – 40	Seed-Cut Shelterwood w/ Patch Clearcut – 169
Meadow Restoration – 14	Pine Encroachment – 50	Pre-commercial Thin – 454 **
<b>Post-harvest Fuels Treatments (acres)</b>		
Lop and Scatter (L&S) – 1,630	L&S with Machine Pile & Burn – 63	
Whole Tree Yard, L&S, Jackpot Burn to Broadcast Burn – 967		
<b>Road Treatments (miles)</b>		
Construct/Convert Unclassified Roads to National Forest System Roads (FSR) – 7.9		
Construct/Convert Unclassified Roads to FSR and Close Year-round – 5.7		
New Construction of FSR and Close Year-round – 4.4		
Decommission Unclassified Roads – 15.4		
Construct Temporary Roads and Decommission Following Activities – 1.3		

\* – Total Road Construction includes: 1) conversion of unclassified roads to FSR (13.6 miles), 2) construction of FSR roads (4.4 miles), and 3) Construction of Temp Roads (1.31 miles)

**Note** – The acres of Pre-commercial Thin (PCT) shown here are for sites where PCT is the only vegetative treatment. It does not include the acres of stands with an Overstory Removal (OR) (or combination of OR with another prescription) that are to be thinned post-sale. All OR treatments would receive a post-sale PCT treatment. This would amount to an additional 1,217 acres of PCT.

Figure 2-4: Canyon Alternative B Road Activities



**2.4.4.2.2 Nest Area**

Due to an expected impact on the Elk Winter – Habitat Effectiveness (HE) value, a Project-specific Forest Plan Amendment would be included in this alternative. This Amendment would change the wording of Guideline 5.1-3201 (Treat as Standard) on page 88 of the Revised Forest Plan, as amended. The Elk Winter HE value would be changed from 34 to 20 percent for the Nest portion of the project area only.

All other Forest Plan Standards would be met with this alternative. See Chapter 3 for details on expected impacts.

**Vegetation Management / Harvest Prescriptions**

About 2,730 acres would be managed through various harvest prescriptions to meet the objectives, see [Figure 2-5](#) and [Table 2-2](#).

1. Thin Overstocked Stands through: Overstory Removal with Seed-Cut Shelterwood (100 acres), Seed-Cut Shelterwood (23 acres), Prep-Cut (383 acres), Pre-commercial Thin (3 acres), and POL thinning (8 acres) prescriptions.
2. Restore and maintain Meadows through: Pine Encroachment (341 acres) prescription.
3. Restore Aspen Communities through: Aspen Regeneration (31 acres), Pine & Spruce Removal with Aspen Regeneration (338 acres), and Pine & Spruce Removal (120 acres) prescriptions.
4. Increase Grass/Forb Structural Stage within Forested Stands through: Patch Clearcut (891 acres), Aspen Regeneration, and Pine & Spruce Removal with Aspen Regeneration prescriptions.
5. Remove Commercial Timber through: all prescriptions mentioned in 1 and 3, Overstory Removal (89 acres), Pine and Spruce Removal, and Individual Tree Selection (403 acres), resulting in about 5.1 MMBF of commercial volume counting towards the ASQ.
6. As a result of these vegetation management activities, about 2,360 acres would require follow-up fuels treatments to keep fuel levels at or below Forest Plan Standards.

**Note** – The acre figures for each prescription were only listed the first time each prescription was mentioned, to lessen confusion of number of acres actually being treated.

**Transportation System / Access Management**

1. Establish an area closure within the project area – all roads and off-roads would be closed to all public motorized wheeled vehicles unless posted open for public use (i.e. snowmobile and administrative use would not be prohibited).
2. Maintain all existing National Forest System roads (FSR), about 21 miles, as open to all wheeled vehicles, with the exception of FSR 117.5D, which would be closed following activities.
3. Construct/Convert about 1.4 miles of existing unclassified road to FSR and maintain their open status to the public.
4. Construct/Convert about 3.0 miles of existing unclassified road to FSR and close them to public wheeled vehicle use.
5. Construct about 0.8 miles of FSR and close them to public wheeled vehicle use.
6. Construct about 1.7 miles of Temporary road and decommission following proposed activities.
7. Decommission about 8.2 miles of unclassified roads.
8. Reconstruct about 13.5 miles of existing road (FSR) for use to implement the proposed vegetation treatments.
9. Move about 0.6 miles of existing road off of private land onto National Forest System Lands. [Figure 2-6](#) and [Table 2-2](#) display these activities.

Figure 2-5: Nest Alternative B Vegetation Treatments

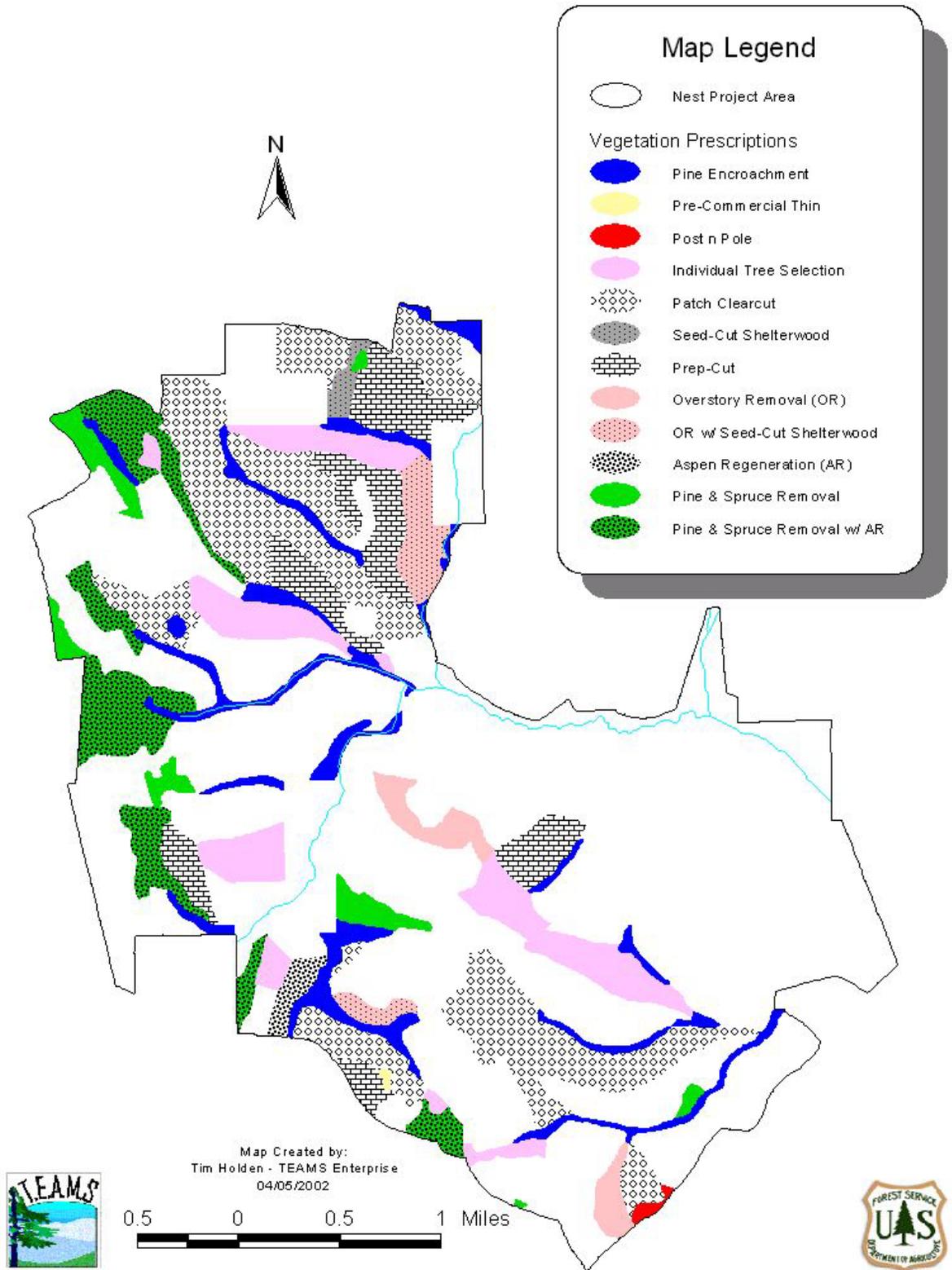
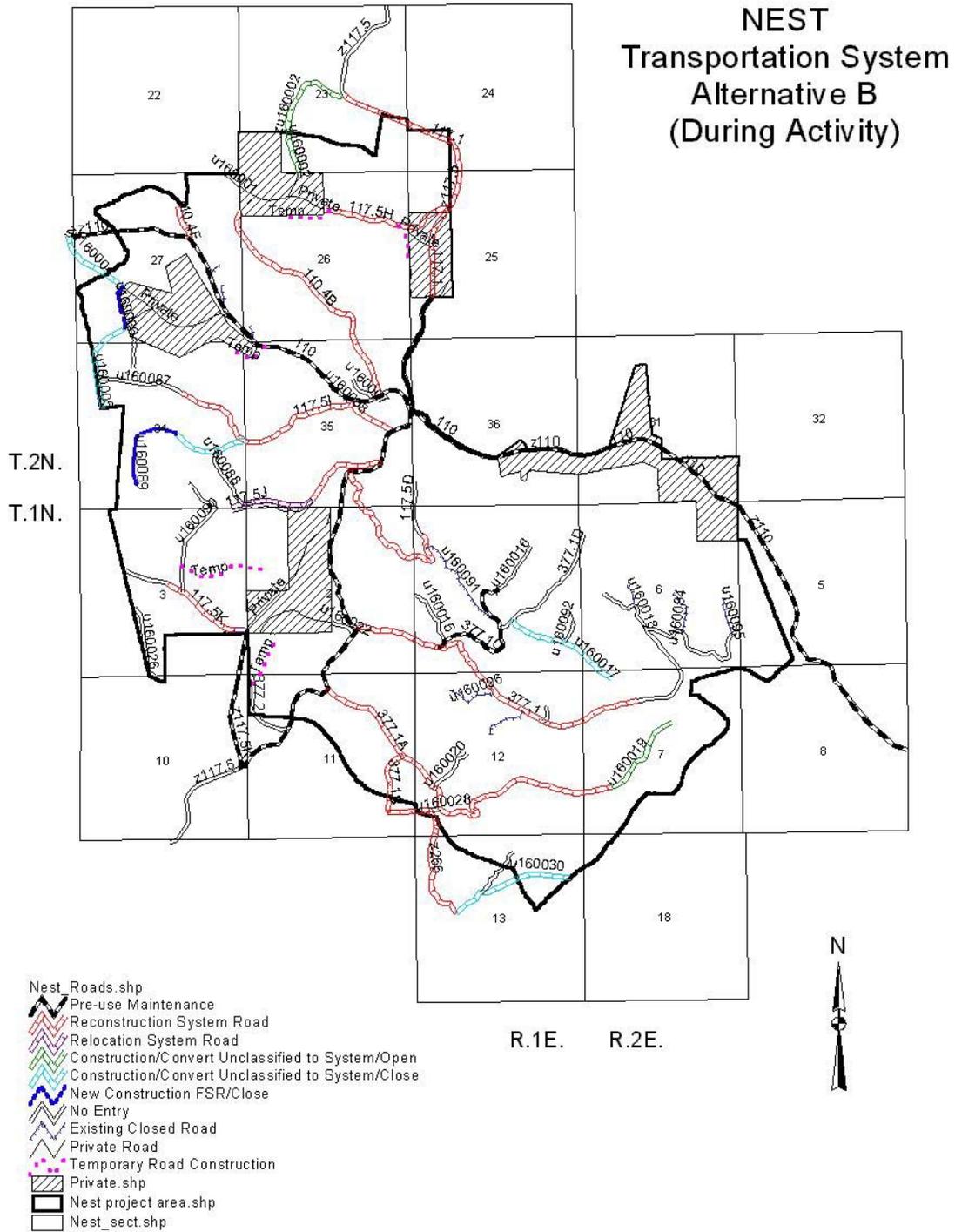


Figure 2-6: Nest Alternative B Road Activities



**Table 2-2: Nest Alternative B – Proposed Action**

<b>PROJECT AREA SUMMARY (Nest Portion)</b>		
Total Acres Treated – 2,730 acres	Area Closure – Entire Project Area (6,120 acres – excludes 770 acres private)	
Open Road Density – 2.1 miles/square mile (FSR only); 2.4 mi/mi <sup>2</sup> w/ Private	Total Existing Road Closing or Decommissioning – 10.4 miles	
Total Road Construction * – 7.5 miles	Total Road Reconstruction – 13.5 miles	
Projected Volume – 5.1 MMBF		
<b>Harvest Methods (acres)</b>		
Tractor – 2,727		
<b>Silvicultural Prescriptions (acres)</b>		
Patch Clearcut – 891	Individual Tree Select – 403	Overstory Removal – 89
Overstory Removal w/ Seed-Cut Shelterwood – 100	Seed-Cut Shelterwood – 23	Prep-Cut Shelterwood – 383
Aspen Regeneration – 31	Pine & Spruce Removal – 120	Pine & Spruce Removal w/ Aspen Regeneration – 338
Pine Encroachment – 341	POL – 8	Pre-commercial Thin – 3
<b>Post-harvest Fuels Treatments (acres)</b>		
Lop and Scatter (L&S) – 603	L&S with Machine Pile & Burn – 461	
Whole Tree Yard, L&S, Jackpot Burn to Broadcast Burn – 1,296		
<b>Road Treatments (miles)</b>		
Construct/Convert Unclassified Roads to National Forest System Roads (FSR) – 1.4		
Construct/Convert Unclassified Roads to FSR and Close Year-round – 3.0		
New Construction of FSR and Close Year-round – 0.8		
Construct/Relocate FSR off of Private Land – 0.6		
Decommission Unclassified Roads – 8.2		
Construct Temporary Roads and Decommission Following Activities – 1.7		

\* - Total Road Construction includes: 1) conversion of unclassified roads to FSR (4.4 miles), 2) construction of FSR roads (0.8 miles), 3) Construction of Temp Roads (1.7 miles), and Moving FSR off of Private Land (0.6 miles).

**Note** – The acres of PCT shown here are for sites where PCT is the only vegetative treatment. It does not include the acres of stands with an OR (or combination of OR with another prescription) that are to be thinned post-sale. All OR treatments would receive a post-sale PCT treatment. This would amount to an additional 189 acres of PCT.

### 2.4.4.3 Alternative C

This alternative was developed to meet the project objectives stated in Chapter 1, and reduce expected impacts on several Sensitive and MIS species. This alternative would: expand the width of the forested connectivity corridor for marten; decrease changes to golden-crowned kinglet and brown creeper habitat; and would improve conditions for the Elk Winter HE value by maintaining more cover. The silvicultural activities proposed for Alternative C did not vary from those proposed for Alternative B. It would just treat fewer acres than Alternative B. It would also result in less timber volume and a lower percentage of grass/forb structural stage within forested areas being produced, and would construct fewer new roads (FSR and temporary). However, it would result in about the same amount of meadows and hardwoods being restored, and the same open road density as Alternative B. See [Figures 2-7 through 2-10](#), and [Tables 2-3 and 2-4](#) for proposed activities. This alternative meets all standards and guidelines provided in the Forest Plan.

#### 2.4.4.3.1 Canyon Area

##### Vegetation Management / Harvest Prescriptions

About 2,176 acres would be managed through various harvest prescriptions to meet the objectives, see [Figure 2-7 and Table 2-3](#).

1. Thin Overstocked Stands through: Overstory Removal with Seed-Cut Shelterwood (85 acres), Seed-Cut Shelterwood (44 acres), Prep-Cut (78 acres), Overstory Removal with Prep-Cut (40 acres), Seed-Cut with Patch Clearcut (169 acres), and Pre-commercial Thinning (454 acres) prescriptions.
2. Restore and maintain Meadows through: Meadow Restoration (14 acres) and Pine Encroachment (50 acres) prescriptions.
3. Increase Grass/Forb Structural Stage within Forested Stands through: Patch Clearcut (241 acres), Defer with Patch Clearcut (185 acres), and Overstory Removal with Patch Clearcut (36 acres) prescriptions.
4. Remove Commercial Timber through: all prescriptions mentioned in 1 and 3, and overstory removal (780 acres). However, pre-commercial thinning would not be included in this.
5. As a result of these vegetation management activities, about 2,176 acres would require follow-up fuels treatments to keep fuel levels at or below Forest Plan Standards.

**Note** - The proposed vegetation management included in this alternative would result in providing about 3.8 million board feet of commercial volume towards the ASQ.

##### Transportation System / Access Management

1. Establish an area closure within the project area – all roads and off-roads would be closed to all public motorized wheeled vehicles unless posted open for public use (i.e. snowmobile and administrative use would not be prohibited).
2. Maintain all existing National Forest System roads (FSR), about 10.9 miles, as open to all wheeled vehicles.
3. Construct/Convert about 7.9 miles of existing unclassified road to FSR and maintain their open status to the public.
4. Construct/Convert about 5.7 miles of existing unclassified road to FSR and close them to public wheeled vehicle use.
5. Construct about 1.9 miles of FSR and close them to public wheeled vehicle use.
6. Construct about 1.0 miles of Temporary road and decommission following proposed activities.
7. Decommission about 15.4 miles of unclassified roads.
8. Reconstruct about 3.8 miles of existing road (FSR) for use to implement the proposed vegetation treatments. [Figure 2-8 and Table 2-3](#) display these activities.

Figure 2-7: Canyon Alternative C Vegetation Treatments

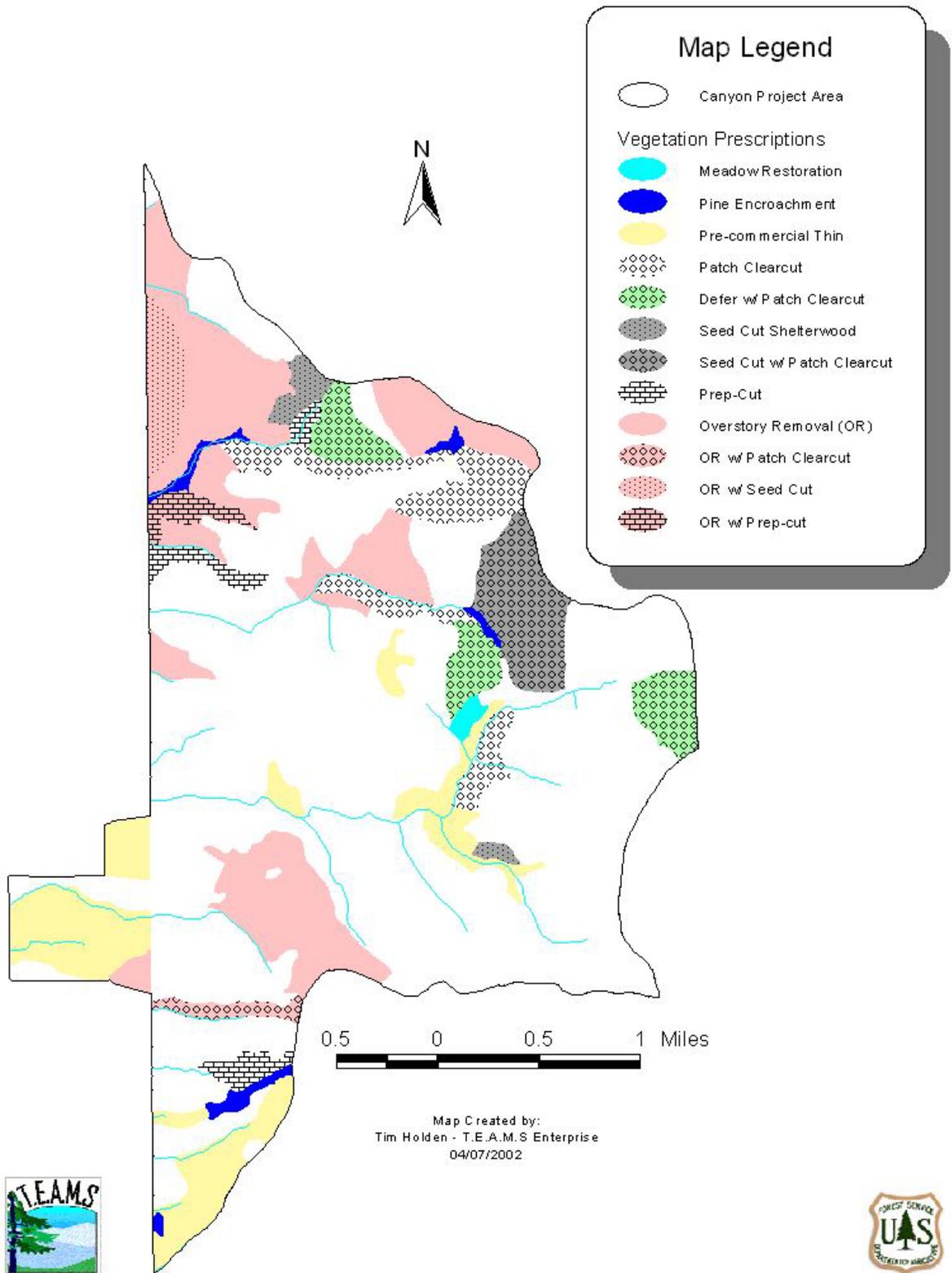
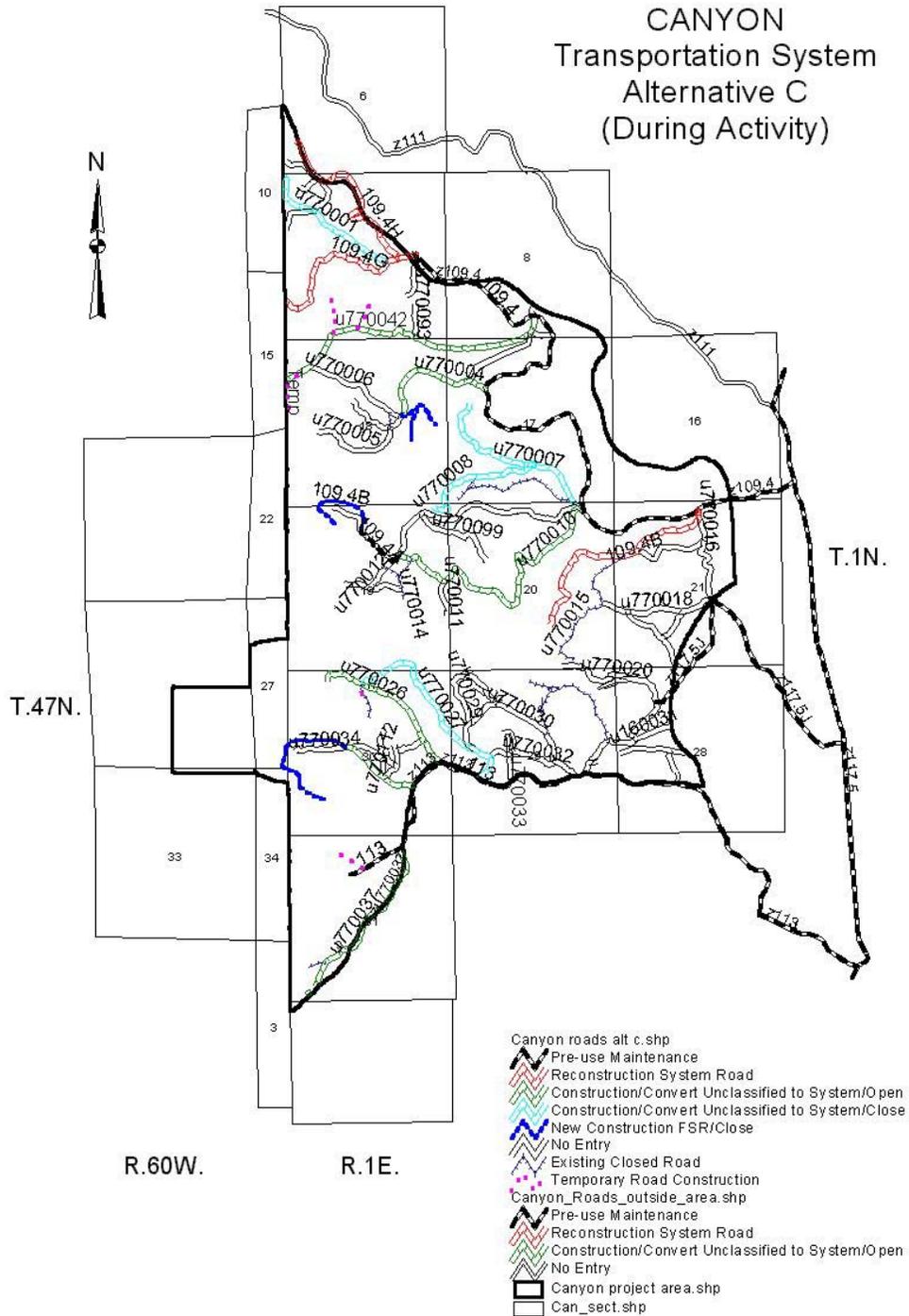


Figure 2-8: Canyon Alternative C Road Activities



**Table 2-3: Canyon Alternative C Activities**

<b>PROJECT AREA SUMMARY</b>		
Total Acres Treated – 2,176 acres	Area Closure – 5,329 acres	
Open Road Density – 2.2 miles/square mile	Total Existing Road Closing or Decommissioning – 21.1 miles	
Total Road Construction – 16.5 miles	Total Road Reconstruction – 3.8 miles	
Projected Volume – 3.8 MMBF		
<b>Harvest Methods (acres)</b>		
Tractor – 1,552	Tractor/Cable - 117	Cable/Skyline – 53
<b>Silvicultural Prescriptions (acres)</b>		
Patch Clearcut – 241	Primarily Deferred with Patch Clearcut – 185	Overstory Removal – 780
Overstory Removal w/ Seed-Cut Shelterwood – 85	Seed-Cut Shelterwood – 44	Prep-Cut Shelterwood – 78
Overstory Removal w/ Patch Clearcut – 36	Overstory Removal w/ Prep-Cut Shelterwood – 40	Seed-Cut Shelterwood w/ Patch Clearcut – 169
Meadow Restoration – 14	Pine Encroachment – 50	Pre-commercial Thin – 454
<b>Post-harvest Fuels Treatments (acres)</b>		
Lop and Scatter (L&S) – 1,359	L&S with Machine Pile & Burn – 63	
Whole Tree Yard, L&S, Jackpot Burn to Broadcast Burn – 754		
<b>Road Treatments (miles)</b>		
Convert Unclassified Roads to National Forest System Roads (FSR) – 7.9		
Convert Unclassified Roads to FSR and Close Year-round – 5.7		
New Construction of FSR and Close Year-round – 1.9		
Decommission Unclassified Roads – 15.4		
Construct Temporary Roads and Decommission Following Activities – 1.0		

\* - Total Road Construction includes: 1) conversion of unclassified roads to FSR (13.6 miles), 2) construction of FSR roads (1.9 miles), and 3) Construction of Temp Roads (1.0 mile)

**Note** – The acres of PCT shown here are for sites where PCT is the only vegetative treatment. It does not include the acres of stands with an OR (or combination of OR with another prescription) that are to be thinned post-sale. All OR treatments would receive a post-sale PCT treatment. This would amount to an additional 945 acres of PCT.

#### 2.4.4.3.2 Nest Area

##### Manage Vegetation

As a result of dropping several vegetation management units, about 1,856 acres would be managed through various harvest prescriptions to meet the purpose and needs, see [Figure 2-9](#) and [Table 2-4](#).

1. Thin Overstocked Stands through: Overstory Removal with Seed-Cut Shelterwood (24 acres), Prep-Cut (64 acres), Pre-commercial Thin (3 acres), and POL (8 acres) prescriptions.
2. Restore and maintain Meadows through: Pine Encroachment (330 acres) prescription.
3. Restore Aspen Communities through: Aspen Regeneration (31 acres), Pine & Spruce Removal with Aspen Regeneration (338 acres), and Pine & Spruce Removal (120 acres) prescriptions.
4. Increase Grass/Forb Structural Stage within Forested Stands through: Patch Clearcut (599 acres), Aspen Regeneration, and Pine & Spruce Removal with Aspen Regeneration prescriptions.
5. Remove Commercial Timber through: all prescriptions mentioned in 1 and 3, Overstory Removal (89 acres), Pine and Spruce Removal, and Individual Tree Selection (250 acres), resulting in about 2.8 MMBF of commercial volume towards the ASQ.
6. As a result of these vegetation management activities, about 1,487 acres would require follow-up fuels treatments to keep fuel levels at or below Forest Plan Standards.

**Note** – The acre figures for each prescription were only listed the first time each prescription was mentioned, to lessen confusion of number of acres actually being treated.

##### Implement Needed Transportation System

The only change from Alternative B Transportation System is less Temporary Road construction/decommissioning, due to fewer vegetation management units.

1. Establish an area closure within the project area – all roads and off-roads would be closed to all public motorized wheeled vehicles unless posted open for public use (i.e. snowmobile and administrative use would not be prohibited).
2. Maintain all existing National Forest System roads (FSR) as open to all wheeled vehicles, with the exception of FSR 117.5D, which would be closed following activities. This would result in maintaining about 21.0 miles of FSR.
3. Construct/Convert about 0.8 miles of existing unclassified road to FSR and maintain their open status to the public.
4. Construct/Convert about 3.0 miles of existing unclassified road to FSR and close them to public wheeled vehicle use.
5. Construct about 0.8 miles of FSR and close them to public wheeled vehicle use.
6. Construct about 0.9 miles of Temporary road and decommission following proposed activities.
7. Reconstruct about 13.5 miles of existing road (FSR and Unclassified) for use to implement the proposed vegetation treatments.
8. Decommission about 8.1 miles of unclassified roads.
9. Relocate about 0.6 miles of existing road off of private land onto National Forest System Lands. [Figure 2-10](#) and [Table 2-4](#) display these activities.

Figure 2-9: Nest Alternative C Vegetation Treatments

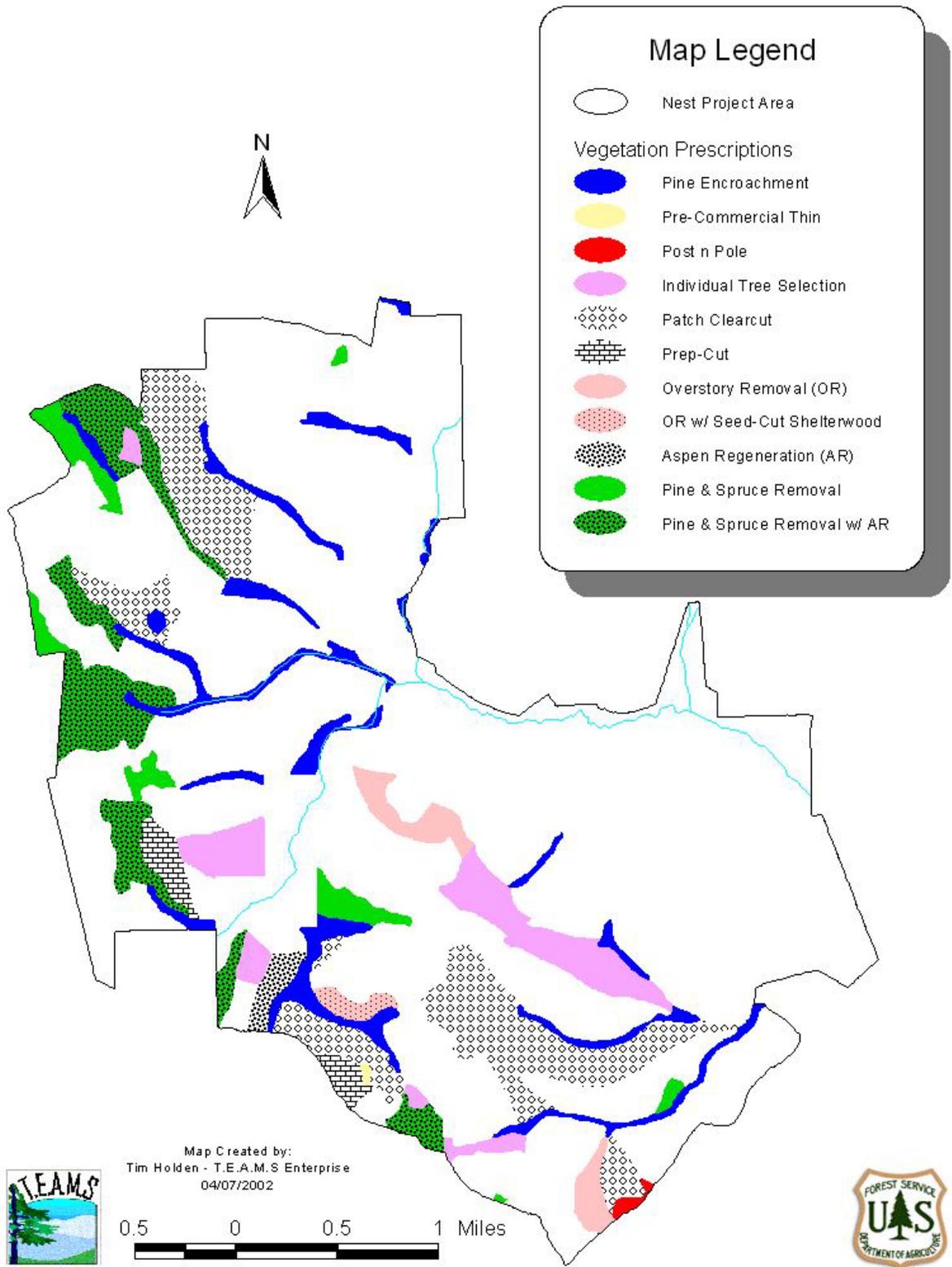
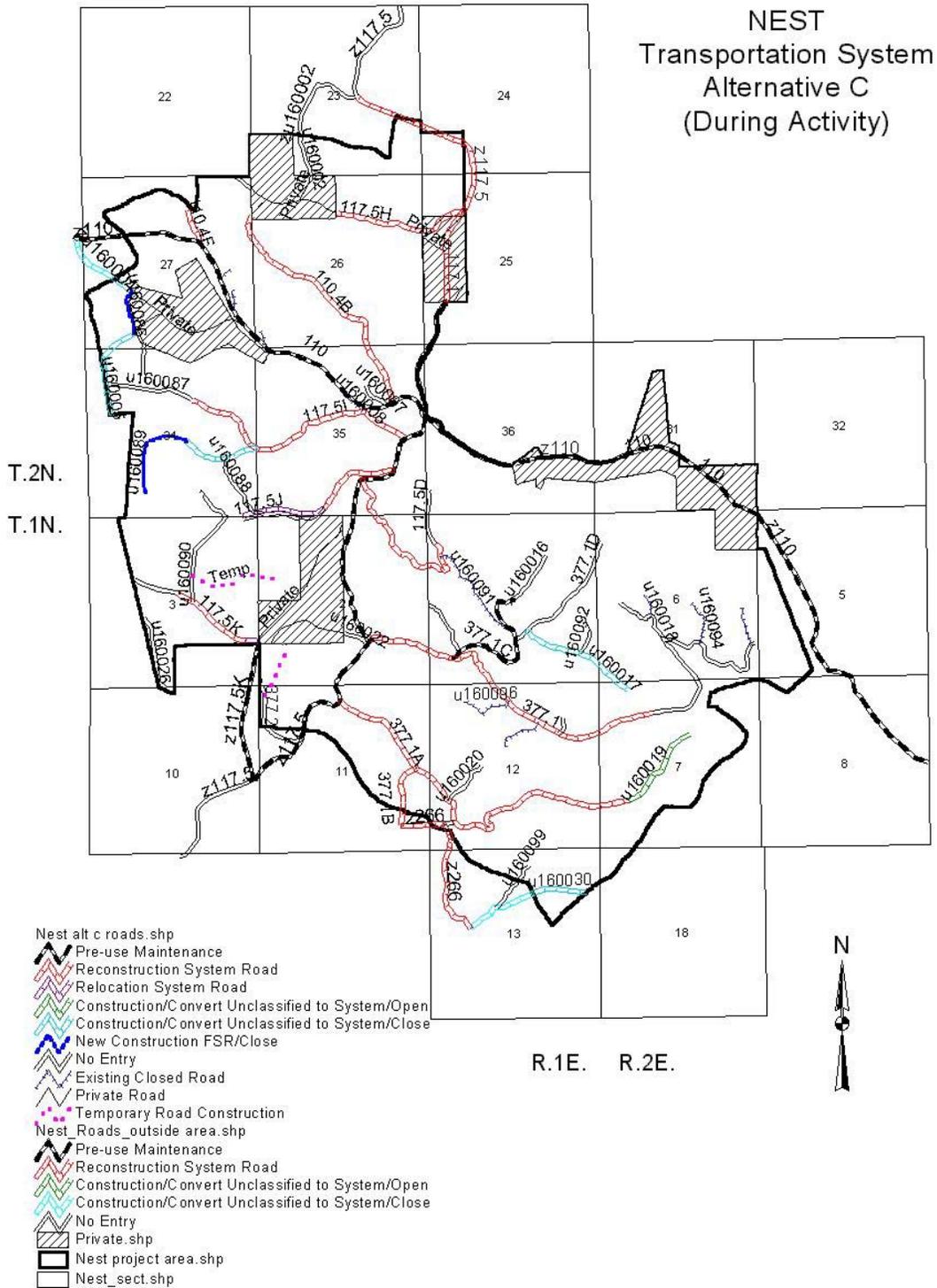


Figure 2-10: Nest Alternative C Road Activities



**Table 2-4: Nest Alternative C Activities**

<b>PROJECT AREA SUMMARY</b>		
Total Acres Treated – 1,856 acres		Area Closure – 6,890 acres
Open Road Density – 2.1 miles/square mile (FSR only); 2.4 mi/mi <sup>2</sup> w/ Private		Total Existing Road Closing or Decommissioning – 10.3 miles
Total Road Construction * – 6.1 miles		Total Road Reconstruction – 13.5 miles
Projected Volume – 2.8 MMBF		
<b>Harvest Methods (acres)</b>		
Tractor – 1,853		
<b>Silvicultural Prescriptions (acres)</b>		
Patch Clearcut – 599	Individual Tree Select – 250	Overstory Removal – 89
Overstory Removal w/ Seed-Cut Shelterwood –24	Seed-Cut Shelterwood – 0	Prep-Cut Shelterwood – 64
Aspen Regeneration – 31	Pine & Spruce Removal – 120	Pine & Spruce Removal w/ Aspen Regeneration – 338
Pine Encroachment – 330	POL – 8	Pre-commercial Thin – 3
<b>Post-harvest Fuels Treatments (acres)</b>		
Lop and Scatter (L&S) – 374		L&S with Machine Pile & Burn – 450
Whole Tree Yard, L&S, Jackpot Burn to Broadcast Burn – 663		
<b>Road Treatments (miles)</b>		
Construct/Convert Unclassified Roads to National Forest System Roads (FSR) – 0.8		
Construct/Convert Unclassified Roads to FSR and Close Year-round – 3.0		
New Construction of FSR and Close Year-round – 0.8		
Construct/Relocate FSR off of Private Land – 0.6		
Decommission Unclassified Roads – 8.1		
Construct Temporary Roads and Decommission Following Activities – 0.9		

\* - Total Road Construction includes: 1) conversion of unclassified roads to FSR (3.8 miles), 2) construction of FSR roads (0.8 miles), 3) Construction of Temp Roads (0.9 miles), and Moving FSR off of Private Land (0.6 miles).

**Note** – The acres of PCT shown here are for sites where PCT is the only vegetative treatment. It does not include the acres of stands with an OR (or combination of OR with another prescription) that are to be thinned post-sale. All OR treatments would receive a post-sale PCT treatment. This would amount to an additional 113 acres of PCT.

**2.5 Summary Comparison of Alternatives**

Table 2-5 presents a comparative summary of principle activities and the environmental impacts for the alternatives being considered in detail. The summary is limited to the effects on project objectives, significant issues, tracking issues, Forest Plan standards, and other resources the IDT deemed important for an informed decision. A brief discussion of the similarities and differences between the alternatives follows the table.

**Table 2-5: Comparison of Activities and Effects**

<b>PROJECT OBJECTIVE INDICATORS</b>			
	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
Percentage of Forested Stands at Moderate to High Risk of MPB Infestation	60.2(C) – 9.4 H 66.9(N) – 15.7 H	32.8(C) – 3.0 H 41.5(N) – 11.4 H	38.2 (C) – 3.6 H 54 (N) – 14.2 H
Acres of Meadow Communities Treated (Restored/Returned and Cleaned)	0	C – 14(R), 50(C) N – 0(R), 341(C)	C – 14(R), 50(C) N – 0(R), 330(C)
Acres of Hardwood (Aspen) Comm. Treated (Nest Only)	0	489	489
Percent of Forested Area in Grass/Forb Structural Stage	3.4 (C), 3.0 (N)	5.0 (C), 7.0 (N)	5.0 (C), 5.7 (N)
Estimated Net Volume of Timber (MMBF)	0	5.3 (C), 5.1 (N)	3.8 (C), 2.8 (N)
Open Road Density (Miles per Section)	4.1 (C), 3.3 (N)	2.2 (C), 2.1 (N)	2.2 (C), 2.1 (N)
Total Road Density (Open& Closed FSR, & Private) (Miles per Section)	4.7 (C), 3.5 (N)	3.4 (C), 2.9 (N)	3.1 (C), 2.9 (N)
Do All HE Values Meet or Exceed Existing Forest Plan Standard	No	No – However, the Forest Plan would be amended in this area.	Yes
<b>SIGNIFICANT ISSUE INDICATORS</b>			
Quality of Forested Connectivity Corridor for Marten	Good	Fair/Marginal	Good
HABCAP Values for Brown Creeper	.46 (C), .33 (N)	.40 (C), .32(N)	.42 (C), .33 (N)
HABCAP Values for Golden-crowned Kinglet (Summer & Winter – Nest Only)	.32 (S), .25 (W)	.32 (S), .23 (W)	.32 (S), .25 (W)
Canyon HE Ratings for Deer (S & W)	.49 (S), .49 (W)	.55 (S), .56 (W)	.55 (S), .56 (W)
Canyon HE Ratings for Elk (S & W)	.53 (S), .50 (W)	.59 (S), .55 (W)	.60 (S), .56 (W)
Nest HE Ratings for Deer (S & W)	.51 (S), .34 (W)	.54 (S), .36 (W)	.54 (S), .36 (W)
Nest HE Ratings for Elk (S & W)	.55 (S), .23 (W)	.57 (S), .22 (W)	.58 (S), .24 (W)
<b>TRACKING ISSUE INDICATORS</b>			
Acres of Jackpot to Broadcast Burn Rx	0	2,263	1,417
Adequacy of Access to State-line Area	Fair/Marginal	Good	Good
Are Scenic Integrity Objectives (SIO) Being Met	Yes	Yes	Yes
Acres of Disturbed Area * (Noxious Weed Potential)	0	1,873 (C) 2,727 (N)	1,669 (C) 1,853 (N)
<b>THREATENED, ENDANGERED, &amp; SENSITIVE SPECIES</b>			
Terrestrial Species (T & E)	No Effect	No Effect	No Effect
Terrestrial Species (Sensitive)	No Impact	NI, MIIH, BI	NI, MIIH, BI
Plant Species (Sensitive)	No Impact	No Impact, ND	No Impact, ND
Fish Species (Sensitive)	No Impact	No Impact	No Impact

\* The acres of Disturbed Area included ground based skidding and cable/tractor units only. Road construction and skyline yarding units were not included in the calculation.

NI = No Impact

MIIH = May Impact Individuals or Habitat, but would not likely contribute to a trend towards Federal listing or a loss of viability.

BI = Beneficial Impact

ND = No Determination

## 2.5.1 Project Objective Indicators

### 2.5.1.1 Thin Currently Overstocked Stands

Stocking density of stands is better characterized by calculating the risk to infestation to Mountain Pine Beetle (MPB) in the Black Hills. The existing condition (Alternative A) shows that over 60 percent of the forested stands are at moderate to high risk for infestation of MPB. Alternative B reduces the percentage at moderate to high risk by about 46 percent in Canyon and 38 percent in Nest. Alternative C reduces the percentage by about 37 percent in Canyon and 19 percent in Nest. The majority of stands at Moderate-High to High in Nest would not be treated with either action alternative, due to deferral for marten habitat or other resource.

### 2.5.1.2 Restore Meadows

The action alternatives would treat about 405 acres of meadow communities. Fourteen (14) acres would be converted from a ponderosa pine cover type back to grass, and about 391 acres would be "cleansed" of conifers, 50 acres in Canyon and the remaining 341 acres in Nest. Alternative C would be the same, with the exception of 11 less acres of treatment in Nest. Overall these treatments would result in a substantial increase in forage production where treatments have occurred. However, this is likely just a short-term "fix". Without the re-introduction of prescribed burning, it is likely that these areas would reseed with conifers in the next 20 to 40 years.

Alternative A would not treat any of the meadow communities and would continue to produce less forage over time as more conifers fill in and encroach into new areas.

### 2.5.1.3 Restore Hardwood (Aspen) Communities

The action alternatives would not create any new aspen stands, because they already exist within the project area. What they would do is remove competing vegetation (pine and spruce) and in some cases regenerate the aspen as well. These treatments would result in improving hardwood communities

### 2.5.1.4 Increase Grass/Forb Structural Stage within Forested Areas

Forest Plan Objective 209 states: Manage at least 5 percent of a timber harvest project area for the grass/forb structural stage. Grass/forb openings should be 1 acre in size or larger. In accounting for openings, include those created by wildfire or other natural disturbance events. Also include grass/forb openings greater than 1 acre within low-density stands.

Both action alternatives would meet this objective of 5 percent in each portion of the project area. This would improve the foraging condition within forested areas for a number of species.

### 2.5.1.5 Remove Commercial Timber

Alternative B is expected to produce about 10.4 MMBF, and Alternative C about 6.6 MMBF. Sawlogs and other wood products, as well as employment opportunities associated with Alternative B or C, would help sustain local sawmills and economies. The estimated net value from Alternative B would total about \$85,674 (Canyon (\$114,675) and Nest \$200,349). Alternative C would be expected to have a net value totaling about \$76,585 (Canyon \$47,670 and Nest \$28,915). In contrast, Alternative A would not generate any wood products or employment opportunities, nor would any money be returned to the county.

**Note:** Values in parentheses are negative values.

### 2.5.1.6 Implement Needed Transportation System

Both action alternatives would implement a similar travel management system. This system would substantially reduce the number of Unclassified roads within the project area, as well as improve others and add them to the FSR inventory. These changes would decrease the

overall maintenance expense historically incurred, which would allow for better maintained roads for the public to access.

These alternatives also include an Area Closure that would ban public use of motorized wheeled vehicles on all roads and off-roads unless signed open.

## 2.5.2 Significant Issue Indicators

### 2.5.2.1 Quality of Forested Connectivity Corridor for Marten

This indicator is subjective in nature, but is based on professional opinion. The forested corridor retained in Alternative B should meet the needs of marten in the short-term. If there were to be any kind of stand replacing event within this remaining corridor, it may not. It is narrow and would not allow for much alteration of forested condition. On the other hand, Alternative C retains a wide forested corridor maintaining option for future management.

### 2.5.2.2 HABCAP Values for Brown Creeper and Golden-Crowned Kinglet

The Brown Creeper is listed as a management indicator species in the Black Hills Forest Plan and is primarily dependent on ponderosa pine habitat types. Therefore, little change in the HABCAP value is noticed in the Nest portion of the project area. The Canyon portion contains more suitable habitat for the bird. Alternative C retains more mature ponderosa pine stands than Alternative B and therefore produces higher HABCAP values. Expected HABCAP Values: Alternative B - 0.40 (C), and 0.32 (N), Alternative C – 0.42(C), and 0.33(N).

The Golden-Crowned Kinglet is a Region 2 Sensitive Species that is primarily dependent on spruce habitat types. The Nest portion of the project area was the only portion that would be changing spruce habitat and was therefore the only area run through HABCAP. Summer HABCAP values do not change with implementation of any alternative. Neither action alternative would create substantial changes in any of the HABCAP values, but Alt. B does reduce the winter rating somewhat. Due to the disturbance of potentially occupied habitat with either alternative, the BE does not make any distinction between alternatives. Both alternatives would result in a “May Impact Individuals or Habitat” determination.

### 2.5.2.3 Habitat Effectiveness Ratings for Deer and Elk

The Phase I amendment to the Forest Plan has changed the status of several guidelines. While the Phase I amendment is in effect, these select guidelines are now treated as standards. In particular, 5.1-3201 is listed as a guideline that is to be treated as a standard, [Phase I Amendment, p.88](#).

Both action alternatives improve winter and summer ratings for deer in both portions of the project area. There are no differences between action alternatives for deer; both improve the values equally.

The elk ratings are a bit more complicated. All summer values and winter values (Canyon only) increase with implementation of any action alternative; primarily through open road density decreases. The winter values in the Nest portion are currently substantially lower than the existing standard of 34 percent. Alternative B decreases the current low value even farther, due to reduction of cover. On the other hand, Alternative C slightly improves the winter HE value for elk. However, since elk primarily use the Nest area for spring, summer, and fall months, the winter ratings are not as critical as the summer values. Implementation of Alternative B for the Nest area would require a Project-specific Forest Plan Amendment to lower the elk winter HE value from the existing 34 percent to 20 percent.

If the full access management proposal in either action alternative were not implemented, there would be substantial changes (reductions) to the calculated HE values for both species and seasons.

### 2.5.3 Tracking Issue Indicators

#### 2.5.3.1 Acres of Jackpot to Broadcast Burning

Alternative B proposes jackpot to broadcast burning on about 2,263 acres. This is substantially more than Alternative C (1,417 acres).

#### 2.5.3.2 Adequate Access to Stateline Area

Either action alternative would improve access to the Stateline area through construction of new roads that would remain on the FSR inventory. In addition, the action alternatives would create several helispots that could be used for fast response to wildfires in this area. Alternative A would maintain the existing moderate access.

#### 2.5.3.3 Scenic Integrity Objectives (SIO)

About 5 percent of the project area is in Moderate SIO rating and the remaining 95 percent is Low. All alternatives would meet the SIO requirements.

#### 2.5.3.4 Acres of Disturbed Area

The acres of disturbed area directly correlate with the amount and spread of noxious weeds in an area. Alternative A would not increase the rate at which the existing noxious weeds would spread. Either action alternative would increase this rate substantially and could increase the number of species present within the project area. Alternative B proposes to disturb substantially more area than Alternative C.

### 2.6 Identification of the Preferred Alternative

**Alternative B** is the Forest Service preferred alternative.

# CHAPTER 3

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## AFFECTED ENVIRONMENT



## Chapter 3 – Affected Environment / Environmental Consequences

### 3.1 Introduction

This chapter summarizes the physical, biological, social, and economics components of the affected environment of the Canyon/Nest project area, and potential consequences to that environment due to implementation of the alternatives. It also presents the scientific and analytical basis for the comparison of alternatives presented in Chapter 2.

The discussions of resources and potential effects take advantage of existing information included in the Black Hills National Forest Plan/FEIS, other project EA's or EIS's, project-specific resource reports and related information, and other sources as indicated. Where applicable, such information is briefly summarized and referenced to minimize duplication. Complete specialists reports, and other analysis information are in the project planning record.

The discussions are arranged by resource area (eg: Silviculture, Fuels, Watershed) and within each resource area the affected environment is described and the environmental consequences are disclosed. The environmental consequences discussion will describe any direct, indirect or cumulative effects from the proposed activities. Direct effects are those occurring at the same time and place as the initial cause or action. Indirect effects are those that occur later in time or spatially removed from the activity. Cumulative effects result from the past, present and foreseeable future activities

#### 3.1.1 General Cumulative Effects Discussion

This section is intended to summarize past, present, and foreseeable future activities, projects, or events that could lead to cumulative effects. All of the information presented within this section was considered by the IDT when preparing the cumulative effects sections for each resource.

Sometimes the combined environmental effects of several projects are both more substantial than those of individual actions and of a qualitatively different nature. Other activities in addition to the proposed action are occurring in the vicinity. Therefore, it is important that decisions made for this project are based on an understanding of the cumulative effects of this project and other events and with consideration of the potential effects of projects that may take place in the vicinity. This includes looking at conditions that exist outside the Canyon/Nest Project Area.

The first step is to determine within what boundaries the cumulative effects will be analyzed. For this analysis the geographic boundaries are evaluated based upon the distance that an impact can travel. Therefore, there are multiple cumulative effects areas for the various resources discussed in this EA. Each resource defines what that cumulative effects area is specifically for that resource.

The time frames within which cumulative effects are analyzed are roughly based upon the time from the previous entry to the next future entry. This time was chosen because it is at these points that decisions are made. This time frame encompasses the time frame over which this analysis is conducted and any other analysis that is also occurring in this planning period. This time frame is roughly 10 to 15 years.

In addition to the project level, cumulative effects are measured at the Forest Plan level to assess impacts of similar treatments on adjacent areas and across the entire Forest. This scale of cumulative impacts analysis is available in the FEIS for the Revised Forest Plan, as amended.

##### 3.1.1.1 Past, Present, and Future Actions in the Cumulative Effects Areas

Some changes are always taking place in the condition of the National Forest, with or without human activity. Many of these, such as the changes set in motion by wildfires, are significant changes and they will continue even if all human activity ceased.

In order to measure the cumulative effects that vegetative treatments have when combined with past, present, and future activities, the IDT looked at a specific geographic area. The area is displayed in Figure 3-1. Any activity that overlaps the project in time and space does not necessarily contribute to cumulative effects. The cumulative effects discussions in each section cover those items that do contribute to cumulative effects by resource area.

### **3.1.1.1.1 Past Activities or Events**

- Three of the most noticeable activities within the cumulative effects area are past road building, vegetation management (logging), and fire suppression. This started around the time of European settlement and has occurred on federal and private lands within the area since then.
- Other commercial driven activities such as livestock grazing, hunting, trapping, and mining have also occurred in the cumulative effects area.
- Non-commercial activities such as firewood cutting, camping, hiking, biking, snowmobiling, hunting, and recreational trapping have also occurred.

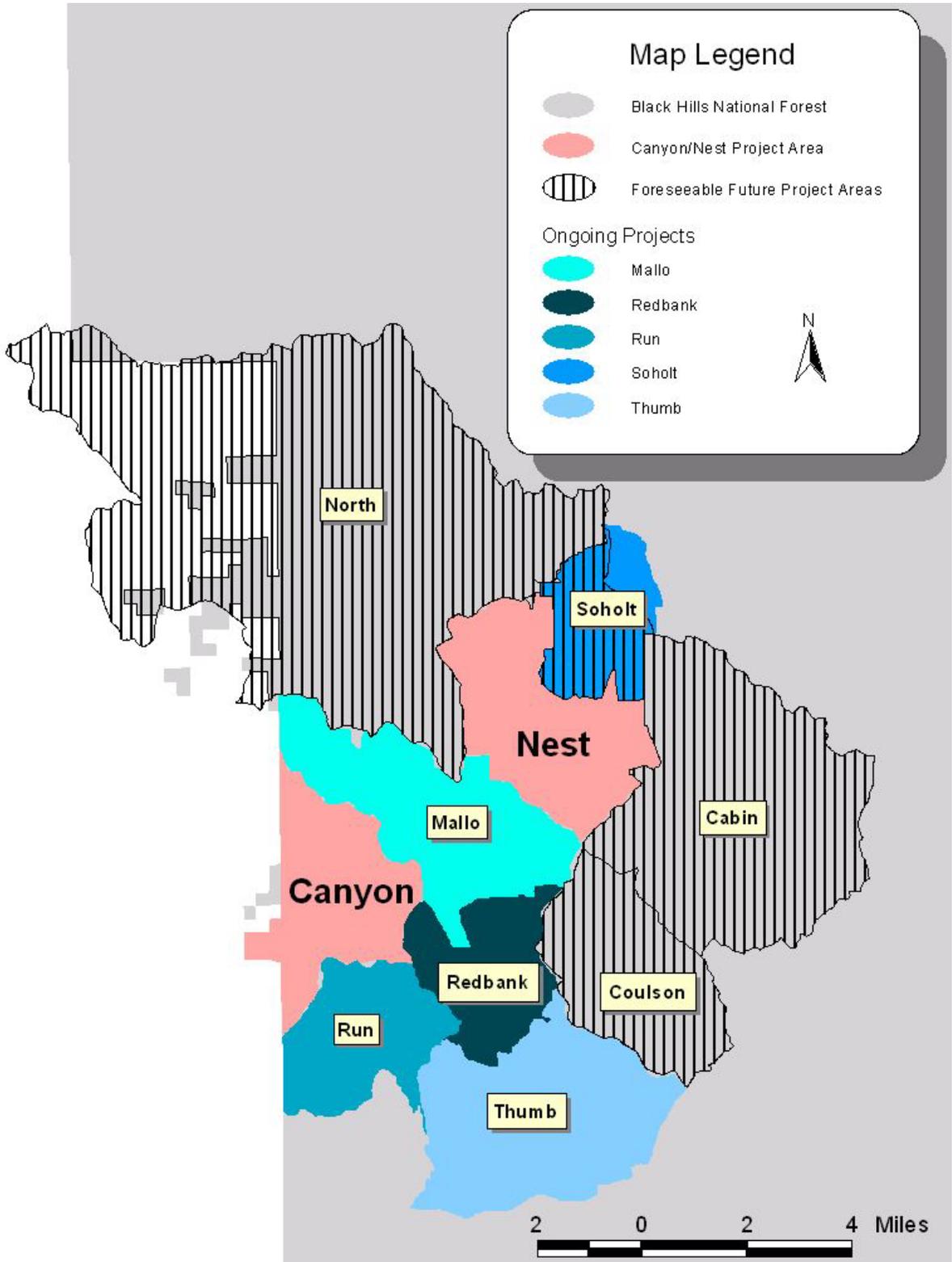
### **3.1.1.1.2 Ongoing (Current) Activities or Events**

- Livestock grazing, fire suppression, dispersed recreation (of all kinds), and firewood gathering are ongoing activities and vary in intensity depending upon the season throughout the cumulative effects area.
- Five ongoing projects are either adjacent to or relatively close to the Canyon/Nest project. They are the Mallo, Run, Redbank, Soholt, and Thumb projects and are displayed in Figure 3-1. These projects are primarily managing vegetation compositions, but in addition contain some travel management activities as well. Specific activities associated with these projects that could contribute to cumulative effects are discussed under each resource section of this EA.
- There is private land within the area, some of which is being developed.

### **3.1.1.1.3 Foreseeable Future Activities or Events**

- Livestock grazing, fire suppression activities, dispersed recreation, and firewood gathering (in designated areas only) will likely continue to occur in the future.
- Vegetation and travel management activities are likely to occur, both on private and Forest Service land. Three projects have already been identified: North, Cabin, and Coulson (Figure 3-1). These projects will likely change the vegetation compositions, and change the open and total road densities within their project areas. However specific information about these projects is unavailable at this time.
- Private lands will likely be further developed in the future.

Figure 3-1: Cumulative Effects Map



As can be seen in Figure 3-1, a portion of the Cabin (foreseeable future) Project area overlaps with a portion of the Soholt (ongoing) Project area.

## 3.2 Soils and Water

### 3.2.1 Introduction

This report describes the results of the analysis of the effects of implementation of the Canyon/Nest Project on soil and water resources. This report focuses on the environmental assessment of the Alternatives and proposed Best Management Practices (BMP's) to protect hillslope and aquatic resources. Appendices are attached which include a listing of the BMP's (Appendix A) that would apply to the project and the Watershed Cumulative Effects Assessment (Appendix B of the Hydrology/Soils Report).

### 3.2.2 Direction

The Regional Office of the United States Forest Service Rocky Mountain Region developed the Watershed Conservation Practices Handbook (FSH 2509.25), which provides the legal background for soil and water conservation measures, as well as providing standards, design criteria, and monitoring requirements for project implementation. The Black Hills National Forest Land and Resource Management Plan (LMRP) provides Goals and Objectives regarding riparian, stream and overall watershed health. The Regional Watershed Conservation Practices Handbook (WCPH) standards are included in the LMRP as standards, and the entire handbook is incorporated by reference.

### 3.2.3 Soils and Watershed Concerns

Erosion from road surfaces and vegetation management areas could increase peak flows and sediment delivery to stream channels and as a result water quality; stream channel stability downstream aquatic resource habitat and beneficial uses of water could be adversely impacted.

### 3.2.4 Description of the Alternatives as they Relate to the Soil and Water Resource

#### 3.2.4.1 Alternative A (No Action)

Implementation of the No Action Alternative will maintain the existing condition of the water resource, riparian environment, and stream channels. An opportunity will be foregone to reduce stand densities that would reduce the fire hazard and potential for large fires and to close and or rehabilitate roads.

#### 3.2.4.2 Alternatives B and C

Implementation of the Alternative B or C could increase on-site erosion and sediment delivery to stream channels, resulting in increased fluvial erosion and adversely effect water quality, stream channel stability, downstream aquatic resource habitat and beneficial uses of water. The processes and watershed conditions that could cause increased fluvial erosion are reduction of canopy cover, ground disturbance, and loss of ground cover. Increased fluvial erosion could result in increases in the percentage of fine material in stream channels. Nutrient laden ash produced by prescribed burning would enter adjacent streams and temporarily change water quality conditions.

##### 3.2.4.2.1 Watershed Mitigation for Alternatives B and C

1. Implementing BMP's would protect water quality. BMP's are the primary method utilized by the Forest Service to prevent water quality degradation and to meet State Water Quality objectives relating to nonpoint sources of pollution. BMP's that relate directly to the Canyon/Nest Project are described in Appendix A.
2. Site-specific mitigation measures that relate directly to these BMP's would be implemented to minimize on-site erosion and instream water quality and aquatic habitat impacts. Measures would also be designed and implemented to minimize adverse changes in other water quality parameters such as dissolved oxygen, water temperature, and turbidity.

### 3.2.5 Affected Environment

#### 3.2.5.1 Analysis Watersheds

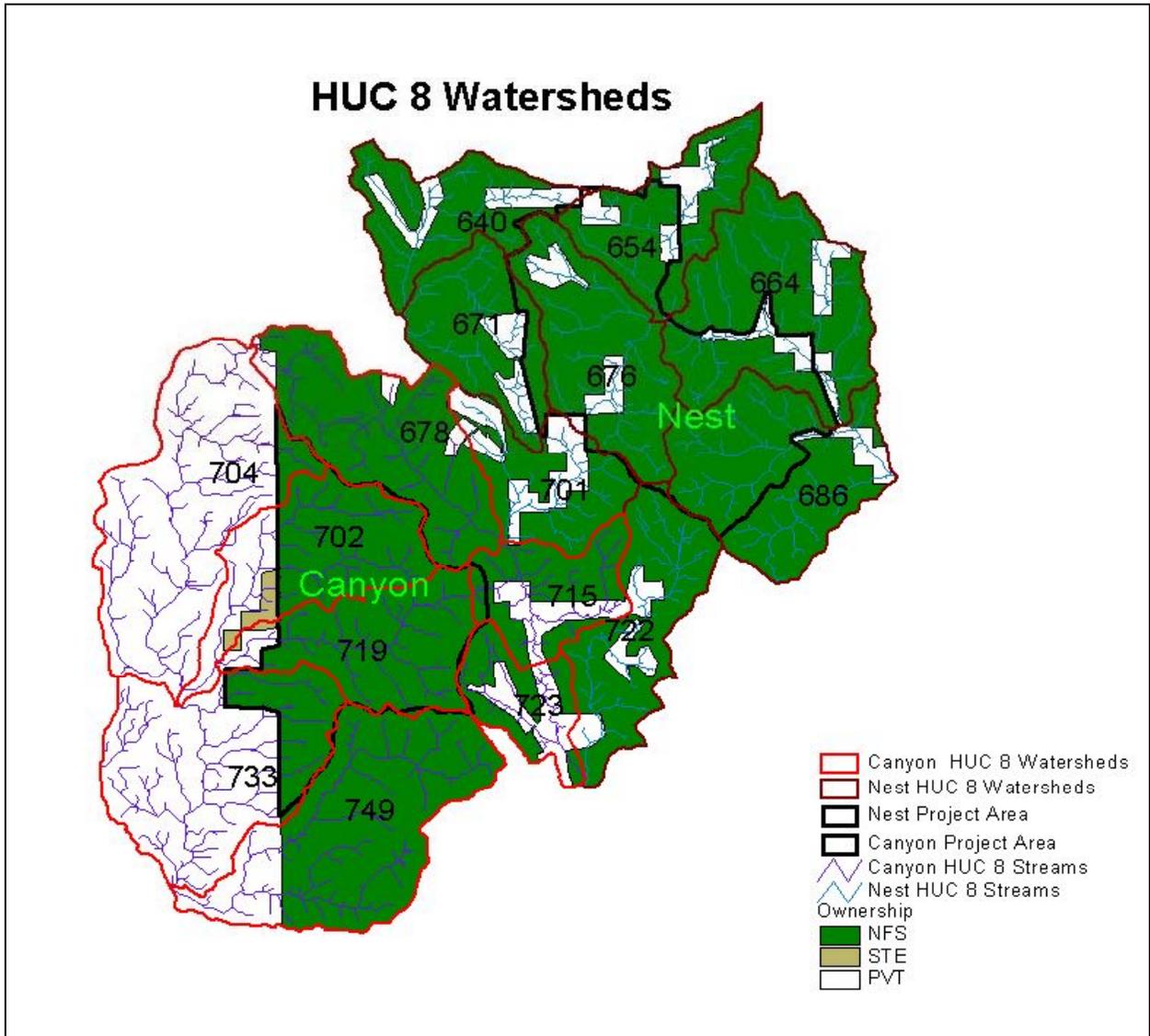
Hydrologic Unit Codes (HUC) consists of a nested series of two digit numbers that detail the watershed level. A watershed assigned a 12 digit HUC would be a 6<sup>th</sup> level watershed. The HUC numbers demonstrate the relative position of watersheds, so that a first level watershed contains the mainstem stream that drains into the ocean, as well as all its tributaries. A second level watershed contains the mainstem tributary to the first level, as well as all tributary streams to the second level stream. Project watersheds include both lands managed by the Forest and those privately owned or managed by other agencies (Table 3-1, Figure 3-2). This report analyses watersheds at the 8th level (Analysis Watersheds). Watersheds with a minor amount of land within project boundaries are not analyzed.

**Table 3-1: Analysis Watersheds**

Watershed Name HUC 6	HUC 6 Number	Figure 1 HUC 8-ID	HUC 8 Number	HUC 8 Acres	Acres Within Project Area	FS Acres	Non FS Acres
<b>Canyon</b>							
Stockade Beaver	101201070401	678	1012010704010203	3,114	28	2937	177
Stockade Beaver	101201070401	702	1012010704010302	2,679	1,794	1798	880
Stockade Beaver	101201070401	704	1012010704010303	4,661	228	232	4,429
Stockade Beaver	101201070401	715	1012010704010202	1,637	88	1219	418
Stockade Beaver	101201070401	719	1012010704010301	2,429	2,205	2236	193
Redbird Canyon	101201070404	723	1012010704040102	1,207	10	725	482
Stockade Beaver	101201070401	733	1012010704010402	4,050	956	981	3,068
Stockade Beaver	101201070401	749	1012010704010401	4,223	19	3529	694

Watershed Name HUC 6	HUC 6 Number	Figure 1 HUC 8-ID	HUC 8 Number	HUC 8 Acres	Acres Within Project Area	FS Acres	Non FS Acres
<b>Nest</b>							
Stockade Beaver	101201070401	640	1012010704010101	1,945	26	1522	423
Upper Castle Creek	101201100105	654	1012011001050101	2,113	1,060	1679	434
Upper Castle Creek	101201100105	664	1012011001050201	3,743	1,088	3212	531
Stockade Beaver	101201070401	671	1012010704010102	1,992	278	1666	326
Upper Castle Creek	101201100105	676	1012011001050102	2,700	2,666	2345	355
Upper Castle Creek	101201100105	686	1012011001050202	3,348	1,698	3136	212
Stockade Beaver	101201070401	701	1012010704010201	1,835	40	1165	670
Redbird Canyon	101201070404	722	1012010704040101	2,388	22	1992	396

Figure 3-2: HUC Watersheds



### 3.2.5.2 Beneficial Uses

The Clean Water Act (PL92-500) mandates that states designate beneficial uses for each water body and determine water quality standards for each use type. The State has assigned all streams in South Dakota the beneficial uses designation of wildlife propagation and stock watering, and irrigation. Castle Creek has the additional beneficial uses of Coldwater permanent Fish Life propagation waters, and Limited-Contact recreation waters. BJORLAND Draw has the additional beneficial uses of Coldwater marginal Fish Life propagation waters and Limited-contact Recreation Waters.

### 3.2.5.3 Current Watershed Condition

A method for classifying the relative stream segment location in the channel network is stream order. First order streams are non-branching segments. The channel segment below the confluence of two first order segments is designated as a second order stream. A second order stream can only have first order tributaries, for when two second order streams join, the segment below their confluence is a third order stream.

Streams are also classified as to flow regime, so that a stream that flows only in response to precipitation events, or snowmelt runoff, is classified as an ephemeral stream. In the analysis watersheds order 1 through 3 streams are ephemeral. Intermittent streams do not flow throughout the year, but are fed by groundwater sources, such as springs or seeps and are annually scoured. In the analysis watersheds, orders 4 and 5 are often intermittent. Perennial streams run year round and often consist of stream orders 6 and 7 ([Table 3-2](#), [Figure 3-3](#)).

Stream density is an indicator of how flashy a watershed will be in its response to a storm event. Stream densities in the analysis watersheds range from 3.5 mi/mi<sup>2</sup> to 4.7 mi/mi<sup>2</sup> ([Table 3-3](#)). Road density is an indicator of potential problems with sediment, compaction or other soils concerns. Road density in the analysis watersheds ranges from 0.05 mi/mi<sup>2</sup> to 5.63 mi/mi<sup>2</sup> ([Table 3-3](#)).

In analyzing watershed condition, the natural sensitivity of the watershed is determined. The Natural Watershed Sensitivity Index (NWSI) is the percentage of the watershed composed of physical components that make it sensitive to management activities ([Table 3-3](#)). This index is composed of the sum of stream buffered areas, soils with a high to very high erosion hazard rating (HER), soils with a hydrologic soil group (HSG) rating of D, and slopes over 80%, divided by total watershed acreage.

**Table 3-2: Stream Order and Stream Buffer Acres**

HUC 8-ID	1st Order (mi)	Buffered Acres	2nd Order (mi)	Buffered Acres	3rd Order (mi)	Buffered Acres	4th Order (mi)	Buffered Acres	5th Order (mi)	Buffered Acres	6th Order (mi)	Buffered Acres	Total Stream Length (mi)	Total Buffered Stream Acres
<i>Canyon</i>														
678	7.6	18.8	4.3	26.5	0.5	8.6			4.9	152.3			17.2	206.2
702	7.9	19.6	2.5	15.6	3.4	64.2	1.6	38.7	0.6	18.7	0.2		16.2	156.7
704	13.8	34.3	9.1	56.6	2.7	49.3			6.4	197.5	0.1		32.0	337.7
715	5.7	14.1	2.4	15.1	1.7	32.1	1.2	29.2	0.0	0.8			11.1	91.3
719	7.2	17.9	2.9	17.8	1.2	22.6	2.5	63.0					13.8	121.3
723	3.8	9.5	2.2	13.4	1.8	34.1							7.8	57.0
733	14.5	35.9	9.8	60.5	2.6	48.8					3.1	116.0	30.0	261.3
749	11.2	27.7	5.7	35.4	6.2	115.3	1.2	28.6			0.1		24.3	207.0
<i>Nest</i>														
640	5.1	12.6	4.3	27.0	0.8	15.8	1.5	36.3					11.8	91.7
654	5.5	13.8	3.6	22.6	2.1	39.4	1.4	34.0	0.0	0.1			12.7	109.8
664	9.1	22.6	6.8	42.0	3.1	57.6			3.3	103.5			22.3	225.7
671	5.4	13.5	2.7	17.0	3.7	68.8	0.2	3.9					12.0	103.2
676	6.9	17.1	4.8	29.9	3.9	72.4	0.3	6.9					15.9	126.2
686	9.1	22.6	4.3	26.7	4.7	88.1	1.0	25.8	1.0	31.8			20.2	195.0
701	6.0	14.8	2.9	17.9	2.3	42.5	0.4	10.0	0.0	0.2			11.5	85.4
722	7.3	18.1	3.3	20.4	3.0	56.7	2.4	60.5					16.1	155.7

Notes:

1. 1<sup>st</sup> order streams buffered 10 ft.
2. 2<sup>nd</sup> order streams buffered 25 ft
3. 3<sup>rd</sup> order streams buffered 50 ft
4. 4<sup>th</sup> order streams buffered 75 ft
5. 5<sup>th</sup> order streams buffered 100
6. 6<sup>th</sup> order stream buffered 125 feet
7. Stream orders derived using 30 meter DEM and ArcView Extension – Create Strahler Stream Order.

Figure 3-3: Stream Buffers

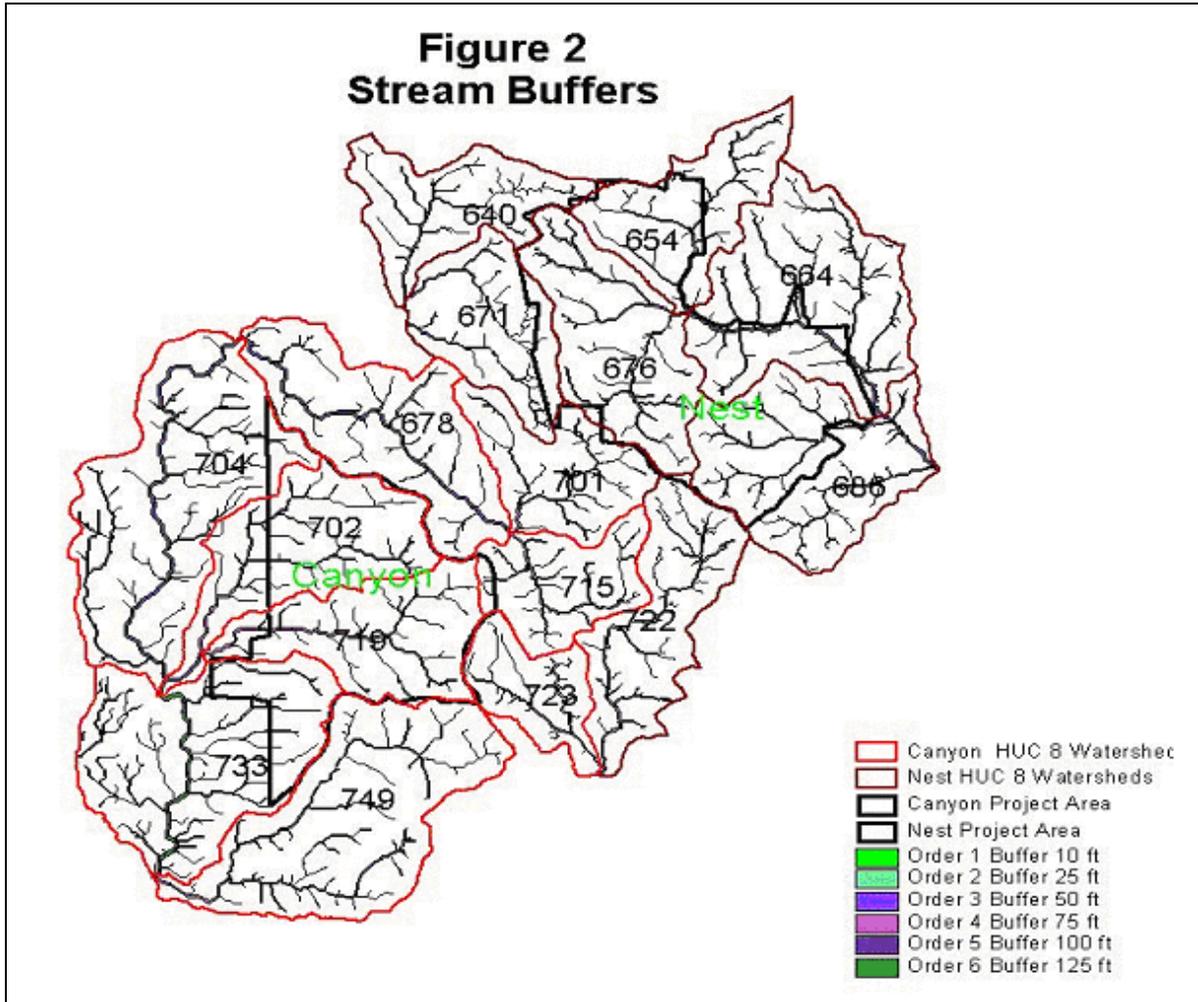


Table 3-3: Natural Watershed Sensitivity Index and Impact Index

Figure 2 HUC 8-ID	Watershed Acres	Stream Buffered Acres	Very High Erosion Hazard (acres)	Hydrologic Soil Group D (acres)	Slopes > 80% (acres)	NWSI	Impact Index	Watershed Sensitivity Class	Stream Density (mi/mi <sup>2</sup> )	Road Density (mi/mi <sup>2</sup> )
<i>Canyon</i>										
678	3,114	206	1168	409		57%	5%	Moderate	3.5	0.08
702	2,679	157	1169	409		65%	7%	Moderate	3.9	4.00
704	4,661	338	1	0.2	3	7%	5%	Low	4.4	0.70
715	1,637	91	1	0.3		6%	5%	Low	4.3	0.20
719	2,429	121	782	274	3	49%	8%	Moderate	3.6	5.01
723	1,207	57				5%	5%	Low	4.1	0.06
733	4,050	261	353	124	1	18%	5%	Low	4.7	1.13
749	4,223	207	1541	539	6	54%	5%	Moderate	3.7	0.15

Figure 2 HUC 8-ID	Watershed Acres	Stream Buffered Acres	Very High Erosion Hazard (acres)	Hydrologic Soil Group D (acres)	Slopes > 80% (acres)	NWSI	Impact Index	Watershed Sensitivity Class	Stream Density (mi/mi <sup>2</sup> )	Road Density (mi/mi <sup>2</sup> )
<i>Nest</i>										
640	1,945	92	27	9.4		7%	5%	Low	3.9	0.05
654	2,113	110				5%	7%	Low	3.8	3.22
664	3,743	226	644	225.6		29%	6%	Moderate	3.8	1.48
671	1,992	103	247	86.3		22%	5%	Low	3.9	0.73
676	2,700	126	25	8.6		6%	8%	Low	3.8	5.63
686	3,348	195	824	288.4		39%	6%	Moderate	3.9	2.31
701	1,835	85				5%	5%	Low	4.0	0.19
722	2,388	156				7%	5%	Low	4.3	0.21

The Natural Watershed Sensitivity Index (NWSI) and the Impact Index for the analysis watersheds was calculated using the methodology described in the Black Hills NF FEIS, Appendix J- Watershed Analysis. The methodology for the current Impact Index was modified in the following manner:

1. Grazing acres at-risk were calculated by assuming that 10% of the stream buffered acres were impacted by grazing.
2. Road acres at-risk were calculated by assuming that 10% of the roads in the analysis watersheds were roads running parallel to streams without an adequate buffer or with road ditches that drain into stream channels.

The NWSI is an indicator of how sensitive a watershed is to off-site and downstream impacts from management activities. NWSI is divided into the following categories:

- Low Sensitivity - 0-29%,
- Moderate Sensitivity - 30-65%, and
- High Sensitivity – 66-100%.

**3.2.5.4 Soils**

Several soils within the analysis area have severe limitations on whole tree harvesting. These soils include Syce, TuG, VcE and VoG. TuG also has management concerns regarding roads due to steep slopes, and VoG and VcE have concerns for roads due to excess fines (Figure 3-4). Several areas within the analysis areas also have soils with severe erosion ratings (Figure 3-5).

Soil fertility depends on organic matter, cation exchange capacity (CEC) and nutrients. Soil productivity can be degraded if humus and topsoil, or even excess leaves and limbs, are taken offsite. All soils within the Canyon/Nest analysis area meet the 2% or greater organic matter requirements. All soils within the project area also meet the rooting depth requirement (at least 15 inches), although the Paunsaugunt portion of JhD and VnC has a rooting depth of 10-20. Windthrow may be a severe problem in these areas. The shallower soils are more likely to occur on the ridges.

Soil creep, debris avalanches and flows, slumps, and earthflows can occur on unstable slopes if roads overload or undercut them, vegetation is removed from them, or runoff is emptied onto them. Hazard depends on type of disturbance, nature of earth material, and water content. Soil failures include land subsidence, shrinking-swelling soils, and collapsing soils. Removal of subsurface fluids or materials, or changed hydrology of certain soil types, can induce soil failures. Three of the analysis area soils (TuG, VcE, and VoG) are listed as potentially having old slides present. Wet or seepy areas have the potential to slide if

disturbed. Although the potential for slides is generally low, the SycE soil type may have some potential on steeper slopes.

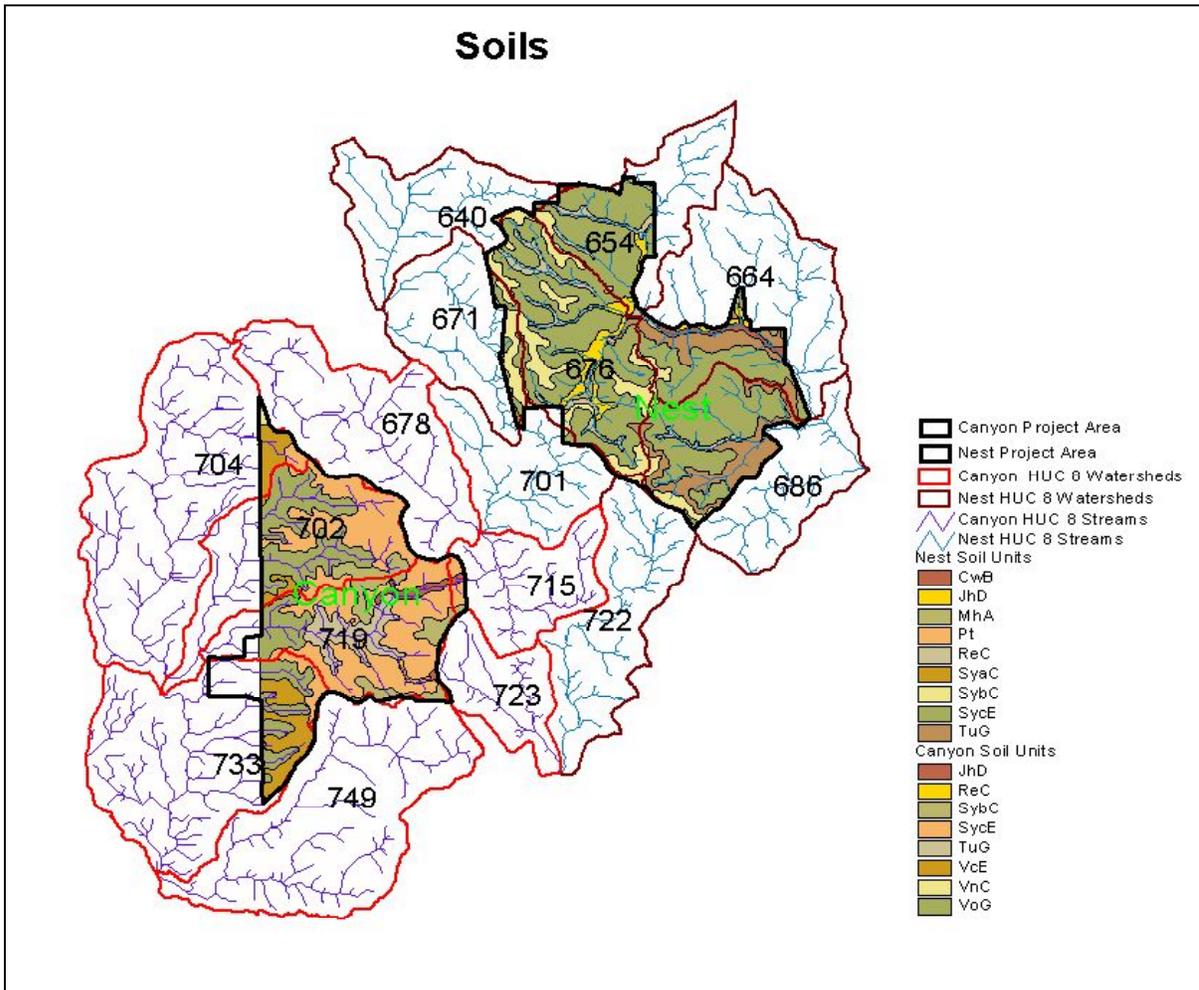
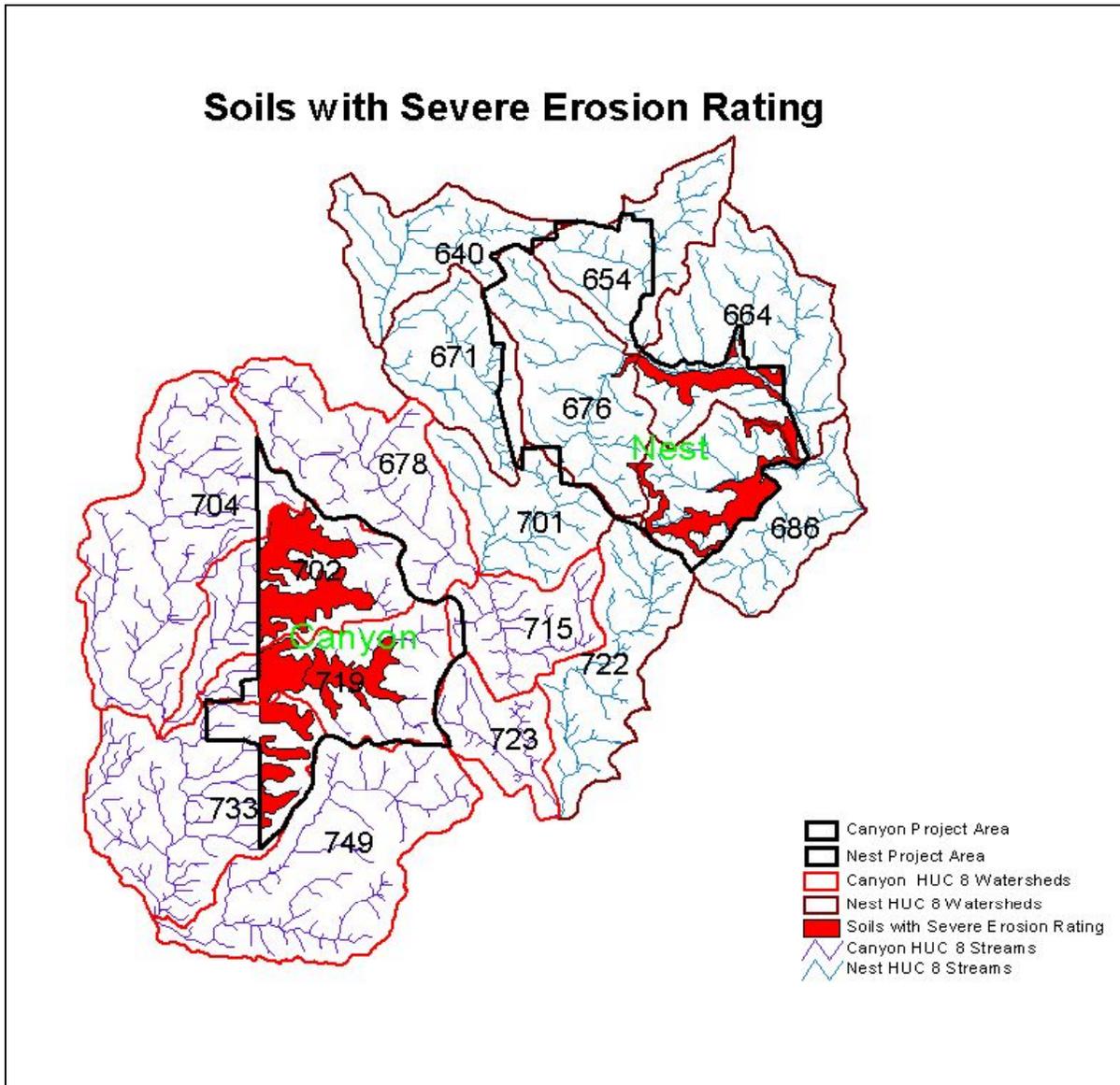


Figure 3-4: Soils

Figure 3-5: Soils with Severe Erosion Rating



**3.2.6 Environmental Consequences**

The assessment of environmental consequences for this report will focus on on-site erosion, the potential for sediment delivery to stream channels, water quality, and stream channel conditions.

**3.2.6.1 Alternative A-No Action**

Vegetation management, road construction and other watershed disturbances would not occur under the Alternative A. Watersheds impacted by historical vegetation management would continue to regain their inherent hydrologic character as stand growth continues, ground cover conditions improve, and porosity of compacted soils increases. Streams in the analysis watersheds would experience a very gradual, long-term improvement in channel stability as peak flows and sedimentation rates decrease. Roads and channel erosion would continue to be the primary source of sediment within these watersheds and sedimentation from roads would continue at its present level.

This description of limited disturbance within watersheds assumes that fires are controlled to spot locations over the next 20 to 30 years. Given the increase in fuel loading resulting from high stand densities, there is a good probability that a large, intense wildfire would occur during this time frame. Such a fire would be intense, removing vegetation, ground cover and large organic debris within stream channels. Given a large intense fire within these drainages, peak flows may increase five to ten times above existing levels and sediment loads could increase up to 50 to 100 fold. Aquatic habitat could be impacted to a level that it would not be used by aquatic species as the stream becomes devoid of cover, large organic debris and aquatic food.

To provide a measure of the cumulative watershed impacts associated with management activities on the water resource this report utilizes the Impact Index developed by the Black Hills National Forest. The methodology for calculating the Impact Index is presented in Appendix B of the Hydrology/Soils Report. Existing Impact Indices for the analysis watersheds are under the threshold of 11% (Table 3-3).

There will also not be the opportunity to pave a small portion of FSR 110 and reduce the airborne dust and direct delivery of sediment to Castle Creek. The open road density in each analysis watershed will not change (Table 3-4).

**Table 3-4: Road Densities**

HUC 8 ID	Alternative A Road Density (mi/mi <sup>2</sup> )	Alternative B Road Density (mi/mi <sup>2</sup> )	Alternative C Road Density (mi/mi <sup>2</sup> )
Canyon			
678	0.1	0.1	0.1
702	4.0	3.9	3.5
704	0.7	0.6	0.6
715	0.2	0.1	0.1
719	5.0	3.0	2.9
723	0.1	0.04	0.04
733	1.1	1.1	1.0
749	0.2	0.2	0.2
Nest			
640	0.05	0.05	0.05
654	3.2	3.6	3.4
664	1.5	2.5	2.6
671	0.7	0.6	1.0
676	5.6	6.9	6.8
686	2.3	3.1	3.2
701	0.2	0.1	0.0
722	0.2	0.2	0.2

**3.2.6.2 Alternative B**

**3.2.6.2.1 Canyon Project Area**

**Direct Effects**

Soil compaction resulting from skid trails and landings located near roads, streams and other drainage features cause water to runoff more rapidly during storm events. Initiation and growth of rill and gully networks on disturbed ground has a higher probability of occurring in treatment units located in areas with severe erosion ratings and on slopes

greater than 30 percent (Figure 3-6 and Figure 3-7). In Alternative B 1129 acres of proposed treatment are located within severe erosion areas and 501 acres of treatment units are on slopes greater than 30 percent. Localized areas of rilling and gullying will likely occur in treatment units on slopes greater than 30 percent and in severe erosion areas, but the extent of the rilling and gullying would be reduced by the implementation of the BMPs described in Appendix B.

Figure 3-6: Alternative B Treatment Areas in Severe Erosion Areas

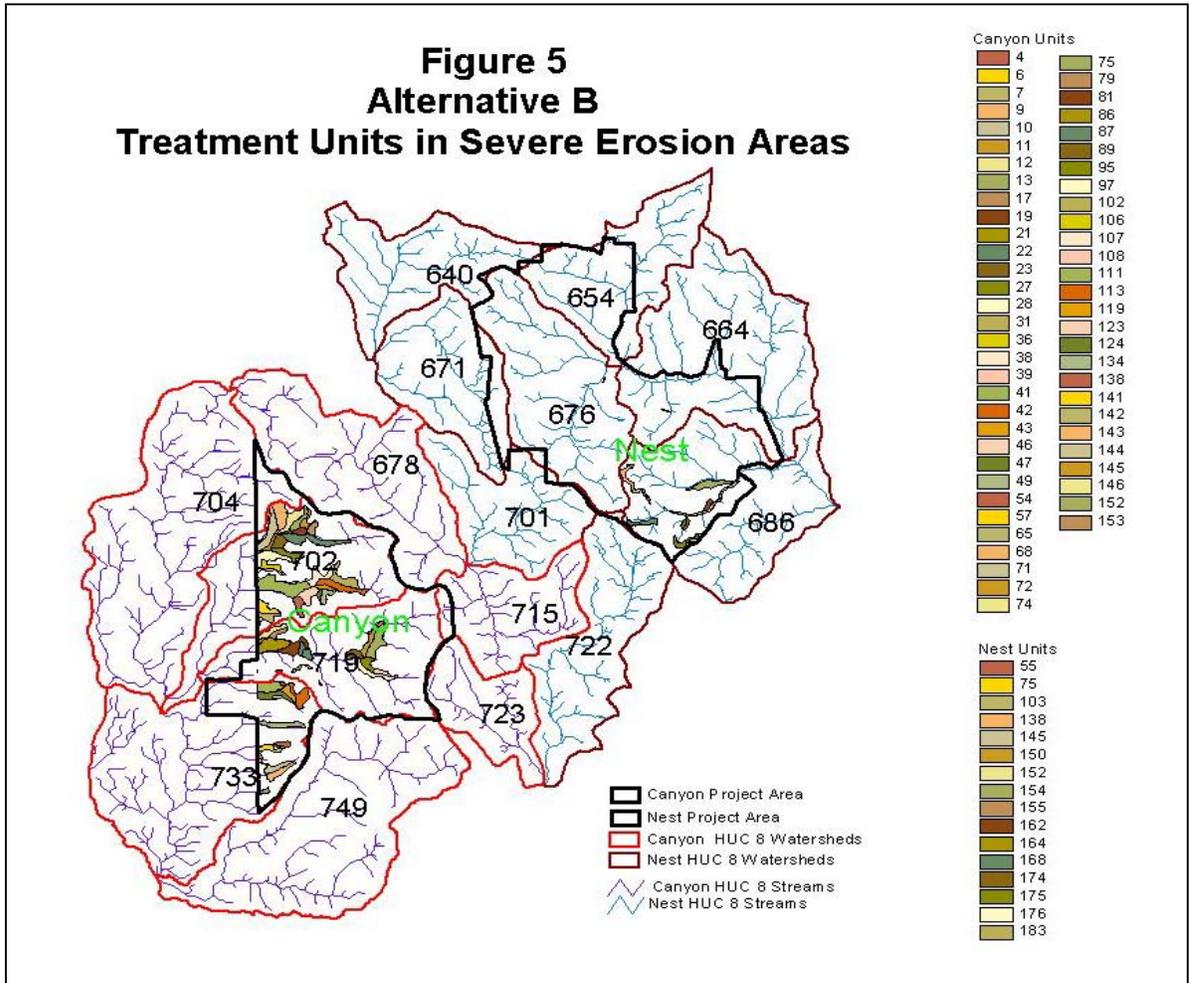
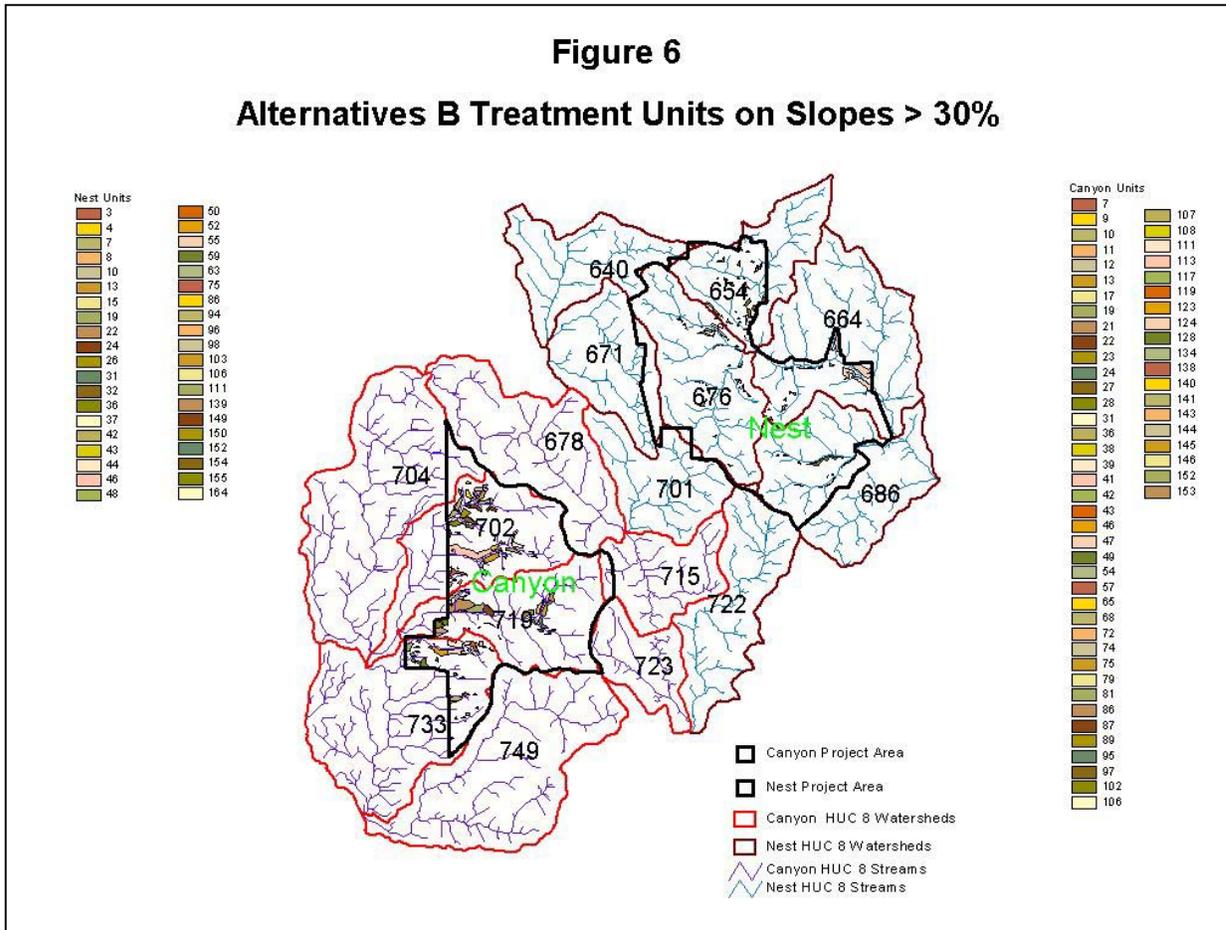


Figure 3-7: Alternative B Treatment Units on Slopes > 30%



**Indirect Effects**

The percent of Equivalent Roaded Area (ERA) in a watershed is a good indicator of the potential for increases in peak flow and increased stream channel erosion. In the Canyon analysis watersheds increases in peak flows are not expected to be substantial because the ERA in the analysis watersheds is relatively low (Table 3-5). The methodology for calculating ERA is described in Appendix B.

**Table 3-5: Equivalent Roaded Area**

HUC 8-ID	Alternative A ERA	Alternative B ERA	Alternative C ERA
Canyon			
678	0.02%	0.2%	0.2%
702	1.1%	11.2%	9.2%
704	0.2%	0.8%	0.8%
715	0.1%	0.0%	0.0%
719	1.4%	5.2%	3.8%
723	0.02%	0.0%	0.0%
733	0.3%	2.9%	2.2%
749	0.04%	0.1%	0.1%

HUC 8-ID	Alternative A ERA	Alternative B ERA	Alternative C ERA
Nest			
640	0.01%	0.2%	0.2%
654	0.9%	10.5%	2.6%
664	0.4%	1.0%	0.7%
671	0.2%	0.5%	0.6%
676	1.5%	9.3%	8.0%
686	0.6%	4.4%	4.4%
701	0.1%	0.2%	0.2%
722	0.1%	0.1%	0.2%

Sediment delivery to stream channels will occur because of the vegetation management activities on slopes >30% and in areas with severe erosion ratings. Sediment delivered to channels will not adversely impact aquatic habitat or impair the beneficial uses of water.

**Cumulative Effects**

Impact Indices range from 5% to 24% in the first year after project implementation and from 5% to 15% five years after project implementation (Table 3-6). Higher Impact Indices are generally associated with higher peak flows that are more erosive and can lead to increased channel scour and higher sediment loads. Watersheds with a High NWSI are generally more susceptible to increases in Impact Indices. All Canyon area analysis watersheds have a NWSI of Low or Moderate and are less susceptible to increases in peak flows and channel scour. The predicted increases in the Impact Indices will result in minor increases in peak flows and localized channel scour. Increases in peak flows and channel scour will not adversely impact aquatic habitat or impair the beneficial uses of water.

**Table 3-6: Impact Index**

HUC 8 ID	Current Index	Alternative B Index Yr 1	Alternative B Index Yr 5	Alternative C Index Yr 1	Alternative C Index Yr 5
<b>Canyon</b>					
678	5%	5%	5%	5%	5%
702	7%	24%	15%	17%	13%
704	5%	6%	6%	7%	6%
715	5%	5%	5%	5%	5%
719	8%	15%	9%	10%	8%
723	5%	5%	5%	5%	5%
733	5%	10%	8%	9%	7%
749	5%	5%	5%	5%	5%
<b>Nest</b>					
640	5%	5%	5%	5%	5%
654	7%	29%	21%	11%	10%
664	6%	9%	8%	8%	7%
671	5%	6%	6%	6%	6%
676	8%	32%	22%	29%	21%
686	6%	21%	16%	21%	17%
701	5%	5%	5%	5%	5%
722	5%	5%	5%	6%	5%

### 3.2.6.2.2 Nest Project Area

#### Direct Effects

The effects are similar to those described for the Canyon area direct effects. For the Nest area 131 acres of proposed treatment are located within severe erosion areas and 173 acres of treatment units are on slopes greater than 30 percent (Figure 3-6 and Figure 3-7).

#### Indirect Effects

In the Nest analysis watersheds increases in peak flows are not expected to be substantial because the ERA of the Nest analysis watersheds is relatively low (Table 3-5). Sediment delivery and aquatic habitat and beneficial use impacts are similar to the effects described for the Canyon area.

#### Cumulative Effects

Impact Indices range from 5% to 32% in the first year after project implementation and from 5% to 22% five years after project implantation (Table 3-6). All Nest area analysis watersheds have a NWSI of Low or Moderate and are less susceptible to increases in peak flows and channel scour. The predicted increases in the Impact Indices will result in minor increases in peak flows and localized channel scour. Increases in peak flows and channel scour will not adversely impact aquatic habitat or impair the beneficial uses of water.

#### Conclusions

Localized areas of soil compaction and on-site erosion would occur in the Canyon and Nest analysis watersheds. Increases in peak flows, channel scour and sediment loads would be minor. Aquatic habitat and the beneficial uses of water would not be adversely impacted.

### 3.2.6.3 Alternative C

#### 3.2.6.3.1 Canyon Project Area

##### Direct Effects

In Alternative C 759 acres (32% reduction) of proposed treatment are located within severe erosion areas and 304 acres (39% reduction) of treatment units are on slopes greater than 30 percent (Figure 3-8 and Figure 3-9). As a result soil compaction and the formation of rill and gully networks would be reduced from levels expected for Alternative B.

##### Indirect Effects

Effects would be similar to Alternative B however the ERA in the Canyon analysis watersheds would be less than the ERA for Alternative B (Table 3-5).

##### Cumulative Effects

The Impact Index would be lower in all analysis watersheds relative to the Alternative B Impact Index. Impact Indices range from 5% to 17% in the first year after project implementation and from 5% to 13% five years after project implementation (Table 3-6). Increases in peak flows, channel scour, and sediment loads would be reduced relative to Alternative B. Aquatic habitat and beneficial uses of water would not be adversely impacted.

### 3.2.6.3.2 Nest Project Area

#### Direct Effects

In Alternative C 131 acres (no reduction) of proposed treatment are located within severe erosion areas and 111 acres (35% reduction) of treatment units are on slopes greater than 30 percent. As a result soil compaction and the formation of rill and gully networks would be reduced from levels expected for Alternative B.

#### Indirect Effects

Effects would be similar to Alternative B however the ERA in the Nest analysis watersheds would be less than the ERA for Alternative B (Table 3-5).

#### Cumulative Effects

The Impact Index would be lower in all analysis watersheds relative to the Alternative B Impact Index. Impact Indices range from 5% to 29% in the first year after project implementation and from 5% to 21% five years after project implantation (Table 3-6). Increases in peak flows, channel scour, and sediment loads would be reduced relative to Alternative B. Aquatic habitat and beneficial uses of water would not be adversely impacted.

#### Conclusions

Localized areas of soil compaction and on-site erosion would occur in the Canyon and Nest analysis watersheds, however, the extent of compaction and on-site erosion would be less relative Alternative B. Increases in peak flows, channel scour and sediment loads would be minor and lower relative to Alternative B. Aquatic habitat and the beneficial uses of water would not be adversely impacted.

Figure 3-8: Alternative C: Treatment Units in Severe Erosion Areas

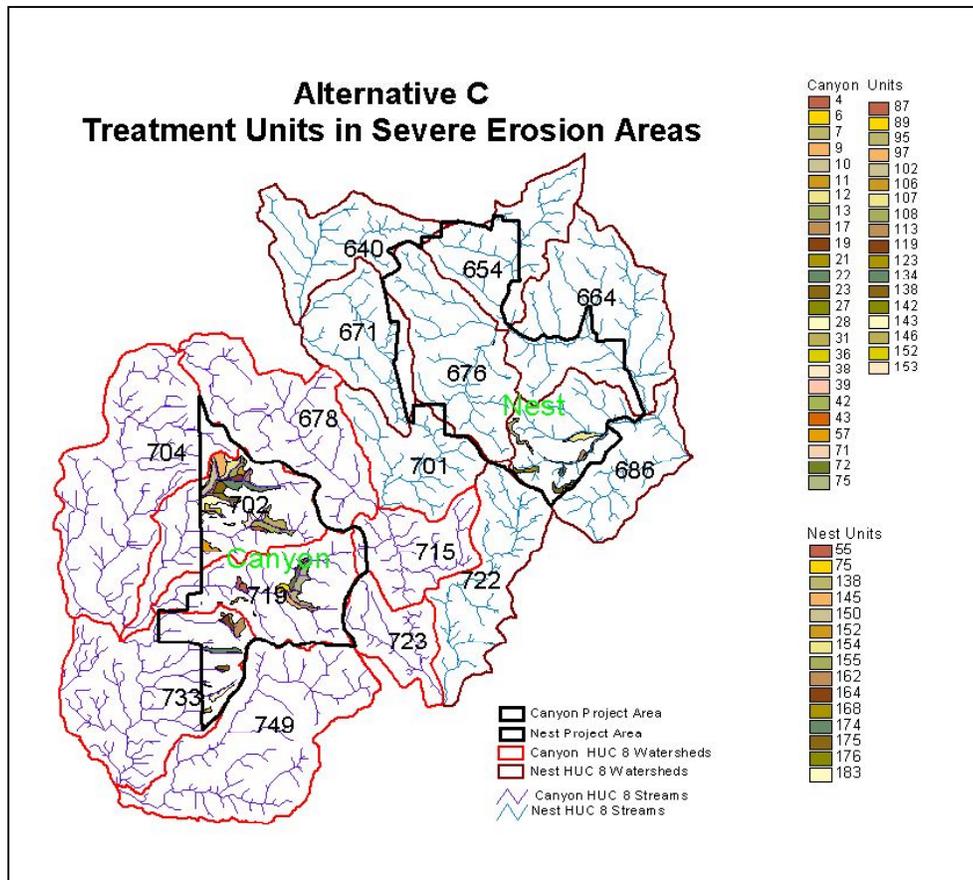
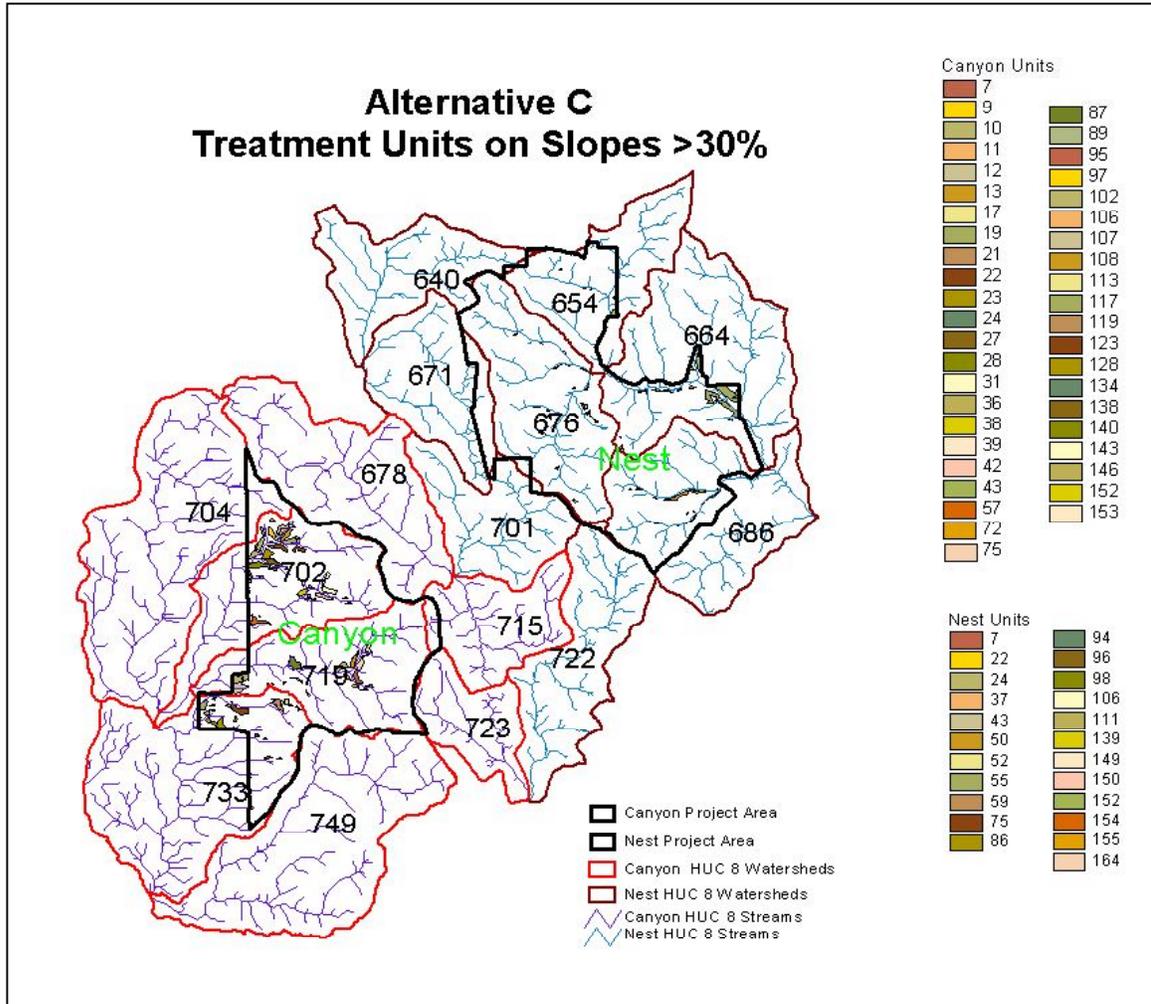


Figure 3-9: Alternative C Treatment Units on Slopes > 30%



**3.3 Timber/Silviculture**

**3.3.1 Introduction**

The Canyon area is located approximately 3 miles southeast of Mallo, and the Nest area is located in the Crows Nest Peak area approximately 5 miles east of Mallo. Canyon is approximately 5330 acres of National Forest lands, and the Nest area is approximately 6890 acres of National Forest lands, with 770 acres of private in-holdings.

**3.3.1.1 Topography**

The Canyon-Nest Project Area has a widely diverse topography with gently rolling hills to very steep slopes with 200-300 foot cliffs. Limestone cliffs are prominent in the canyons, where steep slopes present formidable obstacles for transportation and logging systems.

**3.3.1.2 Vegetation**

The vegetation in the Canyon-Nest Project Area is dominated by ponderosa pine and spruce on the ridges and side slopes, with bluegrass meadows dominating the drainages and lower elevations. Aspen is a significant component in portions of the ponderosa pine and spruce cover types. Ponderosa pine is the dominant vegetative cover type (Canyon-93%, Nest-30%), with white spruce (Canyon-3%, Nest-41%), aspen (Canyon-0.4%, Nest-11%), and grass (Canyon-3%, Nest-7%) comprising the remainder of the area. Ponderosa pine, white spruce, and aspen are intermixed in many sites, but cover type classification is based on the predominant species (see [Table 3-7](#) and [Table 3-8](#)).

**Table 3-7: Canyon, Cover Type**

Cover Type	Acres	% Project Area
Grass	171.15	3.2%
Aspen	20.31	0.4%
Ponderosa Pine	4975.65	93.4%
White Spruce	161.73	3.0%

**Table 3-8: Nest, Cover Type**

Cover Type	ACRES	% Project Area
Private	769.92	11.2%
Grass	461.41	6.7%
Gravel Pit	4.85	0.1%
Aspen	754.30	10.9%
Ponderosa Pine	2101.87	30.4%
White Spruce	2797.76	40.5%

Many of the ponderosa pine cover types vary in structure, with many multi-aged or uneven-aged sites being present. The predominant classifications are storied, and irregular with many age classes represented in small relatively even-aged groups. Regeneration of stands is generally successful in the project area, but can be complicated in areas with dense sod-forming grasses. Prescribed fire should be discouraged in stands with regeneration treatment prescriptions.

White spruce stands are generally occupying north aspects. Ponderosa pine is generally present in white spruce stands, with few pure white spruce stands being found. Aspen clones are generally in the white spruce stands and in a few ponderosa pine stands, the clones being generally less than 100 feet in diameter (.2 ac). Blowdown in the spruce stands is not substantial in the majority of the sites, but is evident in small isolated patches. In Canyon the spruce sites are in deep drainages protected from prevailing winds and have had

prior harvest entries. The spruce stands in Nest are more exposed to prevailing winds and are without previous harvest entry, which increases potential for small areas of blowdown. Prescribed vegetative treatments should consider blowdown potential, and implementation of prescriptions must include consideration of topography and windfirmness of the stand.

Aspen comprises a significant portion of the vegetative cover in the Project Area with 7% of the stands typed as aspen, and with small clones being present in ponderosa pine/white spruce stands. The aspen is present in clones ranging from less than 1 acre to 73 acres in size. The Nest portion of the analysis area has larger and more numerous clones with 11% of the sites classified as aspen while Canyon has considerably fewer with 0.4% of the forested sites classified as aspen. Age class diversity in aspen is well distributed with stand ages ranging from a few years of age to senescence. Regeneration of senescent clones (coppice method) and removal of pine and spruce from the clones is necessary to restore health and vigor as well as sustaining the aspen clones.

### **3.3.1.3 Other Vegetation**

The most abundant woody species shrub cover is common juniper, with snowberry, kinnikinnick, Oregon grape, grouse whortleberry, and buffalo berry scattered throughout the project area. Herbaceous vegetation is not as prevalent due to heavy coverage of sod forming grasses.

### **3.3.2 Field Surveys/Resource Contacts**

A site-specific survey and analysis was completed for each site to determine suitability for timber harvest. All ponderosa pine and white spruce sites are suitable for emphasizing timber management; however, operability for logging systems and transportation systems may prevent vegetative management with this entry. Regeneration of all timber cover types (ponderosa pine, white spruce, and aspen) is expected within 5 years following final overstory removal or final harvest. Aspen and meadow sites were also analyzed for vegetative treatments necessary to maintain both short- and long-term health and vigor. Treatments prescribed in meadows or aspen cover types are prescribed to meet other resource objectives (wildlife, range) for forage production and habitat diversity.

Ponderosa pine, white spruce, and aspen sites were prioritized for treatment based on age, average basal area, and existing regeneration. High priority sites for harvest treatment are those with high risk for mountain pine beetle infestation, sites where regeneration is established, and sites at or past rotation age (culmination of mean annual increment) where regeneration is not established. Lower priority sites are those with low or moderate risk of mountain pine beetle infestation, and sites that are approaching rotation age and would benefit by maintaining stand vigor through reduction of density.

### **3.3.3 Forest Plan Direction/Other Direction**

#### **3.3.3.1 ID Team Objectives from Forest Plan**

The Canyon/Nest Project Area is entirely within MA 5.1, Resource Production Emphasis, under the 1997 Revised Land and Resource Management Plan. The 1997 Plan has recently been amended (see Phase 1 Amendment, below) to address wildlife issues for MIS, snags, and green tree replacements for snags.

The IDT identified the following vegetation treatments in the Purpose and Need section as they related to goals from the Forest Plan and opportunities with the planning areas:

1. Restore aspen communities by removing conifers within and around clones, and by regenerating mature/senescent stands to foster re-growth by vegetative means
2. Move the percentage of grass/forb structural stage within forested sites from 3.6 percent towards 5 percent

3. Thin ponderosa pine stands at risk from the mountain pine beetle
4. Restore natural meadows by removing encroaching conifers
5. Reduce risk of stand-replacement fires through thinning
6. Harvest timber from suitable lands to meet ASQ

Silvicultural objectives identified during the project analysis are as follows:

1. Emphasize stand health and productivity
2. Regenerate stands that are at or near rotation age
3. Increase or maintain vegetative diversity
4. Restore natural meadows

### **3.3.3.2 Culmination of Mean Annual Increment (36 CFR 219.16a2iii)**

The law generally prohibits the harvest of stands before they reach their maximum growth rate (National Forest Management Act (NFMA), 16 U.S.C. 1604(m)). Regulations require that all even-aged stands scheduled for a **regeneration harvest (clearcut, clearcut with reserves, shelterwood, seed-tree)** during the planning period should generally have reached the culmination of mean annual increment of growth (CMAI- periodic annual growth has fallen below average annual growth). The CMAI requirement is applicable to **even-aged** stands that are being managed by even-aged treatment methods for **timber** purposes. In general, stands scheduled for a regeneration cut (e.g. shelterwood seed cuts) for timber purposes need to have reached CMAI. The regulation goes on to say "...exceptions to these standards shall be evaluated if it is reasonable to expect that overall multiple use objectives would be better attained." Also, the regulation goes on to say that "...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... ."

The Forest plan implements this requirement with Guideline 2411: Regeneration harvest of even-aged timber stands should not be undertaken until the stands have generally reached (or surpassed 95 percent of the) culmination of mean annual increment.

Shelterwood seed cut (SC) is the only regeneration harvest treatment prescribed for even-aged stands for timber purposes in the Canyon-Nest Project Area. Only sites prescribed for shelterwood seed cuts need to meet CMAI requirements for this project. All of the sites proposed for shelterwood seed cut have achieved or exceeded 95 percent of CMAI, based on the silviculturist's diagnosis of stand conditions.

Exceptions in the law allow the harvest of individual trees, or even parts or whole stands of trees, before this time to thin and improve timber stands, and salvage damaged stands of trees (part m1 of the law). Further exceptions are allowed in order to achieve multiple-use objectives other than timber harvest (part m2).

### **3.3.3.3 Phase 1 Amendment to the BBNF Plan**

The Phase 1 Amendment provides new direction for management of habitat for the northern goshawk and American marten. The effect of this new direction was to eliminate many sites from consideration for treatment in this planning cycle. Thinning of trees less than 9 in. was considered in the goshawk post-fledgling areas to reduce fire risk.

The amendment also provides new direction on snag and green tree retention management. The effects of this direction are presented in a separate report "Landscape Level Snag and Green Tree Retention Modeling- Canyon/Nest Project Area".

**3.3.4 Affected Environment**

**3.3.4.1 General Forest Condition**

Forest cover types dominate approximately 94% (10,608 ac) of the project area; this excludes small openings in forest stands of grass/forbs structural stage. Approximately 91% of the forest stands are dominated by 9 in.+ trees, 7% by sapling/pole trees, and 1.5% by seedlings. The average age of the 9 in.+ component of forested stands is approximately 88 years, (range 44 - 216 years). The average forest stand density (stem cross-sectional area) is approximately 105 square feet/acre, (range 3-230 square feet/acre). Previous commercial thinning in most ponderosa pine stands is responsible for lower stand densities.

Wildfire has played a dominant role in determining vegetative compositions and structure in many areas of the Black Hills National Forest (*Parrish et. al., 1996*). However, wildfire has not been a significant factor for the Canyon-Nest Project Area. Canyon-Nest has a cooler, moister environment than areas with a higher fire frequency. Some evidence of past fires can be found in the Canyon area, but they were generally small and low-intensity. Lightning strikes are relatively prevalent, but fuel and burning conditions are generally not acceptable for maintaining a significant burn. This is not to say that given the right conditions stand-replacing fires could not occur in this area. Parrish et. al. (1996) report on the historic occurrence of large-scale stand replacement fires on the Limestone Plateau region of the Black Hills, where Canyon and Nest are located. It appears that widespread, stand-replacing fires may have swept this region periodically, although the frequency is unknown. This type of fire regime is considered an anomaly in ponderosa pine ecosystems.

The potential for mountain pine beetle (MPB) is rated low, medium, medium-high, and high. This risk-rating system was developed for the Black hills to measure susceptibility for MPB infestations based on three factors: stand structure, average stand DBH, and average basal area per acre (*Schmid et. al., 1994*). In the Canyon-Nest Project Area approximately 1526 acres (15.6%) are rated high, 63 acres (.6%) medium-high, 5849 acres (59.9%) medium, 513 acres (5.3%) low-medium, and 1816 acres (18.6%) low (see [Table 3-9](#) and [Table 3-10](#) below).

**Table 3-9: Canyon, Bug Risk by Cover Type**

Cover Type	Risk	ACRES	% Project Area
Grass	0	137.1	2.6%
Aspen	0	21.0	0.4%
Ponderosa Pine	0	95.3	1.8%
Ponderosa Pine	1=Low	1837.5	34.9%
Ponderosa Pine	3=Med	2611.7	49.6%
Ponderosa Pine	5=High	497.1	9.4%
White Spruce	3=Med	62.2	1.2%

**Table 3-10: Nest, Bug Risk by Cover Type**

Cover Type	Risk	ACRES	% Project Area
Private	0	768.1	11.1%
Bluegrass	0	0.0	0.0%
Grass	0	455.3	6.6%
Gravel Pit	0	2.2	0.0%
Aspen	0	763.6	11.1%
Ponderosa Pine	0	6.0	0.1%
Ponderosa Pine	1=Low	71.2	1.0%
Ponderosa Pine	3=Med.	1033.9	15.0%
Ponderosa Pine	5=High	1083.2	15.7%
White Spruce	0	15.7	0.2%
White Spruce	1=Low	96.3	1.4%
White Spruce	2=Med. Low	85.1	1.2%
White Spruce	3=Med.	1983.0	28.8%
White Spruce	4=Med. High	507.1	7.4%

Timber sales and silvicultural treatments prior to the 1980's were designed to salvage MPB infestations. Silvicultural treatments in the late 1980's emphasized thinning to increase tree vigor and reduce susceptibility to MPB attack. Generally, when the average stand density exceeds 150 square feet of basal area per acre and the average stand DBH exceeds 10 inches the stand is considered to be high-risk (Stevens, et. al., 1980). As average diameter and density decrease, potential risk also decreases. The overall risk for MPB infestation in the Canyon-Nest Project Area is low to medium for the next 10 years. Continued density management can maintain these lower levels of risk for MPB. If management is not continued, the potential for infestation will increase as stands gradually become denser, loose vigor, and tree diameters increase above 10 inches DBH.

**3.3.4.2 Logging Systems**

Slopes in the Canyon-Nest Project Area are variable ranging from 5-50%. The average slope for the Project Area is approximately 20%. Ground based systems can be utilized on all sites under 35% slope, while skyline systems may be needed on slopes greater than 45%.

**3.3.5 Environmental Effects**

**3.3.5.1 Alternative A: No Action**

***Effects on Snags and Green Tree Retention Levels***

See separate report "Landscape Level Snag and Green Tree Retention Modeling-Canyon/Nest Project Area" (Project Record). Implementation of this alternative would be expected to meet all Forest Plan requirements for snags.

***Effects on Ponderosa Pine Stands at Risk from Bark Beetles***

The No Action alternative would defer vegetative treatment for approximately 10 years. The risk for MPB infestation would increase as well as the potential for MPB caused mortality as stands become more densely stocked and average diameters increase. The potential for decline in timber growth rates would increase as stand densities increase.

***Effects on Aspen Communities***

Aspen reproduces almost exclusively by vegetative means (suckering), and requires a major disturbance for reproduction to occur. A major disturbance is required for reproduction, because a rapid death of the overstory trees creates the hormonal imbalance that triggers sprouting, and because aspen seedlings require essentially a full-sunlight environment to

grow. Fire exclusion has resulted in a lack of young aspen stands, and this is a concern because as the aspen clones age they are less able to resprout vigorously after a major disturbance. Under the No Action Alternative, aspen clones would continue to deteriorate as they age due to cankers, leaf spot, and stem decays. Also, conifers would continue to increase in numbers in aspen stands, further reducing the vigor of the aspen.

Delaying the treatment of aspen stands to future planning cycles would increase the risk of not achieving vigorous aspen suckering after future disturbances, either natural ones such as fire, or human-caused, such as clearcutting. Also, there is a risk that genetic diversity could be reduced as individual clones lose their ability to resprout.

***Effects on Percentage of Grass/Forb Structural Stage***

Under the No Action Alternative, the percentage of grass/forb would remain at 3.6 percent, which is below the Forest Plan objective of 5 percent.

***Effects on Natural Meadows***

Conifers would continue to encroach upon natural meadows under No Action. While conifers could always be removed at a later time, the longer removal is delayed the more the more stumps and slash would remain on site to be dealt with or left alone.

***Effects on ASQ***

Because no vegetation treatment would occur with implementation of this alternative, there would be no potential to help meet the ASQ.

***Effects on Culmination of Mean Annual Increment***

Because no vegetation treatment would occur with implementation of this alternative, there would be no effect to the culmination of mean annual increment.

**3.3.5.2 Alternative B: Proposed Action**

***Effects on Snags and Green Tree Retention Levels***

This project has three primary design features to maintain and improve snags throughout the project area for long-term improvements. All trees greater than or equal to 20 inches dbh would remain following treatment; a minimum of 10 trees between 10 to 20 inches would be left in all overstory removal units or combination of overstory removal and another prescription (other prescriptions would maintain an average of more than 10 trees per acre over 10 inches dbh, with the exception of MR, PE, PSCC, PSCC/AR, and POL); and about two (2) snags per acre would be created in all harvest units. With these design features in place, implementation of this alternative would be expected to meet all Forest Plan requirements for snags. For more information see separate report "Landscape Level Snag and Green Tree Retention Modeling- Canyon/Nest Project Area" (Project Record).

***Effects on Ponderosa Pine Stands at Risk from Bark Beetles***

Alternative B would treat 1,472 acres of moderate- to high-risk stands in Canyon, and 1,761 acres in Nest.

**Table 3-11: Canyon, Alt. B Expected Change in MPB Risk Category**

<b>BUG RISK</b>	<b>Percent of Canyon at Risk Currently</b>	<b>Percent Treated</b>	<b>Expected Percent of Canyon at Risk Following Treatment</b>
1=Low	39.8	46.3	67.2
3=Med.	50.8	41.4	29.8
5=High	9.4	68.6	3.0

**Table 3-12: Nest, Alt. B Expected Change in MPB Risk Category**

<b>BUG RISK</b>	<b>Percent of Nest at Risk Currently</b>	<b>Percent Treated</b>	<b>Expected Percent of Nest at Risk Following Treatment</b>
1=Low	33.1	1.8	58.5
2=Med. Low	< 0.1	80.0	<0.1
3=Med.	43.8	45.5	23.9
4=Med. High	7.4	16.4	6.2
5=High	15.7	27.2	11.4

***Effects on Aspen Communities***

Under Alternative B, 489 acres of aspen sites in Nest would be treated to improve and regenerate aspen. No acres would be treated in Canyon, as no sites were identified for these treatments.

***Effects on Percentage of Grass/Forb Structural Stage***

Under Alternative B an increase in the number of acres in the grass/forb structural stage would be accomplished by making small (two acres or less) patch clearcuts over about 25 percent of the area of sites with this prescription. In Canyon, the increase would be 60 acres, and in Nest the increase would be 223 acres.

***Effects on Natural Meadows***

Alternative B would restore or maintain meadows on 64 acres in Canyon and 341 acres in Nest. Restoring meadows means that it would remove all trees from the area and change the cover type from an existing timber type back to grass, while maintaining means that it would remove trees out of areas currently typed as grass. Only 14 acres of the Canyon area are qualified as meadow restoration and none in Nest.

***Effects on ASQ***

Alternative B would contribute 10.4 mmbf towards the ASQ, 5.3 mmbf in Canyon, and 5.1 mmbf in Nest. The following table shows the breakdown of volume by prescription:

**Table 3-13: Estimated Volumes For Alternative B**

<b>Prescription</b>	<b>Canyon Total Volume (mbf)</b>	<b>Nest Total Volume (mbf)</b>
CC	410	1757
DEFER/CC	47	
OR	3006.9	240.3
OR/CC	64.8	
OR/PC	108	
OR/SC	153	550.8
PC	488	1179
PE	59	125
SC	463	115
SC/CC	531	
PSCC		211
PSCC/AR		297
SEL		668
<b>Total Volume</b>	<b>5330.7</b>	<b>5143.1</b>

***Effects on Culmination of Mean Annual Increment***

This alternative would harvest some trees before the culmination of MAI of some stands in the project area has been reached. These harvest treatments are consistent with the exceptions provided in part m2 of the law, and include the following: shelterwood prep cut (commercial thinning), cleaning (aspen sites), meadow restoration (pine encroachment), patch clearcut, pre-commercial and pole thinning, and single-tree selection. These treatments are prescribed to maintain or improve forest health and vigor, meet wildlife objectives, or maintain vegetative diversity in the Project Area, and are proposed to meet the Forest Plan multiple-use objectives stated earlier in this analysis. The following sections describe the relationship of these prescriptions to the requirements of CMAI:

**1. Overstory Removals**

The stands being harvested with overstory (shelterwood) removal treatments have previously reached CMAI and management is being done to release the regenerating stand as a stand improvement measure (sound silvicultural practices 16 USC 1604 m 1 and 36 CFR 219.16a2iii). Overstory (shelterwood) removals are not considered regeneration cuts. In most cases these stands are multi-aged, two-storied, or multi-storied stands, and are not even-aged.

**2. Commercial (PC), Pre-commercial (PCT), and Pole (POL) Thinning**

Under the regulations these treatments are not subject to meeting CMAI (sound silvicultural practices, such as thinning 16 USC 1604 (m) (i) and 36 CFR 219.16a2iii). The purposes of these thinnings are threefold:

- a. To improve forest health (reduce risk of mountain pine beetle infestations)
- b. To increase growth on individual trees to provide future timber volume, and
- c. To increase growth on individual trees to provide future large diameter snag and green-tree habitat for wildlife.

**3. Individual Tree Selection (SEL)**

Selection treatments are uneven-aged treatments, and need not meet the CMAI requirement. Individual-tree selections are being done to provide within- and between-stand structural diversity.

**4. Harvest for Multiple Use Objectives**

Removal of conifers from hardwood stands and meadows, hardwood regeneration and meadow restoration, and patch clear-cuts are all being conducted for habitat improvement and multiple use objectives, and are not subject to CMAI requirements (16 USC 1604 (m) (i) and 36 CFR 219.16a2iii).

Patch clear-cuts are being made to provide increased grass/forb structural stage for wildlife forage and for habitat diversity, in accordance with 1997 Revision, Black Hills Land and Resource Management Plan and as discussed in the Forest Plan EIS (pages I-11, I-19, II-32). Patch clear-cut locations were based on attributes for wildlife benefit (existing forage species, aspect, surrounding stand structure, etc). Patch clear-cuts will average approximately two acres in size. Planned patch cuts will be designed to naturally regenerate in five years.

**3.3.5.3 Alternative C**

***Effects on Snags and Green Tree Retention Levels***

This alternative would have similar impacts as Alternative B. Implementation of this alternative would be expected to meet all Forest Plan requirements for snags. For more information, see separate report "Landscape Level Snag and Green Tree Retention Modeling- Canyon/Nest Project Area" (Project Record).

**Effects on Ponderosa Pine Stands at Risk from Bark Beetles**

Alternative C treats fewer acres of medium- and high-risk stands in the Canyon Project Area, 1180 acres, as opposed to Alternative B, 1472 acres.

**Table 3-14: Canyon, Alt. C Expected Change in MPB Risk Category**

BUG RISK	Percent of Canyon at Risk Currently	Percent Treated	Expected Percent of Canyon at Risk Following Treatment
1=Low	39.8	35.9	61.8
3=Med.	50.8	31.8	34.6
5=High	9.4	61.7	3.6

Alternative C treats fewer acres of medium- and high-risk stands in the Nest Project Area than Alternative B, 898 acres versus 1761 acres.

**Table 3-15: Nest, Alt C. Expected Change in MPB Risk Category**

BUG RISK	Percent of Nest at Risk Currently	Percent Treated	Expected Percent of Nest at Risk Following Treatment
1=Low	33.1	1.8	46.0
2=Med. Low	< 0.1	80.0	<0.1
3=Med.	43.8	26.1	32.4
4=Med. High	7.4	0	7.4
5=High	15.7	9.7	14.2

**Effects on Aspen Communities**

Under Alternative C, 489 acres of aspen sites in Nest would be treated to improve and regenerate aspen. This is the same number of acres treated under Alternative B. No acres would be treated in Canyon, as no sites were identified for these treatments.

**Effects on Percentage of Grass/Forb Structural Stage**

Under Alternative C an increase in the number of acres in the grass/forb structural stage would be accomplished by making small (two acres or less) patch clearcuts over about 25 percent of the area of sites with this prescription. In Canyon, the increase would be 60 acres, and in Nest the increase would be 150 acres. The 60 acres in Canyon is the same as under Alternative B. The 150 acres in Nest represents 73 acres less than under Alternative B.

**Effects on Natural Meadows**

Alternative C would restore and maintain meadows on 64 acres in Canyon and 330 acres in Nest. The acres are the same under Alternative B for Canyon, and 11 fewer for Nest. Restoring meadows means that it would remove all trees from the area and change the cover type from an existing timber type back to grass, while maintaining means that it would remove trees out of areas currently typed as grass. Only 14 acres of the Canyon area are qualified as meadow restoration and none in Nest.

**Effects on ASQ**

Alternative C would contribute 6.6 mmbf towards the ASQ, 3.8 mmbf from Canyon, and 2.8 mmbf from Nest. The following tables show the breakdown of volume by prescription:

**Table 3-16: Estimated Volumes for Alternative C**

Prescription	Canyon Total Volume (mbf)	Nest Total Volume (mbf)
CC	410	1,197
DEFER/CC	47	
OR	2,024.1	240.3
OR/CC	64.8	
OR/PC	108	
OR/SC	153	64.8
PC	260	237
PE	59	120
SC	146	
SC/CC	531	
PSCC		211
PSCC/AR		297
SEL		431
<b>Total Volume</b>	<b>3,802.9</b>	<b>2,798.1</b>

***Effects on Culmination of Mean Annual Increment***

The expected effects would be the same as those discussed under Alternative B.

**3.3.5.4 Cumulative Effects**

There are no cumulative effects expected for vegetation within or outside the project area, because management or lack of it would have no measurable impacts outside the project area. Vegetation does not move or influence other areas within or outside the project area; nor does the treatment or lack of treatment have a measurable influence on bug populations or other pestilence. If stands are susceptible to attack by pestilence, the pestilence will find the stand. Past activities are reflected in the existing condition. There are no ongoing or future foreseeable vegetation related activities within the project area other than what is proposed with this document. Therefore, the cumulative effects area for this project is the project area itself and no cumulative effects are expected.

### 3.4 Wildlife

#### 3.4.1 Introduction

This section will discuss and analyze the effects of the alternatives on wildlife resources, especially those species emphasized in the Phase I amendment. The effects analysis will be based on criteria established in the revised standards and guidelines included in the Phase I amendment. For all species discussed here, the analysis area boundary will be used for determination of direct, indirect and cumulative effects analysis. Cumulative effects of actions occurring outside of this boundary were analyzed in the Forest Plan and the Phase I amendment. This analysis is tiered to the FEIS for the Revised Forest Plan (1997) and to the EA for the Phase I Amendment (2001). The purpose of the Phase I amendment was to address deficiencies in the 1997 Revised Forest Plan as identified in the 1999 Appeal Decision to assure that projects implemented during the re-evaluation of species viability and diversity (the next 2-5 years) will maintain viable populations of plant and wildlife species. The standards and guidelines revised with the Phase I amendment may contain more comprehensive mitigation or environmental protection measures than the re-evaluation may determine to be needed.

#### 3.4.2 Field Surveys/Resource Contacts

Several days were spent reviewing the project area in the field during the winter of 2001-02. Vegetation types, structural stages, snag levels, and evidence of use by various wildlife species were verified. In general the observations concurred with those in the wildlife report for the original EA and supporting field notes. Snag densities are low, road densities are high, and the majority of the area has been treated with past timber harvest. The stands of trees are healthy with little infestation by forest insects. Weather related tree damage has been minor.

Field reviews determined that there was no suitable goshawk nesting-habitat within the Nest portion of the project area because stands previously identified (in the original analysis) did not have adequate canopy closure and/or are dominated by spruce rather than pine. There are no known goshawk nests in the Nest portion of the project area (6,890 acres). It is not believe there is suitable goshawk nesting habitat in Nest nor is the habitat of adequate size and composition to support a goshawk territory. This area would be more appropriately managed as spruce and mixed conifers to benefit marten.

District wildlife information was discussed with Brad Phillips, District Wildlife Biologist. The District has conducted additional track plate surveys for marten this winter (2001-2002) in both Canyon and Nest. No marten tracks or use of any kind was recorded. Dorothy Fescke, South Dakota State University researcher, was also contacted regarding her current research on marten in the Black Hills. She provided a copy of her press-ready manuscript and other personal communications, which was used in this analysis.

The management area designation for this project area in the Forest Plan is MA 5.1 – Resource Production Emphasis.

The USFWS maintains a website (<http://southdakotafieldoffice.fws.gov/endsppbycounty.htm>) with a list of T&E species for each County in South Dakota. This website was checked on April 4, 2002. Species listed for Custer County are the black-footed ferret and the bald eagle. The database of the South Dakota Natural Heritage Program (March 2002) was also checked to review the most recent locations of sensitive species in the project area.

#### 3.4.3 Affected Environment

##### 3.4.3.1 Topography

Canyon is primarily ponderosa pine type with small inclusions of white spruce and aspen. These spruce sites are in steep canyons on north aspects, with some aspen scattered in the draw bottoms and on steep side slopes. The areas with steep topography have not been logged recently. Wildfires about 60-80 years ago modified the stand structure on these

slopes. Many of these areas now are thick with pine regeneration under an over mature, large diameter pine canopy. The area above the steep canyons is relatively level to gently sloping. These areas have been managed for timber production with the last harvest entry in the 1980's (Bear Canyon and Parmelee Timber sales). There are no private lands within the project area boundary.

Nest area is predominantly mixed conifers stands on gentle to moderate slopes. Tree species are ponderosa pine, white spruce and aspen. Many sites will have all three species present increasing wildlife habitat diversity. This area has also been managed extensively for timber production with the exception of steep north facing slopes above Castle Creek. This area was designated for late succession management under the revised Forest Plan. Commercial timber harvest last occurred in the late 1980's with the Crows Nest timber sale. Silvicultural treatments have often been designed to maintain pine rather than allow conversion to later succession spruce. There are about 770 acres of private inholdings.

#### **3.4.3.2 Roads**

There is an extensive road system in the project area. These roads have resulted from a combination of Forest Service road construction, user-created roads from recreationists and livestock permittees, and skid trails used for timber harvest. The current road density on NFS lands is 4.1-mi./sq. mi. in Canyon and 2.9-mi./sq. mi. in Nest. There is another 0.4-mi./sq. mi. on private lands in Nest. Road densities in this range can adversely affect species such as deer, elk, goshawks, and mountain lions.

#### **3.4.3.3 Water**

There are perennial streams within the Canyon/Nest project area.

**Canyon-** Wet Parmelee Canyon, lower portions of Dry Parmelee Canyon, Bear Canyon, and Bear Run Canyon all flow water from small spring sources. Except in unusually droughty conditions these small "creeks" flow west into Stockade Beaver Creek. The approximate flow is between 2 and 5 cubic feet/second.

**Nest** - There is one perennial stream, Castle Creek that runs through private lands along the northeast edge of the Nest area for about 3 miles. There are at least three springs that flow into Castle Creek. Water is available intermittently after rainstorms in stock dams.

### **3.4.4 Environmental Effects**

In addition to the direct and indirect effects resulting from the above project, this analysis will include a discussion of cumulative effects to wildlife resources resulting from past, present, and reasonably foreseeable future activities. Past activities on NFS lands include timber harvest, water development for livestock, fencing, fire suppression, and road building. The area is currently used for livestock grazing, dispersed recreation, snowmobiling, and cross-country skiing. Future activities that are likely to continue are timber harvest, livestock grazing, recreational uses, and fire suppression. Timber harvest and livestock grazing also occur on private lands. Further residential development on private lands can be expected. Information provided in BHNH Monitoring Reports (USDA Forest Service 2002) was considered in assessing effects of this project.

#### **3.4.4.1 Species or Habitat of Concern**

##### **3.4.4.1.1 Vegetative Habitat Conditions**

###### ***Existing Condition***

Vegetative conditions in the project area are described in the following table. Vegetative conditions were determined based on habitat modeling of stand exam collected in 1998. Snag density was estimated by walk through surveys.

**Table 3-17: Canyon – Existing Habitat Type and Structural Stages by Acres**

	Ponderosa Pine	Spruce	Aspen/Birch	Grasslands	Total
SS1	46			171	217
SS 2	48				48
SS 3A	74				74
SS 3B	100		5		105
SS 3C	121				121
SS 4A	1,837	10	15		1,862
SS 4B	1,782	88			1,870
SS 4C	968	63			1,031
SS 5					
Total	4,976	162	20	171	5,329

The area is dominated by mature structural stages of ponderosa pine. Hard snag density in the Canyon area was estimated to be 0.97 snags/acre

**Table 3-18: Nest– Existing Habitat Type and Structural Stages by Acres**

	Ponderosa Pine	Spruce	Aspen	Grasslands	Total
SS1	6	10		461	478
SS 2		37	76		113
SS 3A		68	116		184
SS 3B	131	227	73		431
SS 3C					
SS 4A	211	1,496	461		2,168
SS 4B	1,392	703	28		2,123
SS 4C	362	257			619
SS 5					
Total	2,102	2,798	754	461	6115

This area is dominated mixed conifer stands containing pine, spruce and aspen. Hard snag density in the Nest area was estimated to be about 0.85 snags/acre.

**Forest Plan Direction:**

1. **Objective 207** – Manage at least 5 percent of the forested land base for late succession
2. **Objective 209** – Manage at least 5 percent of a timber harvest project area for grass/forb structural stage in forested stands.

**Alternative A**

Canyon is currently lacking adequate structural stage 1 to meet the Forest Plan objective (209) of 5 percent grass/forb in forested types. These areas are to be 1 acre or larger. The majority of these sites are small (< 5 acres) openings that have not been delineated as separate RIS sites. While not large enough to change the overall stand structural stage, they provide important habitat for wildlife. Most of these openings were created from log landings, slash disposal sites, and temporary road corridors from past timber harvest. The district biologist and silviculturist used aerial photos to delineate these openings. Acres were tallied using a dot grid. There were 46 acres of grass/forb sites delineated in RIS and an additional 133 acres of small openings were delineated through the aerial photo interpretation effort. This totals to 179 acres (3.5 percent of the forested areas). About 257 acres are needed to meet the objective based on 5,144-forested acres.

Nest is also below the desired level of grass/forb structural stage. The vegetation database shows approximately 16 acres of SS1. Another 156 acres were identified by aerial photo interpretation for a total of 172 acres (3 percent of the forested area). Based on 5,654-forested acres, a total of 283 acres are needed to meet the objective.

Each project is also to be managed for 5 percent late succession. Late succession stands were designated in the revised Forest Plan. Five sites were identified in Canyon in Bear Canyon totaling 152 acres (3 percent). In Nest fourteen sites were designated totaling 646 acres (11.4 percent) of spruce dominated stands along the headwaters of Castle Creek. When combined, approximately 7.4 percent of the forested stands in the Canyon/Nest project area have been designated for late succession management.

**Alternative B**

The following tables display the expected structural stage distribution based on RIS sites for each project area. Additional SS1 is present as discussed above. More SS1 will be created in small patch clearcuts in Canyon (80 acres) and Nest (223 acres). This will provide a total of 259 acres or 5.0 percent grass/forb in Canyon. Nest will have a total of 395 acres or 7.0 percent. Both areas will meet the objective for grass/forb post treatment.

**Table 3-19: Canyon – Habitat Type and Structural Stages by Acres under Alternative B**

	Ponderosa Pine	Spruce	Aspen/Birch	Grasslands	Total
SS1	46			185	231
SS 2	48				48
SS 3A	108				108
SS 3B	1,297		5		1,303
SS 3C					0
SS 4A	1,871	10	15		1,896
SS 4B	1,228	88			1,316
SS 4C	364	63			427
SS 5					
Total	4,962	162	20	185	5,329

**Table 3-20: Nest–Habitat Type and Structural Stages by Acres under Alternative B**

	Ponderosa Pine	Spruce	Aspen	Grasslands	Total
SS1	6	10		464	480
SS 2		37	439		476
SS 3A	60	127	55		241
SS 3B	270	168	29		466
SS 3C					0
SS 4A	654	1,551	232		2,437
SS 4B	977	696			1,673
SS 4C	136	208			344
SS 5					
Total	2,102	2,798	754	464	6,115

In Canyon, Alternative B results in substantial decreases in SS 3C, 4B and 4C while increasing SS 3B. No changes will occur in spruce stands. In Nest, Alternative B reduces the amount of 4B and 4C pine while increasing the amount of SS 3A, SS 3B and SS 4A pine. Treatments planned in spruce stands resulted in minimal changes to the structural stages of spruce. These acreages were used in the HABCAP model to evaluate effects on various wildlife species.

**Alternative C**

The following tables display the expected structural stage distribution based on RIS sites for each project area. Additional SS1 is present as discussed above. More SS1 will be created in small patch clearcuts in Canyon (80 acres) and Nest (150 acres). This will provide a total of 259 acres or 5.0 percent grass/forb. Nest will have a total of 322 acres or 5.9 percent. Both areas will meet the objective for grass/forb post treatment.

**Table 3-21: Canyon – Habitat Type and Structural Stages by Acres under Alternative C**

	Ponderosa Pine	Spruce	Aspen/Birch	Grasslands	Total
SS1	46			185	231
SS 2	48				48
SS 3A	108				108
SS 3B	1,030		5		1,035
SS 3C	0				0
SS 4A	1,638	10	15		1,663
SS 4B	1,408	88			1,496
SS 4C	684	63			747
SS 5					
Total	4,962	162	20	185	5,329

**Table 3-22: Nest–Habitat Type and Structural Stages by Acres under Alternative C**

	Ponderosa Pine	Spruce	Aspen	Grasslands	Total
SS1	6	10		464	480
SS 2		37	439		476
SS 3A	60	127	55		241
SS 3B	187	168	29		384
SS 3C					
SS 4A	486	1,529	232		2,247
SS 4B	1,000	670			1,670
SS 4C	362	257			619
SS 5					
Total	2,102	2,798	754	464	6,115

In Canyon, Alternative C also results in decreases in SS 3C, 4B and 4C while increasing SS 3B but not to the extent of Alternative B. No changes will occur in spruce stands. In Nest, Alternative C maintains all existing pine with SS 4C. It would reduce the amount of 4B pine while increasing the amount of SS 3A, SS 3B and SS 4A pine. All spruce with SS 4C would also be retained. Treatments planned in spruce stands resulted in minimal changes to the structural stages of spruce. These acreages were used in the HABCAP model to evaluate effects on various wildlife species.

**Cumulative Effects**

Wildfires are the most likely events that could lead to major changes in habitat types and structural stages. Over time natural succession will also play a role determining the amount, type and distribution of vegetation.

#### 3.4.4.1.2 Caves

##### *Forest Plan direction*

##### **Guideline 1401 (treat as standard)**

For caves which have been determined to be significant, or which have not been evaluated for significance, manage to protect or enhance biological, cultural, ecological, hydrological and physical characteristics with the following actions:

1. Avoid ground disturbance within 500 feet of an opening of a natural cave;

##### **Existing condition**

There are no known caves, or mines within the Canyon/Nest project area. There are exposed limestone rock outcrops within the area that have the potential for use as roost sites for bats. This is especially true for the Canyon area. There is no evidence to suspect that a major hibernaculum (cave) site exists within either project area.

##### **All Alternatives**

The project area has been surveyed numerous times by a variety of resource specialists. No caves have been discovered. Therefore, no adverse impacts to cave physical or biological resources are expected. Caves discovered during project implementation should be referred to the District biologist for evaluation.

#### 3.4.4.1.3 Down Wood Habitat

##### *Forest Plan and Phase I Direction:*

##### **Guideline 2307 (treat as standard, revised)**

“Leave large woody debris on harvested or thinned sites to help retain moisture, trap soil movement, provide micro-sites for establishment of forbs, grasses, shrubs, and trees, and to provide habitat for wildlife.”

##### **Guideline 2308 (treat as standard, revised)**

Prescription shall be developed prior to timber harvest to identify the amount, size(s), and distribution of down logs to be left on site. On conifer forested sites (ponderosa pine and white spruce) retain an average of at least 50 linear feet per acre of coarse woody debris with a minimum diameter of 10”, where available.

##### **Existing Condition**

Field surveys found that sufficient amounts of large woody debris currently exist to meet or exceed Forest Plan guideline 2308. (Refer to wildlife survey forms locate in the project file.) Current fuel loadings vary from 3-40 tons/acre but generally average 8-12 tons/acre. [Photo Series for Quantifying Forest Residues in the Black Hills \(USFS 1990\)](#) was used to quantify fuel loadings.

##### **Alternative A**

Without thinning, the trees will become denser. Over time competition for water and nutrients will stress the trees. They will become more susceptible to insects and disease agents. Natural mortality levels will be higher with this alternative than either Alternative B or C. As these trees die and fall to the ground there will be an increase in down woody debris. However, this change will take many years.

**Alternatives B & C**

These alternatives are expected to maintain existing down material. No harvest or removal of down wood is expected. Jackpot to broadcast burning may reduce the existing level somewhat, but the burning prescriptions should main levels above Forest Plan standards. No measurable effects would result from implementation of either action alternative.

**Cumulative effects**

Because no measurable impacts are expected to occur, there would be no cumulative effects to down wood habitat from any alternative.

**3.4.4.1.4 Snails**

**Forest Plan Direction**

**Standard 3103 ( Revised)**

Ensure that all identified colonies (as indicated in [Frest 1993](#), and subsequent Frest report [expected in 2001] of the following two regionally sensitive snail species: *Discus shimeki* (Pilsbury, 1890); *Oreohelix strigosa cooperi* (binney, 1958); and the following five snail species: *Vertigo arthuri* (von Martens, 1882); *Vertigo paradoxa* (Sterki, 1900); *Catinella gelida* (Baker, 1927); *Oreohelix strigosa n. subsp*; *Oreohelix strigosa berryi* (Pilsbury, 1915), are protected from adverse effects of livestock use and other management activities.

**Existing condition**

Frest ([1993](#), [2000](#)) surveyed five sites within the project area. At four of these sites *Oreohelix strigosa n. subsp* was found to be present. These colonies appear to be very small ranging in size from 0.4 sq./m. to 5 sq./m. At some sites the distribution of dead snail shells indicated that the colonies may have been larger at one time. Frest's comments indicate that livestock grazing appeared to be a primary impact. All colonies were associated with limestone substrate. Frest reports that this species may be endemic to the Black Hills, however, it's taxonomy remains uncertain.

**Alternative A**

No vegetative treatments would affect the microsite at these locations. No additional impacts would occur.

**Alternatives B&C**

The areas surrounding two of the sites are planned for vegetative treatments. The colonies will be avoided during planned treatments. No treatments are planned near the other colonies.

**Cumulative effects**

Because none of the alternatives have any expected impacts, there could be no cumulative impacts.

**Conclusion**

None of the alternatives will have any adverse effects on these snail colonies.

**3.4.4.1.5 Neotropical Migratory Birds**

**Forest plan Direction**

There is no specific management direction for Neotropical migratory birds.

***Existing Condition***

Neotropical migratory birds have become a concern in recent years, mainly because of declining populations in the eastern United States. These birds inhabit a wide variety of habitats from grass/shrub communities to dense mature and old growth forests.

***Alternative A (No Action)***

This alternative would have no short-term or direct impacts to any neotropical birds or their habitat. There are potential indirect, long-term impacts from potential wildfires and/or insect infestations occurring in the future. However, the magnitude and timing of these potential impacts are unknown, but they could modify the existing condition of the forested habitat.

***Alternatives B & C***

These alternatives may result in unintentional take of individuals. However, the project complies with the U.S. Fish and Wildlife Service Directors Order #131 related to applicability of the Migratory Bird Treaty Act to federal agencies and requirements for permits. In addition, these alternatives are compliant with the Executive Order (Jan. 11, 2001), because the analysis meets our obligation as defined under the Memorandum of Understanding (Jan. 16, 2001), and specifically because it meets sections 2a. and 2b.

These alternatives would move stand densities and tree species compositions within the project area towards earlier successional stages, which may result in a change of bird species composition in those areas. However, sufficient forage, hiding cover and nesting habitat exists within and adjacent to the project area for migrants. Although species compositions may change, nesting attempts fail, or individuals are displaced to other areas as a result of project activities, overall numbers of neotrops would not likely change as the potentially displaced individuals would likely find suitable habitat elsewhere within and outside of the project area.

***Cumulative Impacts***

**Alternative A** - Because this alternative would not have any measurable impacts, there could be no cumulative impacts.

**Alternatives B & C** - Although these alternatives could result in the displacement of individuals and/or failed nesting attempt, such impacts would not be expected to result in a trend towards extinction or Federal listing of any species. The project area makes up such a small amount of the species habitat that only immeasurable cumulative impacts would be associated with either action alternative.

**3.4.4.2 Management Indicator Species (MIS)**

The Forest Plan as amended by Phase I list management indicator species to be considered during project planning. The amended list includes Threatened and Endangered Species, Sensitive Species and Species of Special Interest. T&E species and Sensitive species are addressed later in this report. Terrestrial Species of Special Interest are listed and discussed in this section. Aquatic Species of Special interest will be addressed in the Fisheries Report.

The Phase I Amendment changed some of the Forest Plan direction for management of MIS. Former Guideline 3201 that limited the magnitude of changes in habitat capability has been deleted. It has been replaced by additional protective measures to reduce adverse impacts to these species habitats. This analysis will still use the HABCAP model (USDA Forest Service 1992) to reflect relative changes in habitat capability among alternatives. Where specific new standards or guidelines were added, those will also be addressed. The HABCAP model has

been updated since the original model was developed based on local research ([Mills et al. 1996](#), [Rumble and Anderson 1996b](#)).

**3.4.4.2.1 Big Game (Including mule deer, white-tailed deer, and elk)**

**Forest Plan Direction**

**Guideline 3203 (treat as standard)**

Provide big game screening on 20 percent of arterial and collector roads.

**Guideline 5.1-3201 (treat as standard)**

Deer and elk habitat effectiveness values in a planning unit should at least meet the following values. Projects in planning units currently below these values should result in increased habitat effectiveness, Elk summer = 43 percent, Elk winter = 34 percent, Deer summer = 40 percent, Deer winter = 35 percent.

**Existing Condition**

Mule deer, elk and white-tailed deer all use the Canyon/Nest area. Mule deer comprise from 20-30 percent of the deer population. The area is considered summer range by SDGF&P biologists. Both areas are used for calving and fawning. Neither area is considered winter range although some animals may remain during very mild winters. Generally snow depths of greater than 6” move deer to lower elevations. Sustained snow depths of greater than 1 foot can move elk to lower elevations. Steep, south slopes in Canyon frequently melt off following snows leaving bare areas where wintering animals can congregate. The Nest area is normally snow covered all winter.

Black Hills deer populations have been decreasing in recent years while elk herds have been increasing ([SDGF&P 1998](#), [USDA Forest Service 2002](#)). Research efforts have been underway for several years to attempt to determine the underlying causes of the deer declines. The poor quality forage on summer range has been identified as one problem, along with road kill and other factors ([DiPerno et al. 199?](#)).

The ARC-HABCAP model was used to compare the alternatives. Vegetation structural stage data for the model was derived from stand exam information with field verification. Open road density was based on GPS road inventory. The model evaluates the spatial arrangement of habitat quantity and quality. Roads are considered to adversely impact habitat quality within 60-180 meters of an open road. Closed roads have no adverse effect. The model produces a habitat effectiveness value from 0.0 to 1.0 (highest). The following table reflects the overall habitat effectiveness for deer and elk.

**Table 3-23: HE values for Canyon/Nest Project area based on the ARC-HABCAP.**

<b>Canyon</b>				
<b>Species</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>MA 5.1 Guideline</b>
Deer - summer	.488	.552	.549	.40
Deer – winter	.485	.563	.558	.35
Elk – summer	.527	.593	.597	.43
Elk - winter	.504	.553	.563	.34
<b>Nest</b>				
Deer – summer	.509	.543	.542	.40
Deer – winter	.344	.357	.361	.35
Elk – summer	.551	.574	.576	.43
Elk - winter	.228	.221	.236	.34

The limiting factors for deer and elk in summer are forage quality and quantity. Large areas of preferred browse species (chokecherry, serviceberry, aspen, etc.) do not exist. Scattered pockets of shrubs, willows, and aspen regeneration are heavily browsed. Herbaceous forage is allocated for livestock grazing as well as elk, deer and other wildlife. The primary limiting factors in winter include poor forage availability, lack of high quality thermal cover, and high road density.

Habitat effectiveness values meet Guideline 5.1-3201 except for elk and deer in winter in Nest. The abundance of spruce habitat type limits the habitat effectiveness for big game. Spruce is not considered to be high quality feeding habitat for either deer or elk in winter. Spruce is effective winter cover only where stands are dense (SS 3C or 4C) ([USDA Forest Service 1992](#)).

The HABCAP model acknowledges the open roads adversely affect big game. The model incorporates a buffer of ineffective habitat along open roads. The buffer width varies depending on the standard of the road. Primary roads (State and County roads) are buffered 180 meters, arterial and collector roads are buffered 60 meters, and primitive roads/two-tracks are buffered 30 meters. Based on this method, open roads are adversely affecting >20 percent of the project area. Open roads also affect winter habitat since the roads are used by snowmobiles.

In Canyon there are about 4.5 miles of roads classified as either arterial or collector. Approximately 28 percent of these roads have screening cover. In Nest there are about 10.6 miles of arterial or collector roads. About 30 percent of these roads have screening cover. Screening cover was defined as vegetation, landform, or slopes that conceal a deer or elk standing at a distance of 200 feet from the road ([Thomas 1979](#)). Where these roads travel through a large upland meadow and the road was over 200' from the tree line it was not included in these calculations.

To improve deer and elk habitat in the area, the following must occur: 1) designate and manage adequate cover areas, 2) reduce the miles of open roads, and 3) stimulate production of quality forage species through a combination of timber harvest, prescribed burning, and seeding. These recommendations are based on information provided by SDGF&P biologist and personal observations. The success of such measures will depend extensively on commitments to other resources uses such as livestock grazing, recreation, commercial timber harvest, and local private land uses. Substantial improvement of big game habitat in this area will be difficult to achieve under the current management emphasis. Forest Plan direction for Management Area 5.1 does not designate or manage for adequate cover areas.

Population levels of elk in the Black Hills are increasing while deer populations have been declining in recent years ([SDGF&P 1998](#), [USDA Forest Service 2002](#)).

### **Alternative A**

Under this alternative no timber harvest would occur. Trees would become denser and provide better cover. Other areas would develop into cover over time. However, pine would continue to encroach into meadows and hardwoods further reducing the amount of quality forage. This is likely to cause an increase in competition for forage between livestock and big game. No roads would be closed. Overall, these changes would further reduce summer habitat values but may increase winter habitat values over time.

All screening cover along roads would be maintained. Screening is likely to develop along roads in other areas.

**Alternative B**

**Canyon** - Some existing cover stands would be thinned by the planned treatments. But treatments that expand meadows and maintain or restore hardwoods would improve forage quality and quantity. Thinned pine stands also provide more foraging acres although the quality of the forage is often low. Decreases in cover are offset by planned road closures that make habitat more “effective” by reducing disturbance. Habitat effectiveness values for both deer and elk exceed Guideline 5.1-3201. Under this alternative HE values would increase across the board.

**Nest** – The results are similar to those discussed for Canyon with one exception. The habitat effectiveness for elk in winter is currently (22.8 percent) below the desired level of 34 percent (Guideline 5.1-3201). This guideline is to be treated as a standard under Phase I. It decreases further under Alternative B to 22.1 percent. The decline results from further reduction of cover areas. Road closures cannot fully compensate for lack of high quality cover. **This violates the same guideline, which requires areas currently below the desired habitat effectiveness to show an increase. Selection of this alternative will require a site-specific Forest Plan amendment.** Since this area is not considered winter range and is usually snow covered, the HE values for summer should be considered more important. HE values for elk and deer in summer decrease slightly but are well above the desired levels.

Both alternatives include a mitigation measure to protect existing screening cover along roads. This list of sites is included in the original EA. Screening is likely to develop along roads in other areas.

**Alternative C**

**Canyon** – Under this alternative HE values for both deer and elk in all seasons would increase relative to the existing condition. Much of this increase is due to planned road closures. This alternative meets the Forest Plan direction. This alternative provides a greater benefit to elk than does Alternative B.

**Nest** – Under this alternative HE values for both deer and elk in all seasons would increase relative to the existing condition. Much of this increase is due to planned road closures. This alternative meets the Forest Plan direction. This alternative increases HE values for elk in winter and therefore meets the Forest plan direction under Guideline 5.1-3201. This alternative would not require a Forest Plan amendment to implement.

Both alternatives include a mitigation measures to protect screening cover along roads. The list of site is included in the original EA. Screening is likely to develop along roads in other areas.

**Cumulative Effects**

Private land inholdings in Nest are currently used for summer livestock grazing and the grass is considered livestock forage. By the end of the grazing season, little usable herbaceous cover remains. Private timbered lands have been harvested recently. These areas do not provide quality cover for big game. Plans to subdivide these lands are not expected in the foreseeable future but it is possible without advanced notice to the Forest Service. Roads on private lands contribute to disturbance levels.

**Conclusion**

Habitat conditions and HE values would improve for deer and elk with implementation of either action alternative with the exception of elk winter HE in Nest in Alternative B. Most of the increase is due to proposed road closures. In general, Alternative C is better for elk while Alternative B is better for deer in Canyon. In Nest, Alternative C is better for both deer and elk.

#### 3.4.4.2.2 Turkey

##### **Forest Plan Direction**

##### **Guideline 3205 (treat as standard)**

Provide at least 2 to 6 turkey roost sites per section (mature trees w/ average diameter 10-14", widely spaced horizontal branches, BA at least 90 sqft/ac.). Sites should be at least ¼ acre in size and not isolated from adjacent forested stands. Emphasis should be on the upper third of east-facing slopes if available.

##### **Existing Condition**

Turkeys are common in the Canyon/Nest project area in summer. Few turkeys remain in the area in winter except during very mild winters. Snow depths of 6 " or more push turkeys to lower elevations. A popular game bird, it uses dense pine forest for winter foraging/cover habitat. These birds roost in larger diameter, horizontally branched ponderosa pine trees, usually within ½ mile of water. Hens nest on the ground. They use down logs, common juniper, or other tall ground cover to hide their nests. In summer months, hens with broods prefer more open forest conditions where insects are plentiful since they comprise a large portion of the poult's diet.

Turkey populations are generally stable to increasing in the Black Hills (SDGF&P 1998, USDA Forest Service 2002). However, population levels can fluctuate considerably due to adverse weather conditions during the spring nesting and brood rearing season. SDGF&P regulates hunting pressure to compensate for population declines due to adverse weather conditions.

Forest Plan guideline 3205 is currently being met. There is over 4,400 acres of mature ponderosa pine habitat with an average canopy density of 40 percent or greater in Canyon and Nest project areas. Adequate roosting habitat is available.

The HABCAP model was used to compare the effects of alternative on habitat capability (HC) for turkeys. The current HC value for summer is .676 and for winter is .529

##### **Alternative A**

No mature trees will be harvested. The project areas will continue to meet this guideline. Habitat capability is not likely to change significantly for several years. Habitat value is lower in Nest due to the amount of spruce present in that area. Spruce is not ideal habitat for turkeys. Canyon provides good turkey habitat year-round.

##### **Alternatives B & C**

Guideline 3205 can be met without specific mitigation due to the number of stands left untreated this entry. However, to assure compliance and maintain distribution of turkey roost tree groups, at least one turkey roost tree group (minimum of ¼ acre) would be designated during sale layout in each of the following stands planned for seed cut or overstory removal. These sites are east facing slopes and within ½ mile of known water sources.

- Canyon – 040903- 110, 147,
- Nest – 040402-111

Habitat capability values increase for summer habitat except for Alternative C in Canyon and decrease for winter habitat. Declines in winter habitat are more significant than improvements in summer. Changes are largely due to reduction in cover and increase in foraging areas. Cover is a more important habitat component in winter. However, turkeys use the area mostly in the summer, so summer habitat values may be a more important consideration.

**Table 3-24: Habitat capability (HC) values for turkeys under All Alternatives**

	Alternative A	Alternative B	Alternative C
Canyon			
Summer	.772	.786	.765
Winter	.803	.762	.781
Nest			
Summer	.676	.698	.686
Winter	.529	.481	.494

**Cumulative Effects**

Spring weather is probably the single most significant factor in determining turkey populations. Hunting pressure can also affect population levels. Livestock grazing in conjunction with or independent of drought can reduce herbaceous vegetation. Herbaceous vegetation is important in maintaining a high quality summer brood habitat (Rumble and Anderson 1996).

**Conclusion**

Alternative B will provide better habitat values for turkeys in summer. Alternative A is the best alternative for maintaining winter habitat. Alternative C would improve turkey habitat in summer in Nest but decrease habitat capability in Canyon in all seasons and decrease winter HC values in Nest.

**3.4.4.2.3 Brown Creeper**

**Forest plan Direction**

There is no specific management direction for the brown creeper.

**Existing Condition (include pop. Trend)**

This small forest bird is associated with mature and late succession forest conditions. Optimal habitat is Structural stage 5 (late successional). Suitable cover exists in SS 4A, 4B, 4C spruce and pine although pine is the preferred habitat type. Nests are constructed in the bark cracks and folds of large diameter (>20" dbh) ponderosa pine.

Recent monitoring results on the Black Hills indicate that the density of brown creepers is twice as high in late succession pine as in other habitat types (Panjabi 2001). Spruce is the second most frequently used habitat type.

**Alternative A**

There is currently 2, 750 acres classified as pine SS 4B or 4C in Canyon and 151 acres of spruce 4B or 4C. There is currently 1,754 acres classified as pine SS 4B or 4C in Nest and 960 acres of spruce 4B or 4C. The current habitat capability value for the brown creeper in Nest is .330 and in Canyon is .459.

**Alternative B**

Some mature stands would be harvested leaving 1,592 acres of SS 4B or 4C pine and 151 acres of spruce 4B or 4C in Canyon. In Nest, planned timber harvest would leave 1,113 acres of SS 4B or 4C pine and 904 acres of spruce 4B or 4C in Canyon. Habitat capability values would be .322 in Nest and .401 in Canyon.

**Alternative C**

Some mature stands would be harvested leaving 2,092 acres of SS 4B or 4C pine and 151 acres of spruce 4B or 4C in Canyon. In Nest, planned timber harvest would leave 1,362 acres of SS 4B or 4C pine and 927 acres of spruce 4B or 4C in Canyon. Habitat capability values would be: .325 in Nest and .415 in Canyon

**Table 3-25: Habitat capability (HC) values for brown creeper under All Alternatives**

	Alternative A	Alternative B	Alternative C
Canyon			
Summer	.459	.401	.415
Nest			
Summer	.330	.322	.325

**Conclusion**

Both action alternatives reduce habitat for the brown creeper, Alternative C is less detrimental than Alternative B. The preferred Alternative for this species is Alternative A. However, all alternatives will leave all large diameter (>20" dbh) trees for snag replacements. So planned treatments will not be as detrimental as they could be if all the largest trees were being removed.

Both action alternatives may disturb nesting if harvest occurs during the nesting season. This impact is expected to be short term affecting only one brood.

**Cumulative Effects**

Fire suppression can improve habitat for this species by preventing wildfires and maintaining dense closed canopy stands. Wildfires on the other hand can reduce habitat if they become stand-replacing events. Underburns are not likely to substantially reduce since large diameter pines are the most fire-resistant.

**3.4.4.2.4 Mountain Lion**

**Forest Plan Direction**

There is no specific management direction for the mountain lion.

**Existing Condition**

Mountain lions in the Black Hills range widely and have very large home territories. They prey on deer primarily but will take other small mammals as well ([Chapman and Feldhamer 1982](#)). Lions use rock crevices and caves in cliff areas for shelter. They are generally solitary and secretive, preferring areas with little human disturbance. However, they can become habituated to human activities where human presence is high in ideal habitat. This can result in attacks on human or domestic animals. Offending lions are usually destroyed when they become a problem. Good lion habitat management includes maintaining areas with a minimum of human presence and providing good habitat for prey species such as deer.

Population trend in the Black Hills appears to be upward according to SDGF&P 1998. Research is currently being conducted by SDGF&P and SDSU on mountain lions in the Black Hills using radio-collared animals. This information will be used to guide future management of lions.

**Alternative A**

High road density may affect mountain lions although most of these roads receive little traffic except during big game hunting season. This is the time of greatest impact. Changes in habitat due to natural succession are unlikely to adversely affect mountain lion over the short term.

**Alternative B & C**

The road closures proposed for travel management would benefit lions. Action alternatives that maintain the best habitat for deer will also provide the best habitat for lions.

***Cumulative Effects***

Long-term lack of timber management coupled with continued fire suppression could reduce deer and elk populations by decreasing forage availability. Increasing residential development on private lands and recreational use on NFS lands could limit habitat suitability in some areas.

***Conclusion***

Both action alternatives would benefit mountain lion through reductions in open road density and improvements in deer habitat. Alternative B is better for deer in Canyon. In Nest, Alternative C is better for both deer and elk. Alternative A would have no effect on mountain lion.

**3.4.4.2.5 Mountain Goat**

***Forest Plan Direction***

There is no specific management direction for the mountain goat.

***Existing Condition***

There is not suitable habitat for mountain goats in the Canyon or Nest project areas (Richardson 1971). Mountain goats are not known to use the area (SDGF&P 1998).

***Conclusion***

No effects to mountain goats would be expected under any alternative.

**3.4.4.3 Sensitive Species– Biological Evaluations**

***Pre-field review***

A pre-field review of Region 2 Sensitive Species was completed by reviewing on-the-ground surveys results from the District office, site-specific District data, South Dakota Natural Heritage database, literature reviews, personal communication with other FS personnel, the Expert Interview Summary (USFS 2000) completed for the Phase I Amendment, and the BHNH 2001 Monitoring Report (USDA Forest Service 2002).

***Field reconnaissance***

Field reconnaissance occurred during the months of June and July 1998. Surveys were conducted for nesting goshawks, amphibians, reptiles, and terrestrial snails in particular. Field visits were made during January and February 2001 and 2002 as well. Track plate surveys were conducted for marten at these times.

Frest conducted forest-wide surveys for land snails in 1992 and 1999. Some surveys sites were located within the project area (Frest 1993, Frest 2000). None of these sites contained the two regionally listed sensitive species. (However some additional species were located as discussed previously). Surveys for sensitive butterfly species were conducted across the Forest (Marrone and Royer 1992a, Royer and Marrone 1992b). One location of tawny crescent butterfly was reported adjacent to the project area.

These efforts located three large stick nests in the Canyon area and an active goshawk nest located on the Wyoming state land just off National Forest. Leopard frog (*Rana pipiens*) and tiger salamander (*Abystoma tigrinum*) were also detected. No marten tracks or other sign were detected.

District personnel completed surveys for sensitive plant species during the summer of 1994 for allotment management planning purposes. The surveys focused on high probability

habitat in riparian, moist woodlands, and north-facing spruce stands. No occurrences of R2 listed plant species were located and none have been found since that time.

The BE for the Revised Forest Plan (USDA Forest Service 1997, Appendix H) and the BE for the Phase I Amendment (USDA Forest Service 2001, Appendix G) contain habitat descriptions for sensitive plant species. Monitoring and survey information collected since the Revised Forest Plan was completed indicates that five of these plant species (American trailplant, northern arnica, greater bladder sedge, long-stalk sedge, and tree-like clubmoss) are more abundant and widespread than previously believed. The Black Hills Sensitive Plan Task Team has determined that these species no longer merit status on the Region 2 Sensitive species list (USDA Forest Service 2001).

Two sensitive species have only one historic record each on the forest: autumn coralroot and prairie moonwort (USDA Forest Service 2001). Because of the difficulty of locating these species, little is known of their distribution and habitat requirements in the Black Hills. Lacking this information, it is impossible to make a determination for either of these species at this time (USDA Forest Service 2001). They will not be addressed further.

Based on pre-field review and field reconnaissance efforts, there are seven R2 sensitive species that could be expected to occur within the project area. They are: black-backed woodpecker, northern three-toed woodpecker, northern goshawk, northern leopard frog, tiger salamander, American marten, Black Hills red-bellied snake, and tawny crescent butterfly, and northern arnica.

#### **3.4.4.3.1 Goshawk And Post-Fledging Areas**

##### ***Forest Plan and Phase I Direction***

##### **Guideline 3108 (revised)**

“The following additional protective measures will apply relative to the northern goshawk for all projects involving the removal of trees in suitable habitat, except those done for the purpose of enhancing goshawk habitat:

- A goshawk nest survey prior to any projects in forested areas.
- If the project area includes a historically active nest or a replacement stand associated with a historically active territory, this acreage will be excluded from the project.
- If a historically active territory occurs within one-half mile of the project area and protected acreage has not yet been identified, the project analysis will determine whether some of the protected acreage should occur within the project area.
- If the pre-project survey identifies a previously unknown active nest, the project analysis will determine where protected acreage will be located.

##### **Guideline 3109 (revised)**

“In all cases, protected acreage will include 180 acres best suited for nesting habitat within ½ mile of the historically active or currently active nest within the goshawk territory. The acreage need not be contiguous but must occur in 30-acre units or larger. If these conditions cannot be met, then the acreage will include stands that are not currently suitable habitat but that could be managed to meet nesting conditions over time. Activities within these stands should be limited to those that aid in maintaining or enhancing the stand values for goshawks.”

##### **Guideline 3110 (treat as standard)**

“Activities should not reduce the structural and compositional integrity of active and alternative conifer-forested goshawk nest stands.”

**Guideline 3111 (treat as standard, revised)**

“From March 1 to August 31, minimize additional (new) human-caused disturbances and disruption beyond that occurring at the time of nest initiation (e.g. road traffic, timber harvest, construction activities) within 1/4 mile of active goshawk nests.”

**Guideline 3112 (treat as standard)**

“Management at goshawk nest sites should be designed to conserve or enhance site conditions”

**Guideline 3113 (treat as standard)**

“From March 1 to September 30, avoid timber harvest schedules that cause simultaneous widespread disturbances across active PFAs. Fledgling habitat should include areas without human disturbance. “

**Guideline 3114 (treat as standard, revised)**

“Design silvicultural prescriptions and manage activities to enhance prey species habitat by maintaining vegetative diversity and striving for a balance of structural stages, from stand initiation to late succession, within goshawk fledgling habitat (approximately 420 acres) around each historically active goshawk nest and alternate nests.”

**Existing Condition**

Goshawk surveys were conducted in 1997 and 1998 in suitable nesting habitat. Three stick nests were found along with one active nest site. Monitoring of these known nests was done in 2000 and 2001. There was no sign of goshawk activity at that time.

In the Canyon portion of the project area, there are three known active or historic goshawk nests. There was also one known nest to the west of the project area on State of Wyoming land. All four nests are in the vicinity of Bear Canyon in the middle of the Canyon portion of the project area. Therefore I designated one PFA around the three known nest stands in Bear Canyon. The Canyon project area comprises about 5, 353 acres. I feel this size area is appropriately managed as one territory. There are no known nests within Nest. Based on my field review there is no suitable nesting habitat in Nest.

Stands included in the PFA in addition to the nest/replacement stands are: 40903- 166, 167, 168, 169, 170, 179, 180, 181, 198, 199, 200, 206, 207, 208. The PFA totals approximately 716 acres and includes the 183 acres of suitable nest stands. Although this PFA is somewhat larger than the suggested acreage (total of 600 acres including nest stands), I feel this is necessary to provide adequate fledgling habitat around all of the known nest stands. The following table reflects the current balance of structural stages in the PFA.

**Table 3-26: Goshawk Structural Stages In PFA**

Goshawk Structural Stage	Stand #	Acres	Existing percent of PFA	Desired percent of PFA
1	200, 206, 207, 208	197	27.5	10 (7-13)
2	184	41.3	5.7	10 (7-13)
3	166, 167, 168, 169, 170, 181	195.3	27.2	20 (15-25)
4-50	180, 183, 185, 186, 202	104.8	14.6	13 (8-18)
4-60	179, 182, 201, 238, 240	163.7	22.8	7 (2-12)
5	199	13.8	2.0	20 (15-25)
6		0	0	20 (15-25)

The PFA is currently in a slightly earlier successional stage overall than what is desired. There is more Structural stage 1 than is needed. This structural stage includes very open stands of mature pine with an understory composed primarily of grass. There is less structural stage 2 than is desirable. However, some of the SS 1 will develop into SS2 as pine regenerates in open mature pine stands. There is slightly more structural stage 3 than is needed. Some of these stands could be thinned from below to enhance tree growth and the faster development of larger diameter trees (SS 4). Structural stage 4 stands with at least 50 percent canopy closure are currently at the desired level. SS 4 with at least 60 percent canopy is present in larger amounts than is needed. However, these are the stands that are currently active nest stands or have been identified as replacement or alternate nests stands. They are also expected to develop into structural stage 5 and eventually into structural stage 6. Currently no structural stage 5 or 6 exists within the project area. These late successional structural stages would provide the best habitat for goshawk prey species (Reynolds 1992).

Some of the stands in the PFA that are currently in SS 4-50 or 4-60 have advanced regeneration that may act as ladder fuels in case of a ground fire. These ladder fuels could ignite the overstory resulting in the loss of the nest stands. The advanced regeneration in the understory can also impede the movement of goshawks under the canopy making them less suitable for nesting.

Regional population trend of the northern goshawk is downward since 1980 (BBS data). Local population trend is unknown. However, local habitat trend is downward due to recent large wildfires in the Southern Black Hills. These fires have destroyed at least 10 known nest stands in the last two years (2000-2001). Regional population trend of the northern goshawk is downward since 1980 (BBS data). Local population trend is unknown. However, local habitat trend is downward due to recent large wildfires in the Southern Black Hills. These fires have destroyed at least 10 known nest stands in the last two years (2000-2001). **Goshawks using these territories may be able to find other territories outside the burn. The effects of the fires on population trend are uncertain.**

### ***Alternative A***

Changes in habitat due to natural succession would occur. Stands would gradually become denser and individual trees would become larger. Overstocked stands would become more susceptible to insect induced mortality increasing snag density over time. Stands suitable for nesting would become more common. The distribution of vegetation structural stages in the PFA would become more balanced as early successional stages develop into more mature stands. Mature stands would gradually develop characteristics of late successional stands. No pre-commercial thinning would take place in the nest stands making them more susceptible to crown fires. Continued growth of the understory may make the stands less suitable for nesting.

### ***Alternatives B & C***

Three stands that currently contain an historic or active nest were identified (40304-182, 183, 202). These stands total 74.6 acres. Additional stands that currently provided suitable nesting habitat were identified using a combination of field review, aerial photo interpretation, stand exam data, and computer modeling. Those stands total another 109 acres (40304- 186, 185, 201, 238, 240). All of these stands provide a total of 183.6 acres of contiguous nesting habitat. Commercial treatments planned in these stands were dropped.

There are 106 acres of pre-commercial thinning planned within the PFA. The purpose of the thinning is to remove small diameter ladder fuels to reduce the risk of a crown fire developing. The treatments would also maintain an open understory that enhances nesting habitat.

Mitigation measures (seasonal restrictions) were added to limit disturbances near nest stands and around PFAs during critical periods.

***Cumulative Effects***

Road closures may benefit goshawks by limiting disturbance. It has been my experience that use of the roads in the project area is not very high during the nesting season when the birds are most sensitive to disturbance. Underburning that mimics the historical fire regime and maintains an open understory would benefit this species. However, crown fires could destroy many acres of forested habitat thereby reducing overall habitat availability.

***Rationale for determination***

This species has a low reproductive rate and is vulnerable to predation, environmental extremes, loss of nesting habitat, and disturbance. Regional population trend is downward. Local habitat trend is also downward due to the recent wildfires in the Black Hills that destroyed ten nest stands. However, the Forest Plan Phase I Amendment provides for additional standards and guidelines to provide protection of this species and its' habitat. Mitigation measures also protect nesting goshawks if found during harvest operations and/or post sale activities. All alternatives will meet the Revised Forest Plan direction for the goshawk.

***Determination***

The No Action alternative is expected to have no impact on goshawks. All action alternatives may adversely impact individuals but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

**3.4.4.3.2 American Marten**

***Forest Plan and Phase I Direction***

**Guideline 3215 (new)**

“Prevent decrease in patch size of current or high-potential marten habitat. Increase connectivity; maintain microclimate; avoid building roads. Don't thin important connectivity habitat areas. Habitat definition: Spruce (SS 3B, 3C, 4B, 4C, 5); Also pine adjacent to above spruce stands (with  $\geq 30$  percent BA in spruce, and  $\geq 40$  percent canopy cover)”

**Guideline 3117 (new)**

“Where timber harvest activities occur in stands adjacent to potential marten habitat (spruce sites or conifer sites with a significant spruce component), maintain ~1 pile of woody material per 2 acres to create near-ground structure for marten prey species.”

**Standard 2308 (modified)**

b. Design vegetation management activities including prescribed fire to maintain 10 sound logs per acre (8 logs  $\geq 10'$  in length and 10" in diameter; 2 logs  $\geq 10'$  in length and 20" in diameter) to provide future den sites, resting sites, and prey habitat within areas currently occupied by marten or with a high potential for occupancy.”

***Existing Condition***

In the Canyon portion of the project area, there are only four isolated stands of spruce. Spruce regeneration is not common except on steep north facing slopes. There is no connectivity habitat to other areas of spruce in the Black Hills. Because of the small, isolated nature of these stands they are not considered high-potential marten habitat. However, there is suitable habitat for marten in the Nest portion of the project area. Spruce and mixed conifer stands predominate in this area. Spruce regenerates under

pine stands with even moderate canopy closure. Effects on pine marten habitat will be discussed only with regards to the Nest area.

Marten were released in the Nest area by SDGF&P in the early 1990s (Fescke, *In Press*). However, recent surveys for marten have not recorded any evidence of the species in this area. On-going research indicates that marten may use this area as a travel corridor between areas of better habitat to the north and the Black Elk Wilderness. The marten population in the Black Hills appears to be increasing and is considered secure (SDGF&P 1998).

Spruce stands and some adjacent pine stands (1695 acres) in Nest were identified as high-potential marten habitat based on the criteria listed in Guideline 3215 above (40401-105, 108, 112, 114, 119, 121, 122, 124, 128, 130, 131, 132, 137, 138, 139, 140, 141, 142, 143, 144, 145; 40402-102, 115, 116, 117, 119, 121, 127, 134; 40301-109, 114, 132, 137; 40501-106, 107, 108, 126).

Other stands (757 acres) were identified as connectivity habitat in Nest (40403-105, 108, 115, 116, 125, 126, 128, 129, 131, 135, 138; 40402-122, 123, 125, 126, 131, 132; 40401-135; 40405- 125, 127, 128, 131,133).

**Alternative A**

The No Action alternative will favor the development of marten habitat through natural succession. In Nest, most stands are mixed-conifer. Without timber harvest they will progressively become more dominated by spruce with increasingly less pine. This is especially true when combined with fire suppression. In Canyon, the No Action alternative is not likely to result in better marten habitat. The Canyon area is drier with very little spruce. Spruce is not likely to become established in most areas.

**Alternative B**

All treatments planned in high potential habitat were dropped. Connectivity sites that were located between high potential habitat sites in Nest project area were deferred from treatment to maintain an effective network of habitat that might allow for marten to become established in Nest.

**Alternative C**

All of the high potential habitat areas were deferred. All of the connectivity sites in Alternative B as well as some additional sites on the north end of Nest were deferred. These additional sites would provide a corridor of connectivity habitat between the high potential habitat in Nest and other core areas of marten habitat to the north of the project area near Cheyenne Crossing.

The following table displays the HABCAP values for the marten in Nest. Alternative A is the best for the marten. Alternative C has the least adverse effect of the action alternatives although Alternative B has a relatively minor effect since most of the suitable marten habitat has been deferred. Changes in habitat capability result from treatment of denser pine stands primarily. The difference between Alternative B & C is the result of deferring more connectivity habitat in Alternative C.

**Table 3-27: Habitat capability (HC) values for marten under All Alternatives**

	Alternative A	Alternative B	Alternative C
Nest			
Year round	.315	.312	.313

**Cumulative Effects**

Fire suppression will benefit marten by maintaining spruce, denser pine stands, and high levels of down wood. Silvicultural prescriptions that are designed to favor pine over

spruce will limit the development of better marten habitat in areas managed primarily for timber production such as Nest. Implementation of the Phase I direction for marten in future planning will prevent conversion to pine and promote development of better marten habitat (spruce) over time.

***Rationale for Determination***

Marten are not known to occupy the project area at this time. Marten have been released in Nest this decade. However they have not stayed in the area. Previous timber harvest schedules and silvicultural prescriptions may have adversely affected habitat in the area affecting its suitability for marten. Both action alternatives limit further adverse impact to spruce habitat and should promote development of better marten habitat over time. Alternative C defers more spruce habitat than does Alternative B. Changes to marten habitat due to the project are minimal.

***Determination***

No impacts are expected to marten since marten are not known to inhabit the project area at this time.

**3.4.4.3.3 Black-tailed Prairie Dog**

***Forest Plan Direction***

**Guideline 3118.**

Maintain existing black-tailed prairie dog populations on the forest.

***Existing Condition***

There are no black-tailed prairie dog populations in the project area. There is no suitable habitat.

***Alternatives A, B & C***

No impacts are expected.

***Cumulative Effects***

No cumulative effects are expected.

***Determination***

No impacts.

**3.4.4.3.4 Black-backed woodpecker**

***Forest Plan Direction***

There is no specific direction for management of this species other than Standards 2301, 2302, 2303, 2304, 2305 and 2306 listed above regarding snags.

***Existing Condition***

This species inhabits coniferous forests, especially spruce in the boreal zone, swampy conifer stands, burned over areas or insect epidemic areas. The black-backed woodpecker eats wood boring insects and their larvae underneath loose bark on dead trees. This species is a primary cavity nester and is closely tied to stand replacing events, such as insect outbreaks or large wildfires. This species requires dense unlogged stands (pre-burn, greater than 70percent crown closure) for nesting and foraging (Saab and Dudley 1998). Their nest tree is usually a hard snag, > 15" DBH, but they will nest in smaller diameters > 9" DBH.

This species' preference for burned forests in a time of fire suppression, its eruptive populations, and lack of population information has identified it as a species of concern (Finch 1992). There is no local or regional population trend available (BBS). Surveys for

this species conducted on the Black Hills in 2001 (Panjabi 2001) indicate this species is present in the burned areas and late succession stands. It appears widely distributed in the Hills but relatively rare throughout.

Snag density in the project area is currently below the minimum hard snag level described in Standard 2301 above. Snag densities in Canyon were estimated to be 0.97 hard snags/acre based on walk-thru estimates conducted in 1997. Densities in Nest were estimated at about 0.85 snags/acre. Low snag densities are likely limiting both nesting and foraging habitat for this species.

**Alternative A**

This alternative would allow natural successional changes to occur in vegetation. All existing dense stands would be maintained. Trees would become larger and denser. This would eventually cause competition for water and resources inducing stress in the trees. Stressed trees are more susceptible to insect attack. Insects provide food for woodpeckers and trees killed by insects provide snags for nest sites. This alternative would provide for the greatest increase in woodpecker habitat over time. However, no anthropogenic snag creation would occur. There would be no immediate benefit to woodpeckers.

**Alternative B**

Treatments included in this alternative are designed to thin overstocked tree stands by harvesting commercial sized trees. This creates more open stands that are less susceptible to attack by insects. It reduces the total acres of dense stands and the number of large (>9" dbh) trees. Mitigation measures are included to retain all of the largest diameter trees (>20" dbh). These trees are the most likely to become decadent and die.

Snags would also be created under this alternative in all harvested units. This alternative would have the greatest immediate beneficial impact on woodpecker habitat by creating snags immediately across a larger area than the other alternatives. The life of this benefit is expected to be about 10-20 years based on the falldown rate of snags in the Black Hills (Lentile and Smith 2000). However, over the longer term it would reduce the availability and mortality rate of large diameter trees when compared to the other alternatives. This alternative may disturb nesting if harvest occurs during the nesting season. This impact is expected to be short term affecting only one brood.

**Alternative C**

This alternative would harvest fewer acres and trees than Alternative B. Effects would be similar but to a lesser extent. The same mitigation measures would apply. Some snags would be created but not as many as in Alternative B. Some existing dense stands would be maintained but not to the same degree as Alternative A. This alternative is the best balance of long and short-term benefits to the species. This alternative may disturb nesting if harvest occurs during the nesting season. This impact is expected to be short term affecting only one brood.

The following table displays the habitat capability values for the black-backed woodpecker based on the HABCAP model. Canyon provides much better habitat for this species than does Nest. Habitat values in Nest are limited by the amount of spruce. Spruce does not provide high quality habitat for this species. In the Black Hills this species is most closely associated with late succession pine and burned areas (Panjabi 2001).

Alternative A is the best for this species over the long term. Both action alternatives would provide the best benefit to the species in the short term. Alternative C will have the

least adverse impact. Alternative B will have the greatest adverse impact. However, planned treatments do not significantly reduce habitat capability in either area.

**Table 3-28: HC values for black-backed woodpecker under All Alternatives**

	Alternative A	Alternative B	Alternative C
Canyon			
<b>Year round</b>	.879	.703	.743
Nest			
Year round	.289	.266	.275

**Cumulative Effects**

Over 100,000 acres of the Black Hills have burned in the past two years (2000 and 2001). This has created extensive habitat for this species. Although none of the burned areas are within or adjacent to Canyon/Nest, they do provide excellent areas of source habitat from which individuals may colonize this area. There is currently a prohibition on the cutting of snags for firewood. If effective, this should provide better habitat for this species over time. However, illegal cutting of snags for firewood may limit the benefit of the proposed snag creation.

**Rationale for determination**

Noise and activity associated with this project may disturb some nesting birds. The planned project will create snags for future nesting sites immediately. However, the action alternatives would reduce the availability and mortality rate of large diameter trees (>10' dbh) over time when compared to the no action alternative.

**Determination**

Alternative A will have no impact on this species. Both action alternatives may adversely impact individuals, but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

**3.4.4.3.5 Northern three-toed woodpecker**

**Forest Plan Direction**

There is no specific direction for management of this species other than Standards 2301, 2302, 2303, 2304, 2305 and 2306 listed above regarding snags.

**Existing Condition**

The three-toed woodpecker prefers coniferous forest, especially spruce in the boreal zone, or where burned over, logged or swampy. This species feeds on borers, insects, and beetle larvae underneath loose bark on dead trees. This species is a primary cavity nester, requiring large diameter hard snags (>16" DBH) and dense stands similar to the black-backed woodpecker (Finch 1992, Petersen 1995).

In the Black Hills, this species is considered a rare permanent resident (SDOU 1991, Luce et. al. 1997) and has been documented in a few locations in Lawrence, Pennington and Custer Counties in South Dakota. Recent monitoring efforts in the Black Hills (Panjabi 2001) have also recorded few occurrences. Observations were limited to spruce, or other areas where spruce was a prominent feature of the surrounding forest. There was one observation in the Jasper burn area 2001.

Regional population trend is substantially downward (BBS data). No local population data is currently available. This species is vulnerable to loss of large snags, salvage timber harvest and fire suppression.

**Alternative A**

This alternative would allow natural successional changes to occur in vegetation. All existing dense stands would be maintained. Trees would become larger and denser. This would eventually cause competition for water and resources inducing stress in the trees. Stressed trees are more susceptible to insect attack. Insects provide food for woodpeckers and trees killed by insects provide snags for nest sites. This alternative would provide for the greatest increase in woodpecker habitat over time. However, no anthropogenic snag creation would occur. There would be no immediate benefit to woodpeckers.

The No Action alternative will favor the development of spruce habitat through natural succession. In Nest, most stands are mixed-conifer. Without timber harvest they will progressively become more dominated by spruce with increasingly less pine. This is especially true when combined with fire suppression. In Canyon, the No Action alternative is not likely to result in better spruce habitat. The Canyon area is drier with very little spruce. Spruce is not likely to become established in most areas. This alternative would not result in an immediate change to the habitat capability in Nest, but over time HC would increase as the existing habitat matures.

No spruce habitat would be treated. Spruce is more likely to dominate future stands in the Nest area. This would benefit the species over time.

**Alternative B**

Treatments included in this alternative are designed to thin overstocked tree stands by harvesting commercial sized trees. This creates more open stands that are less susceptible to attack by insects. It reduces the total acres of dense stands and the number of large (>9" dbh) trees. Mitigation measures are included to retain all of the largest diameter trees (>20" dbh). These trees are the most likely to become decadent and die.

Snags would also be created under this alternative in all harvested units. This alternative would have the greatest immediate beneficial impact on woodpecker habitat. The life of this benefit is expected to be about 10-20 years based on the falldown rate of snags in the Black Hills ([Lentile and Smith 2000](#)). However, over the longer term it would reduce the availability and mortality rate of large diameter snags when compared to the other alternatives.

Treatments in this alternative are also designed for favor regeneration of pine over spruce in the understory. This could limit the availability of mature spruce stands over time.

This alternative may disturb nesting if harvest occurs during the nesting season. This impact is expected to be short term affecting only one brood

**Alternative C**

This alternative would harvest fewer acres and trees than Alternative B. Effects would be similar to Alternative B but to a lesser extent. The same mitigation measures would apply. Some snags would be created but not as many as in Alternative B. Some existing dense stands would be maintained but not to the same degree as Alternative A. This alternative is the best balance of long and short-term benefits to the species. This alternative may disturb nesting if harvest occurs during the nesting season. This impact is expected to be short term affecting only one brood.

The following table displays the habitat capability values for the northern three-toed woodpecker based on the HABCAP model. In the Black Hills this species is most closely associated with white spruce and burned areas ([Panjabi 2001](#)).

**Table 3-29: HC values for northern three-toed woodpecker under All Alternatives**

	Alternative A	Alternative B	Alternative C
Nest			
Year round	.392	.375	.379

Alternative A is the best for this species over the long term because it maintains all dense stands of both spruce and pine. Both action alternatives would provide the best benefit to the species in the short term by increasing the snag density immediately. Alternative C will have the least adverse impact. Alternative B will have the greatest adverse impact. However, planned treatments do not significantly reduce habitat capability. Habitat values will increase to above current levels in 10-20 years as untreated stands continue to grow denser.

**Cumulative Effects**

Silvicultural prescriptions that favor regeneration of pine over spruce could adversely impact this species by limiting the development of future spruce habitat. Such treatments have occurred in the past and likely have affected current habitat conditions. Fires suppression prevents stand-replacing events that produce large areas with high snag density. Stand-replacing wildfires could destroy many acres of forested habitat thereby reducing overall habitat availability. There is currently a prohibition on the cutting of snags for firewood. If effective, this should provide better habitat for this species over time. However, illegal cutting of snags for firewood may limit the benefit of the proposed snag creation. Also, see discussion of cumulative effects for snags above.

**Rationale for Determination**

Noise and activity associated with this project may disturb some nesting birds. The planned project will create snags for future nesting sites immediately. However, the action alternatives would reduce the availability and mortality rate of large diameter trees (>10' dbh) over time when compared to the no action alternative

**Determination**

Alternative A will have no impact on this species. All action alternatives may adversely impact individuals, but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

**3.4.4.3.6 Golden-crowned kinglet**

**Forest Plan Direction**

There is no specific Forest plan direction for this species.

**Existing Condition**

The golden-crowned kinglet prefers larger blocks of coniferous forest and woodland, especially spruce. The nest is typically in evergreens, most often in the crown of the trees. The golden-crowned kinglet feeds primarily on insects, tree sap and sometimes fruit and seeds. Young are usually fed small arthropods and sometimes, small snails. This species is susceptible to forest thinning, logging activities, spruce die-off, wildfires and extreme winters ([Natureserve 2001](#)).

In the Black Hills, this species is an uncommon resident ([Luce et. al. and SDOU 2001](#)), usually found in larger blocks of dense, more mature pine stands and spruce/pine mix stands. During mild winters in the Black Hills, this species is observed with other foraging species such as chickadees and brown creepers in the lower elevations of the Black Hills ([District Data](#)). Panjabi (2001) found this species to be moderately abundant in appropriate habitat. Its distribution was strongly tied to the occurrence of white spruce.

Regional population data indicate a stable trend but local population data shows great variation (since 1966 –15.6 percent and since 1980 +11.1 percent) but variations may be due to winter weather conditions ([BBS data](#)).

Habitat capability value as calculated using the HABCAP model is .321 in summer and .254 in winter.

**Alternative A**

The No Action alternative will favor the development of spruce habitat through natural succession. In Nest, most stands are mixed-conifer. Without timber harvest they will progressively become more dominated by spruce with increasingly less pine. This is especially true when combined with fire suppression. In Canyon, the No Action alternative is not likely to result in better spruce habitat. The Canyon area is drier with very little spruce. Spruce is not likely to become established in most areas. This alternative would not result in an immediate change to the habitat capability in Nest, but over time HC would increase as the existing habitat matures.

**Alternative B**

This alternative treats the greatest number of acres of spruce habitat in Nest. No treatments are planned in spruce stands in Canyon. Some treatments in this alternative are also designed to favor regeneration of pine over spruce in the understory. This could limit the availability of mature spruce stands over time.

This alternative may disturb nesting if harvest occurs during the nesting season. This impact is expected to be short term affecting only one brood

**Alternative C**

This alternative treats fewer acres of spruce habitat in Nest. No treatments are planned in spruce stands in Canyon. Effect are expected to be similar to Alternative B but to a lesser degree.

The following table displays the habitat capability values for the golden-crowned kinglet based on the HABCAP model. In the Black Hills this species is most closely associated with white spruce and burned areas ([Panjabi 2001](#)).

**Table 3-30: HC values for golden-crowned kinglet under All Alternatives**

	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
Nest			
Summer	.321	.316	.317
Winter	.254	.232	.248

Both action alternatives reduce habitat capability for this species due to thinning of spruce stands. Alternative B is more detrimental than Alternative C. Treatments under both action alternatives may adversely affect nesting if harvest occurs during the breeding season. This impact is expected to be short term affecting only one brood.

**Cumulative Effects**

Silvicultural prescriptions that favor regeneration of pine over spruce could adversely impact this species by limiting the development of future spruce habitat. Such treatments have occurred in the past and likely have affected current habitat conditions. Fire suppression will benefit this species by maintaining spruce. Stand replacing wildfires could destroy many acres of suitable habitat.

**Determination**

Alternative A will have no impact on this species. All action alternatives may adversely impact individuals, but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

**3.4.4.3.7 Northern leopard frog**

**Forest Plan Direction**

There is no specific Forest plan direction for this species.

**Existing Condition**

This species can be found from desert to mountain meadow up to 10,000 feet. Preferred habitats include cattail marshes, beaver ponds, and other permanent water sources with aquatic vegetation with good water quality. Breeding habitat is limited to permanent water sources greater than 6 inches deep (Baxter and Stone 1985, Fisher et. al. 1999 and Peterson, 1974).

In the Black Hills, this species is moderately common in suitable habitat. Local population trend and habitat appears to be stable (District Data). This species is vulnerable to habitat alteration/loss, susceptible to overgrazing, predation, low water quality and quantity (desiccation) (Baxter and Stone 1985, Fisher et. al 1999, Peterson 1974). Suitable habitat in Canyon/Nest is limited to perennial streams and ponds. At least two breeding locations are known adjacent to the project area. No activities are planned adjacent to these areas.

Sedimentation in ponds from roads and natural sources may reduce habitat availability over time. Livestock overgrazing in riparian areas can negatively impact this species. In addition, recreational motorized travel in riparian areas can increase soil erosion and could contaminate the water. Use of dust abatement chemicals on roads adjacent to riparian areas may negatively affect this species by causing changes in soil and water pH (Power et al. 1989)

**Alternative A**

The No Action alternative will have no impacts.

**Alternative B & C**

No activities are planned adjacent to streams and ponds. No dust abatement is planned on any roads in the project area. No direct or indirect effects are anticipated.

**Cumulative Effects**

No cumulative effects are expected.

**Determination**

The proposed action and its alternatives will have no impact on the northern leopard frog.

**3.4.4.3.8 Tiger salamander**

**Forest Plan Direction**

There is no specific Forest plan direction for this species.

**Existing Condition**

Habitat for this species is varied, including arid sagebrush plains, pine barrens, mountain forest, and meadows where ground is easily burrowed. This species lives beneath debris near water, in crayfish or mammal burrows. This species is often found at night after

heavy rains, especially during the breeding season. They are voracious consumers of earthworms, large insects, small mice and amphibians (Behler and King 1979). This species needs ponds, temporary pools or backwater streams to breed and a moist habitat to disperse. This species is vulnerable to riparian contamination (change in pH), loss of habitat and breeding site disturbance (Baxter & Stone 1985, Livo, 1995).

In the Black Hills, this species is a moderately common to uncommon resident (Peterson 1974, Baxter and Stone 1985, Fisher et. al. 1999, Luce et. al. 1997) and is known to exist in all counties. There is no local population trend data available. Habitat trend appears to be stable (District Data). Optimal habitat in the project area is limited to areas around springs, seeps, stock dams, and streams. Adequate down woody debris is available throughout the project area. Though no tiger salamanders have been located it is likely that some are present.

Use of dust abatement chemicals on roads adjacent to riparian areas may negatively affect this species by causing changes in soil and water pH (Power et al. 1989).

### ***Alternative A***

No impacts are expected.

### ***Alternative B & C***

Disturbance or loss of individuals may occur from temporary road construction, road reconstruction, and skidding operations. Loss of down wood due to prescribed burning can reduce habitat quality in burned areas. Sufficient large diameter trees will be retained to ensure the availability of large diameter down wood over time. Mitigation measures have been included to ensure that adequate amounts of down wood are retained across the project area although not on all sites. Mitigation measures are included to protect riparian areas.

### ***Cumulative Effects***

Livestock overgrazing in riparian areas can negatively impact this species. In addition, recreational motorized travel in riparian areas can increase soil erosion and could contaminate the water.

### ***Determination***

All action alternatives may adversely impact individuals but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

### **3.4.4.3.9 Black Hills red-bellied snake**

#### ***Forest Plan Direction***

##### **Standard 3116.**

Avoid creating barriers (i.e. new open roads) between red-bellied snake hibernacula and wetlands.

#### ***Existing Condition***

This snake occurs in moist woodlands with adequate cover of rocks, logs, tree bark or leaf litter, dry wooded habitat and human habitations. It feeds on slugs, earthworms, and soft-bodied insects (Thompson and Backlund)

This subspecies is restricted to the Black Hills of South Dakota and Wyoming. In the Black Hills, this species is endemic, uncommon (survey data limited) and have been documented in all counties (Baxter and Stone 1985, Peterson 1974, Thompson and Backlund). No local population trend data is available. Habitat appears to be stable (District data). Not much is known on distribution, abundance and dispersal due to its

secretive behaviors. This species may be susceptible to predation and human caused mortality (road kills).

Suitable habitat exists in Canyon/Nest Project Area although there have been no documented occurrences. There are no known hibernacula. Occurrences have been recorded just to the north of the project area. It is likely that the species is present.

**Alternative A**

No impacts are expected.

**Alternative B & C**

Disturbance or loss of individuals may occur from temporary road construction, road reconstruction, and skidding operations. Loss of down wood due to prescribed burning can reduce habitat quality in burned areas. Sufficient large diameter trees will be retained to ensure the availability of large diameter down wood over time. Mitigation measures have been included to ensure that adequate amounts are retained across the project area although not on all sites. Mitigation measures are included to protect riparian areas.

**Cumulative Effects**

Livestock overgrazing in riparian areas can negatively impact this species. In addition, recreational motorized travel in riparian areas can increase soil erosion and could contaminate the water. Use of dust abatement chemicals on roads adjacent to riparian areas may negatively affect this species by causing changes in soil and water pH.

**Determination**

All action alternatives may adversely impact individuals but are not likely to result in a loss of species viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability range-wide.

**3.4.6.7.10 Tawny Crescent Butterfly (Phycoides batesii)**

**Forest Plan Direction**

There is no specific Forest plan direction for this species.

**Existing Condition**

This species appears to be restricted to moist forest borders, particularly in riparian situations, and moist valley bottoms that border woodlands. This species utilizes mostly asters, especially Aster simplex and leafy spurge as a host plants for a portion of their life cycle (Royer and Marrone 1992). This species is considered uncommon to rare throughout its distribution.

Distribution in North and South Dakota considered disjunct and populations assumed to be genetically isolated (Royer and Marrone 1992, Pyle 1998). The populations tend to be colonial and probably do not range widely. In the Black Hills, this species is known in Lawrence, Pennington, Meade and Custer counties in South Dakota and Crook and Weston counties in Wyoming. It is rare to uncommon at known sites. Royer and Marrone located this species along Castle Creek near Knutson Spring on the east edge of the Nest project area. Some suitable habitat may exist in the rest Nest along other portions of Castle Creek, ponds, and springs. No additional surveys have been conducted in the project area. Some of these butterflies may be present.

**Alternative A**

No impacts or benefits are expected.

**Alternative B&C**

No direct impacts are expected since no treatments will take place in riparian areas. All alternatives will benefit this species by increasing native grass/forb seral stage in meadows restoration areas. Thinning of the canopy in forested stands may benefit this species by increasing aster species (host plant) in the understory. Protection of riparian habitat at springs is planned under both alternatives. This may benefit this species.

**Cumulative Effects**

This species is adversely affected by livestock overgrazing and fire suppression which reduce grassland habitat and native host species. Direct effects of prescribed fire on this species itself are unknown. Herbicide treatment for noxious weeds may negatively impact some host plants (leafy spurge). Habitat loss due to agriculture practices (crops and spraying of hay meadows) will continue negatively impact this species on private lands. Habitat on public lands within the Black Hills appears to be stable at this time (District data).

**Rational for Determination**

No activities are planned in riparian areas. Meadow restoration treatments may benefit this species. Population trend and habitat trend forest wide appears to be stable.

**Determination**

This project proposal may benefit the tawny crescent butterfly and its habitat.

**3.4.6.7.11 Northern Arnica**

**Forest Plan Direction**

There is no specific Forest plan direction for this species.

**Existing Condition**

Surveys for sensitive plants conducted in 1994 indicated that there is suitable habitat in the Canyon/Nest project area but individual plants were not located. Due to more abundant and widespread distribution than previously recorded, these species have been determined to no longer merit status on the Region 2 Sensitive Species (FSM 2600-94-2) by state and regional authorities ([USDA Forest Service 2001](#)). These species appear to be very secure in the Black Hills and have limited effects from management activities ([USDA Forest Service 2001](#)). This species has been located on road banks and other disturbed sites ([District data](#)).

**Alternative A**

Therefore, no direct, indirect, or cumulative effects are anticipated.

**Alternative B & C**

Both action alternatives may impact individual plants through inadvertent habitat alteration or trampling.

**Cumulative effects**

No cumulative effects are anticipated.

**Determination**

May adversely impact individuals, but not likely to 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.

#### 3.4.4.4 T&E Species – Biological Assessments

##### ***Pre-field review***

A pre-field review of federally listed Threatened or Endangered species was completed by reviewing on-the-ground surveys results from the District office, site-specific District data, South Dakota Natural Heritage database (3/3002), USFWS information, literature reviews, personal communication with other FS personnel, the Expert Interview Summary completed for the Phase I Amendment, and the BA completed for the Phase I Amendment.

The U. S. Fish and Wildlife Service list of endangered and threatened species for South Dakota (<http://southdakotafieldoffice.fws.gov/endsppbycounty.htm>) was revised on October 11, 2001. The list for Pennington County includes the bald eagle, whooping crane, least tern, and black-footed ferret.

The USFWS list of T&E species for Wyoming: ([http://ecos.fws.gov/webpage/webpage\\_region\\_lists.html?lead\\_region=6](http://ecos.fws.gov/webpage/webpage_region_lists.html?lead_region=6)) was checked on 4/11/2002. It included 18 species: Grizzly bear, Kendall Warm Springs dace, whooping crane (2 separate populations), bald eagle, black-footed ferret (2 separate populations), Canada lynx, Preble's meadow jumping mouse, pikeminnow, razorback sucker, Wyoming toad, gray wolf, Colorado butterfly plant, blowout penstemon, Ute ladies'-tresses, desert yellowhead.

##### ***Field reconnaissance***

Field reconnaissance occurred during the months of June and July 1998. Surveys were conducted for nesting goshawks, amphibians, reptiles, and terrestrial snails in particular. Field visits were made during January and February 2001 and 2002 as well. Track plate surveys were conducted for marten at these times. No Threatened or Endangered species were located during these efforts.

##### ***Risk Assessments***

Most of the listed species either have not been documented to be breeding or wintering in the Black Hills or suitable habitat for these species is not present in the Canyon/Nest project area. Results of the pre-field review and field reconnaissance indicate that one federally listed species may occur or has suitable habitat present in the project area: bald eagle. Species that are eliminated from this risk assessment are: grizzly bear, Kendall Warm Springs dace, whooping crane (2 separate populations), least tern, black-footed ferret (2 separate populations), Canada lynx, Preble's meadow jumping mouse, pikeminnow, razorback sucker, Wyoming toad, gray wolf, Colorado butterfly plant, blowout penstemon, Ute ladies'-tresses, desert yellowhead. Results of the pre-field review and field reconnaissance indicate that one federally listed species may occur or has suitable habitat present in the project area: bald eagle.

##### **3.4.4.4.1 Bald Eagle**

###### ***Forest Plan Direction Standard 3101.***

“ To protect endangered and threatened species:

Chlorinated hydrocarbons will not be used as chemical agents on the Black Hills National Forest:

- Prohibit new disturbances, not existing at the time of nest initiation, that may detrimentally influence nest success during the nesting season (February 1 – September 1);
- Protect traditional Bald Eagle winter roost sites; human activities should be prohibited within 100 yards of roosting areas between November 15 and March 1.
- In stands being used by Bald Eagles on a transitory basis, avoid timber harvest activities when in use. Harvest may resume when birds have vacated the stands.

**Existing Condition**

In the Black Hills, this species is a winter resident only (SDOU 1991). Bald Eagles have been documented in all counties in the Black Hills (USFWS 2000, District Files). They feed on carrion along roadsides and gut piles left by hunters. There are no known nest sites in the Black Hills. There are no known communal winter roost sites. Some large trees or large snags within the project area may be used as occasional perch or roost sites.

Population trend nationwide is upward (BBS data). No regional or local BBS trend information is available. The Forest has begun winter bald eagle monitoring. No meaningful trend information is yet available. However, local wintering populations appear stable. The species is being considered for de-listing.

**Alternative A**

The No Action alternative will have no effect on bald eagles. All large diameter trees and snags will be maintained.

**Alternatives B & C**

This project is designed to retain and enhance levels of large diameter trees (>20' dbh) and snags used for roosting. No direct or indirect effects are expected.

**Cumulative Effects**

None expected.

**Determination**

This project should have No Effect on bald eagles.

**Consultation with the USFWS**

Since all determinations were "No Effect", no further consultation is required.

### 3.5 Fisheries

#### 3.5.1 Introduction

Historically fish species diversity was limited in the Black Hills. Native fishes include Long-nosed dace (*Rhynchthys cataractae*), Mountain sucker (*Catostomus platyrhynchus*), White sucker (*Catostomus commersoni*), creek chub (*Semotilus atromaculatus*) and fathead minnow (*Pimephales promelas*). All of these species are still present although some populations appear to be declining. Today at least 25 species of fish reside in the Black Hills.

#### 3.5.2 Field Surveys/Resource Contacts

Field surveys were conducted in 1984 and 1993 by the South Dakota Department of Game, Fish and Parks. Steve Hirtzel, Fisheries Biologist, Black Hills National Forest, Hell Canyon Ranger District was consulted on Forest fishes.

#### 3.5.3 Forest Plan Direction/Other Direction

Fish habitat protection in the Forest Plan is primarily found under the direction for water quality, water yield, and riparian area management. Specific fish related guidance includes maintaining or improving instream fisheries habitat and inclusion of instream fisheries habitat as a management indicator.

The South Dakota Game, Fish and Parks has written a plan for trout management in the Black Hills. It is designed to establish a systematic approach to management on the watershed level. It includes the following strategies:

- Strategy 1: Instream Habitat – Maintain the existing natural habitat quality of Black Hills streams and improve habitat quality when possible.
- Strategy 2: Water Quality – Maintain or improve water quality in Black Hills streams.
- Strategy 3: Instream Flows – Protect public trust values in South Dakota rivers and streams.
- Strategy 4: Watershed Management – Increase water yield to Black Hills streams.
- Strategy 5: Fisheries Management – Protect, enhance, maintain, and restore populations and optimize angling opportunity through the efficient and economical use of natural and hatchery fish resources.
- Strategy 6: Resource Education and Communications – Promote greater understanding of coldwater streams and associated resources in the Black Hills.

#### 3.5.4 Affected Environment

There are 10.0 miles of perennial streams, 6.2 miles of intermittent and 87.8 miles of ephemeral streams within the project area. Perennial streams in Canyon include Wet Parmelee Canyon, lower portions of Dry Parmelee Canyon, Bear Canyon, and Bear Run Canyon. Under normal conditions these tributaries flow water from small spring sources west into Stockade-Beaver Creek. The Nest project area includes headwaters of Castle Creek. According to the 1996 South Dakota Water Quality Standards all streams in South Dakota are assigned the beneficial uses of irrigation, wildlife propagation and stock watering. Castle Creek has the additional beneficial values of coldwater permanent fish life propagation waters and limited-contact recreation values. Bjorland Draw, which is also in the Nest project area, has the additional beneficial values of coldwater marginal fish life propagation waters and limited-contact recreation waters. Castle Creek is the only stream within the project area that has been found to contain viable fisheries populations (*SD Department of Game, Fish and Parks 1994*).

From a watershed management perspective, the sediment yield from a basin is important because 80 percent of water quality degradation results from erosion. Sediment interacts strongly with other water quality components, and sediment yield is directly affected by land-use activity (*Kohler et al 1993*). Sediment can smother the spawning and rearing habitat of trout and reduce aquatic invertebrates thereby affecting food availability.

Because of the quantity of area roads cover and because many are adjacent to or cross stream channels, roads are the greatest source and delivery system of sediment to channels (*Forest Plan Appendix K 1996*). Even disturbed areas far from the drainage system may contribute to sediment if they are connected to the stream by roads, skid trails, ditches or cattle trails. Generally the harvesting of timber itself is not a serious source of soil disturbance. Surveys support the view that improperly located roads and skid trails, and roads and trails without proper drainage rather than the actual harvesting of timber are the greatest cause for concern (*Megahan 1976*).

The South Dakota Water Quality Standards rates the Castle Creek Watershed as a Class II. Class II watersheds are those which may have streams and soils in disequilibrium. A change in management and implementation should be able to change their ranking to Class I.

**3.5.4.1 Castle Creek Inventory Results**

(See *Figure 3-10: Fish Survey Location Map at end of fisheries section for site locations*)

**Table 3-31: Site 1: Riparian Zone within the Nest project area**

Date	Conductivity	Water Temp	Site Length (M)	Species	Pop. Est.	95% C.I.	# per acre	# per mile	Mean Length (mm)
Jun-93	310	7	100	Brook<200mm	86	68-110	1777	1384	108.9
				Creek Chub	2	2-7	41	32	112.5
				Fathead Minnow	6	6-9	124	97	70.7
				Hatchery Rainbow Trout<200mm	40	35-50	827	644	145.5
				Hatchery Rainbow Trout>200mm	5	5-13	103	80	244
				Rainbow Trout	23	11-82	475	370	140.5

**Table 3-32: Site 2: Below Confluence with Soholt Draw**

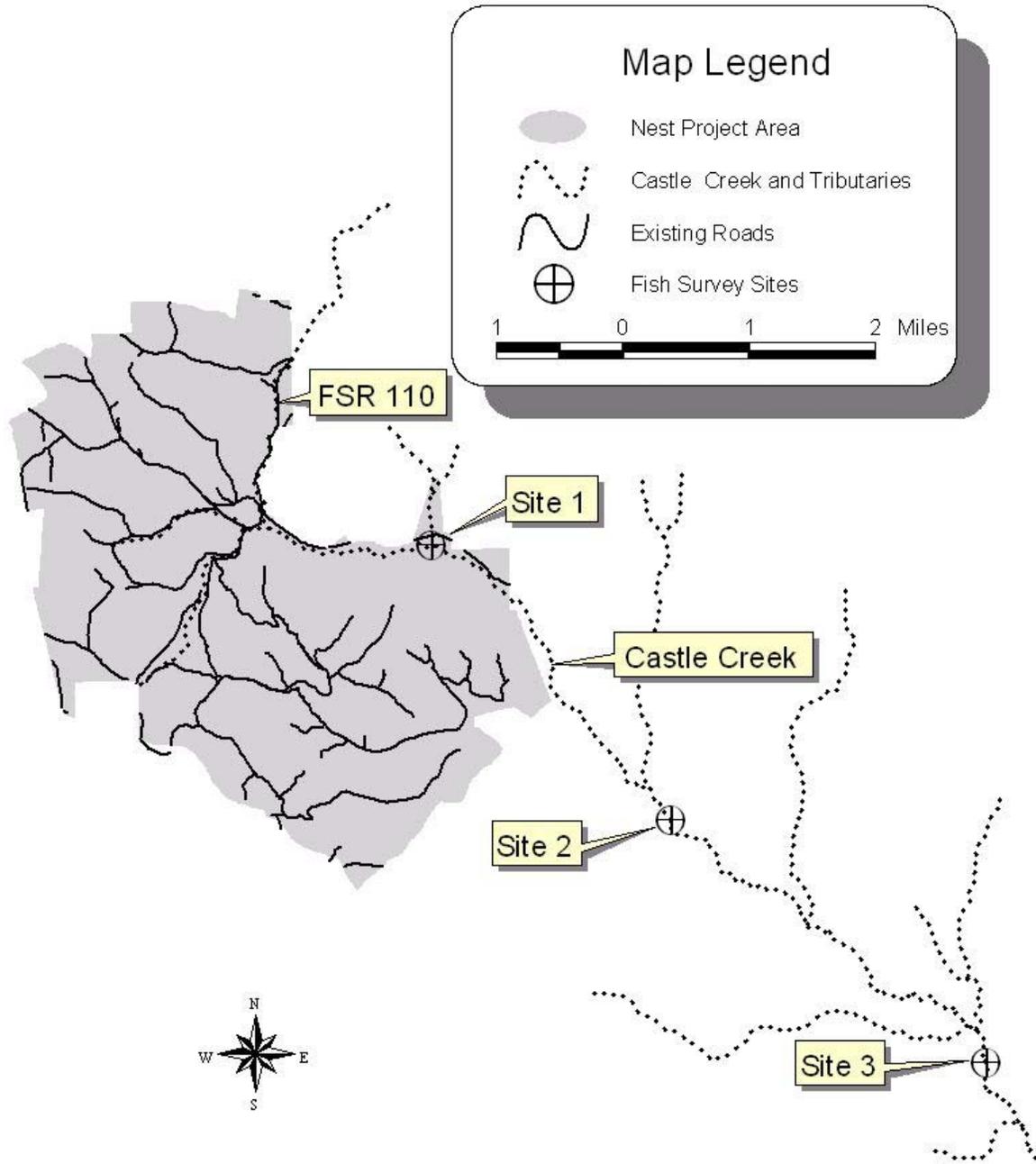
Date	Conductivity	Water Temp (C)	Site Length (M)	Species	Pop. Est.	95% C.I.	# per acre	# per mile	Mean Length (mm)
Jun-93	325	12	100	Brook<200mm	55	50-64	1172	885	130.2
				Brook>200mm	3	3-9	64	48	202

**Table 3-33: Site 3: First Bridge above Deerfield Store**

Date	Conductivity	Water Temp (C)	Site Length (M)	Species	Pop. Est.	95% C.I.	# per acre	# per mile	Mean Length (mm)
Aug-84	270	7	200	Brook<200mm	71	66-73	1159	1142	140.6
				Brook>200mm	17	NA	283	274	210.7
Jun-93	278	9	100	Brook<200mm	44	44-47	685	708	131.9
				Brook<200mm	5	5-5	78	80	214.2
				Creek Chub	1	1-4	16	16	115

Brook Trout (*Salvelinus fontinalis*), Creek Chub (*Semotilus atromaculatus*) and Rainbow Trout (*Oncorhynchus mykiss*) are all Black Hills Forest Aquatic Management Indicator Species (MIS). Management indicator species are selected because their population changes are believed to indicate changes in biological communities or water quality due to management activities.

Figure 3-10: Fish Survey Sites Map



**Brook Trout (*Salvelinus fontinalis*):** Brook trout are an important game species introduced to the Black Hills (*South Dakota Fishing Handbook 2000*). They need cold, clean headwater streams and lakes. They are sensitive to water temperatures above 20C for extended periods of time and degraded water quality including low pH, low dissolved oxygen, and sedimentation. Brook Trout spawn on gravel and cobble. The eggs are susceptible to mortality from sediment. Management activities that cause changes in brook trout habitat include livestock grazing in riparian zones, channelization and sediment from roads and other ground-disturbing activities (*Biota Information System of New Mexico*).

**Creek Chub (*Semotilus atromaculatus*):** Creek chub are a non-native species of the black hills that are decreasing in populations (*SD Department of Game, Fish and Parks 1994*). They are sensitive to sedimentation and channelization (*Biota Information System of New Mexico*).

**Rainbow Trout (*Oncorhynchus mykiss*):** Rainbow Trout are a game species stocked in most lakes and streams in the black hills although there are self-sustaining populations in a few creeks including Castle Creek (*South Dakota Fishing Handbook 2000*). They are not native to the black hills. They require silt-free rocky substrate for spawning, cover and food production. Temperatures increased to 26-28C are lethal. Management activities that affect rainbow trout include clearcuts and logging practices that reduce shade over water and activities that increase sedimentation (*Biota Information System of New Mexico*).

### 3.5.5 Environmental Effects

#### 3.5.5.1 Alternative A: No Action

The no action alternative will continue to provide sedimentation directly into Castle Creek from FSR 110. However, the impacts are not expected to be substantial. Castle Creek is ranked as a Class II watershed, therefore, while current sediment levels are found to be acceptable, appropriate management practices could improve the water quality considerably (SD Department of Environment and Natural Resources 1996)

#### 3.5.5.2 Alternative B – Proposed Action

##### ***Affects from Timber Management:***

Timber Management in Alternative B will have **no effect** on fisheries resources. There are no fisheries within the Canyon project area (*SD Department of Game, Fish and Parks. 1994*). Within Nest, there are three MIS species that are sensitive to sedimentation and change in water temperature. The proposed activities are not expected to increase sedimentation within the waterway. Although the project will cause an increase in use of forest roads due to logging traffic, applying best management practices on construction and maintenance of those roads will reduce the likelihood that any impacts will occur.

If at least half of the trees in a 100-foot buffer zone on either side of the stream are left standing to provide shade, changes in water temperature are not likely (*Belt, etal*). The project plan does not include vegetative treatments within 100 feet of the streambank on either side; therefore change in water temperature is not expected to occur. The principle water quality variables that may be influenced by timber harvest are suspended sediment, nutrients, dissolved oxygen and temperature. Activities such as road building, felling, yarding, and burning can impact watershed hydrology and streamflow. Road systems, landings, and skid trails can accelerate slope run-off, concentrate drainage and increase soil water content. Alternative B would provide basic protection of stream courses through Forest Plan direction, Water Conservation Practices and Best Management Practices thereby avoiding any substantial impacts.

***Effects from Roads (new and reconstructed):***

Road construction and reconstruction in Alternative B will have **no effect** on fisheries resources provided the short section of FSR 110 is fixed and no longer is contributing sediment directly into Castle Creek. There are no other roads within the project area that have been shown to be directly contributing sediment into Castle Creek. There are no fisheries within the Canyon project area. Within Nest, there are three MIS species that are sensitive to sedimentation and change in water temperature. Roads can accelerate erosion and sediment loading, alter channel morphology and change run-off characteristics. Erosion can arise from log skidding and yarding areas, failure of stream crossings, washout of road fills, and accelerated scour at culverts and outlets. According to the project's hydrology and soils report, the proposed activities are not expected to increase sedimentation within the waterway. Alternative B would provide basic protection of stream courses through Forest Plan direction, Water Conservation Practices and Best Management Practices thereby avoiding any significant impacts.

**3.5.5.3 Alternative C – Response to Wildlife Issues**

This alternative was designed to insure that habitat capability for the golden-crowned kinglet and brown creeper would not be substantially reduced. Although these species no longer have Forest Plan Standards to meet, the IDT felt it was necessary to bring forward as a significant issue. This alternative was also designed to insure that a wide connectivity corridor was provided for potential marten movement through the nest project area. It represents a lower risk to adverse impacts from proposed activities for many wildlife species. Therefore, this alternative would produce lower volumes than alternative B. See tables & figures 3 and 4 for proposed activities.

***Affects from Timber Management:***

Timber Management in Alternative C will have **no effect** on fisheries resources. There are no fisheries within the Canyon project area (*SD Department of Game, Fish and Parks. 1994*). Within Nest, there are three MIS species that are sensitive to sedimentation and change in water temperature. The proposed activities are not expected to increase sedimentation within the waterway. Although the project will cause an increase in use of forest roads due to logging traffic, applying best management practices on construction and maintenance of those roads will reduce the likelihood that any impacts will occur.

If at least half of the trees in a 100-foot buffer zone on either side of the stream are left standing to provide shade, changes in water temperature are not likely (*Belt, etal*). The project plan does not include vegetative treatments within 100 feet of the streambank on either side, therefore change in water temperature is not expected to occur. The principle water quality variables that may be influenced by timber harvest are suspended sediment, nutrients, dissolved oxygen and temperature. Activities such as road building, felling, yarding, and burning can impact watershed hydrology and streamflow. Road systems, landings, and skid trails can accelerate slope run-off, concentrate drainage and increase soil water content. Alternative C would provide basic protection of stream courses through Forest Plan direction, Water Conservation Practices and Best Management Practices thereby avoiding any substantial impacts.

***Effects from Roads (new and reconstructed):***

Road construction and reconstruction in Alternative C will have **no effect** on fisheries resources provided the short section of FSR 110 is fixed and no longer is contributing sediment directly into Castle Creek. There are no other roads within the project area that have been shown to be directly contributing sediment into Castle Creek. There are no fisheries within the Canyon project area. Within Nest, there are three MIS species that are sensitive to sedimentation and change in water temperature. Roads can accelerate erosion and sediment loading, alter channel morphology and change run-off characteristics. Erosion can arise from log skidding and yarding areas, failure of stream crossings, washout of road fills, and accelerated scour at culverts and outlets. According to the project's hydrology and

soils report, the proposed activities are not expected to increase sedimentation within the waterway. Alternative C would provide basic protection of stream courses through Forest Plan direction, Water Conservation Practices and Best Management Practices thereby avoiding any significant impacts.

### **Cumulative Effects**

The proposed actions will have no direct, indirect, and therefore no cumulative effect on fisheries resources provided the Forest Plan direction, Water Conservation Practices and Best Management Practices are adhered to at all times. No long-term impacts to fisheries within the Canyon/Nest project area were identified, therefore no accumulation of impacts would occur.

## **3.6 Range/Noxious Weeds**

### **3.6.1 Introduction**

The range/noxious weeds section will discuss management direction, current conditions, and environmental consequences of the proposed alternatives on the range vegetation, livestock grazing, and noxious weeds. The analysis area for the range/noxious weeds discussion will be the entire Canyon/Nest Project Area

### **3.6.2 Field Surveys/Resource Contacts**

Information on the range resource and noxious weeds was received through email and phone contacts with the district range and noxious weed staff (*personal communication, Craig Beckner, Lisa Lam*). Surveys for noxious weeds have been conducted in the project area within the last five years by district range staff. That information is used for this analysis

### **3.6.3 Forest Plan Direction/Other Direction**

The Forest Plan Standards and Guidelines for the rangeland resource includes the following:

- 2501. Achieve or maintain rangeland in satisfactory range condition class, meaning that the existing vegetation is at or progressing towards the desired conditions. If rangeland within an allotment is not in satisfactory condition, project implementation within that allotment will move range condition toward satisfactory. GUIDELINE

The Forest Plan Standards and Guidelines for noxious weeds include the following:

- 4301. For all proposed projects or activities, determine the risk of noxious weed introduction or spread, and implement appropriate mitigation measure. STANDARD
- 4303. Develop a noxious weed management program that addresses the following components: awareness, prevention, inventory, planning, treatment, monitoring, reporting, and management objectives.
- 4306. Use certified noxious weed-free seed, feed and mulch. STANDARD

### **3.6.4 Affected Environment**

#### **3.6.4.1 Rangeland Resources**

The Canyon/Nest project areas have portions of several allotments, including: Cold Creek, Castle Creek, and Crows Nest Upper Beaver. See figure 3-11 showing the grazing allotments in relation to the project areas. Allotment acres, allowable use, and Animal Units months are summarized below in table 3-34. Allotment condition and trend is also described.

**Table 3-34: Livestock Allotments in the Project Area**

Allotment Name	Allotment Acres Total	Class of Livestock	Total Permitted AUMs
Baseline	4,483	Cattle Cow/Calf	189
Castle Creek	4,947	Cattle Cow/Calf	1191
Cold Creek	12,135	Cattle Cow/Calf	2002
Crows Nest Upper Beaver	42,754	Cattle Cow/Calf	9445

Rangeland inventories on the allotments that cover the project area were conducted in 1985 and again in 1994 for a range allotment environmental assessment<sup>1</sup>. Allotment conditions are described below:

Baseline Allotment- Rangeland inventories conducted in 1994 indicated that range conditions are 60 percent fair, and 40 percent good. Pine encroachment into meadows is a problem.

Castle Creek Allotment- Rangeland inventories conducted in 1994 indicated that vegetative communities ranged from 44%-67% similar to the Desired Future condition vegetation community.

Cold Creek Allotment- Rangeland inventories conducted in 1994 indicated that vegetative communities ranged from 37%-63% similar to the Desired Future condition vegetation community.

Crows Nest Upper Beaver Allotment- Rangeland inventories conducted in 1985 indicated that vegetative trend appeared to be stable to slightly increasing, placing many sites in satisfactory condition.

Currently, there are an estimated 3.6 % of grass-forb structural stage in the Canyon Project area and an estimated 3.0 % in the Nest Project area. The Black Hills Forest Plan has an objective for at least 5.0 % of any project area to be managed for the grass-forb structural stage.

**3.6.4.2 Noxious Weeds**

Documented noxious weed species found in the project areas include:

1. Canada Thistle (Cirsium arvense)
2. Houndstongue (Cynoglossum officinale)
3. Musk Thistle (Cardus nutans)
4. Common Tansy (Tanacetum vulgare)

Canada thistle is widespread in both project areas along many of the system roads. Houndstongue is a major secondary weed infestation species, and along with other noxious weeds species occur as scattered populations mixed with the Canada thistle infestation. Approximately 350 acres of noxious weed infestation has been estimated from field surveys in the project areas (Lam, 1999). See figures 3-11 through 3-14 for noxious weed locations in project areas.

<sup>1</sup> Livestock Grazing Environmental Assessment, Custer/Elk Mt. District. Black Hills National Forest, Sept. 1997.

Figure 3-11: Grazing Allotments in Project Area

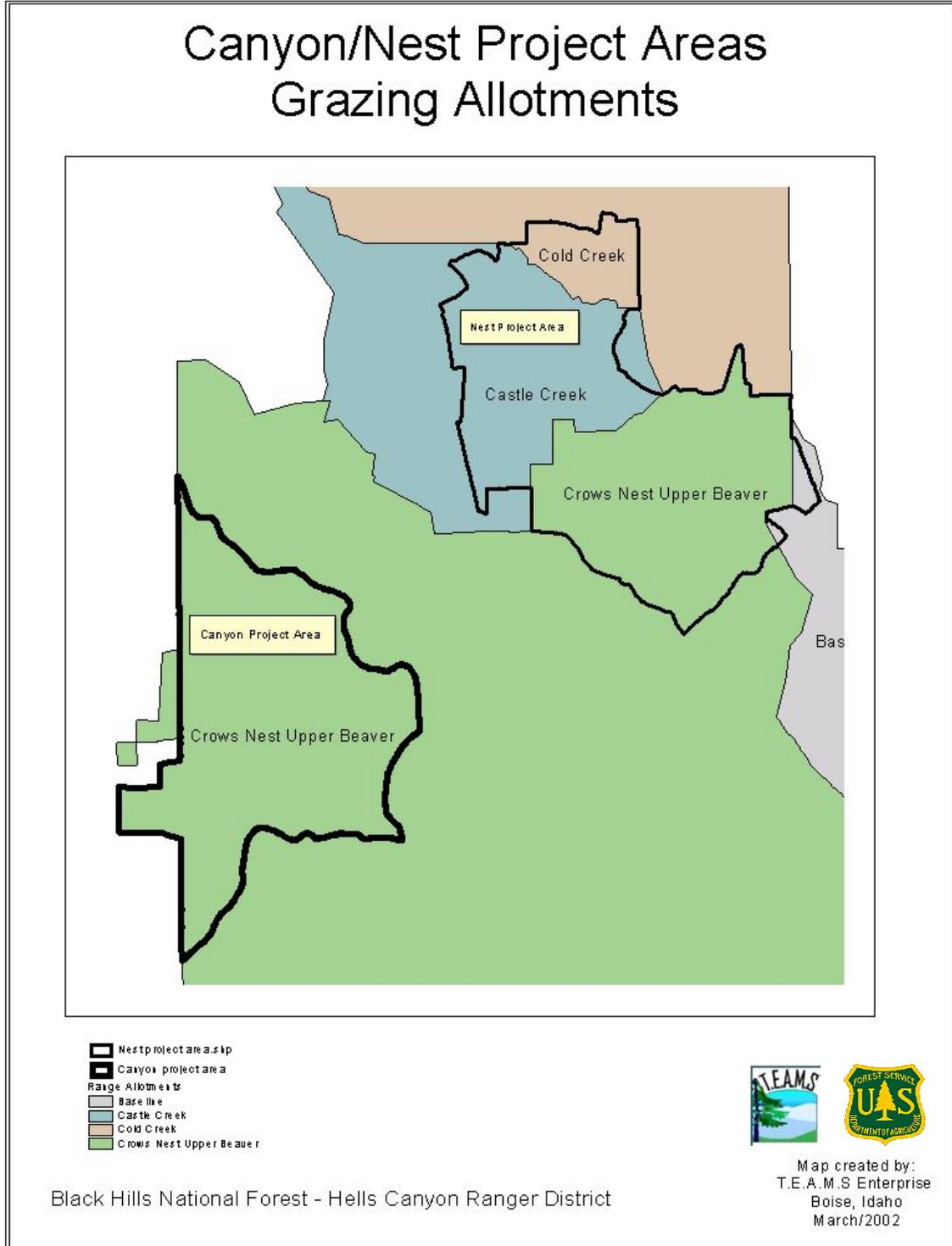


Figure 3-12: Primary Noxious Weeds in Canyon Project Area

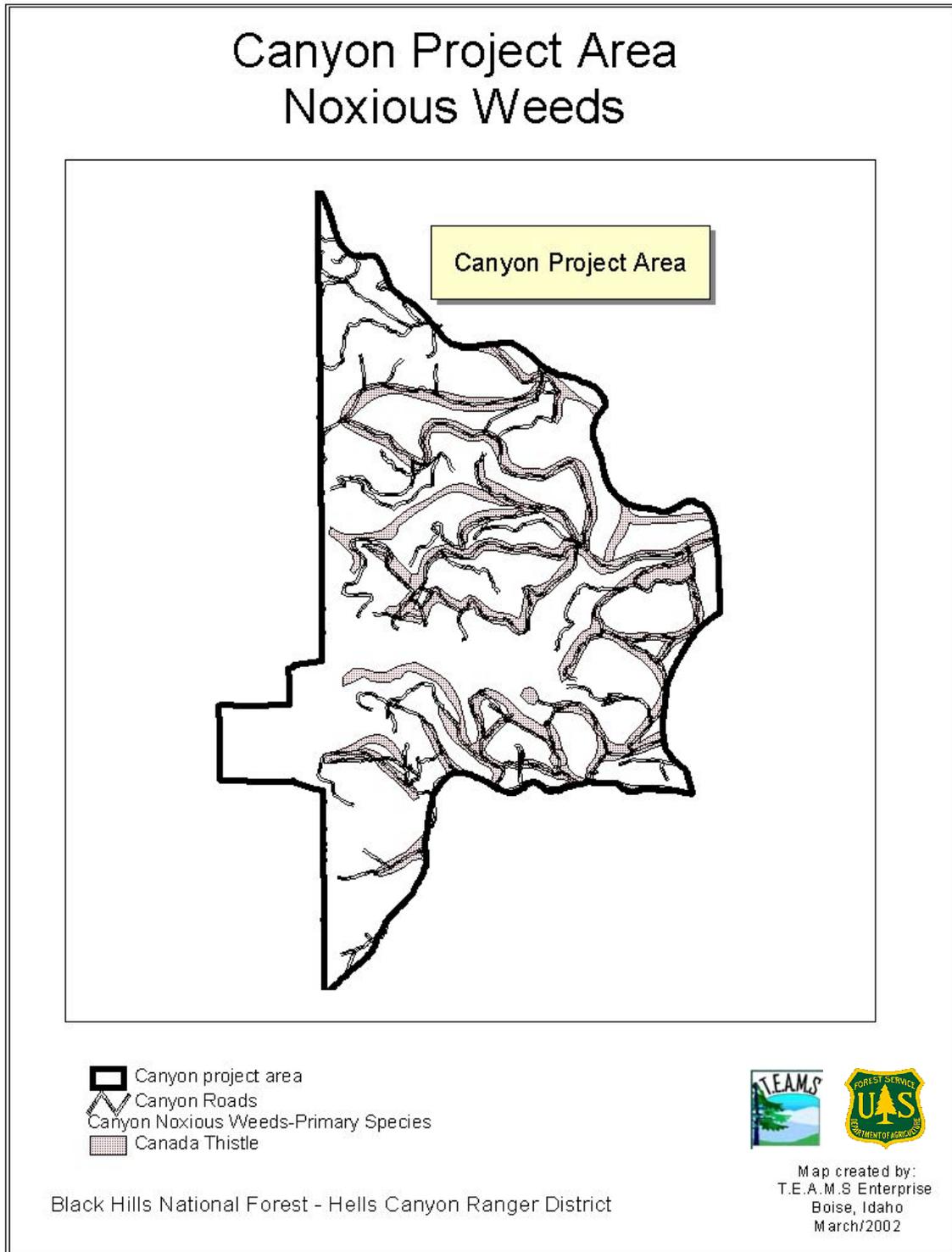


Figure 3-13: Secondary Noxious Weeds Species in Canyon Project Area

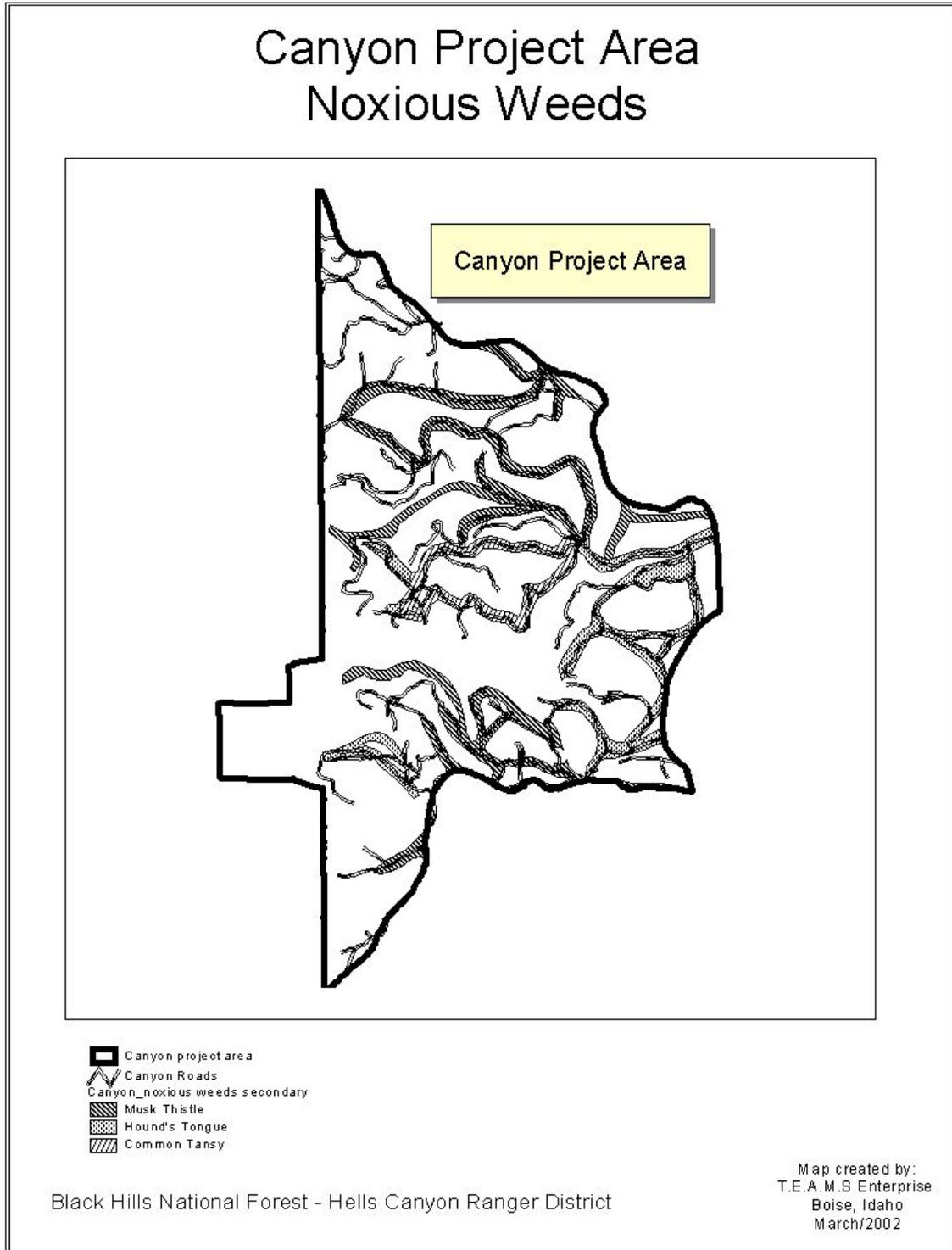


Figure 3-14: Primary Noxious Weed Species in Nest Project Area

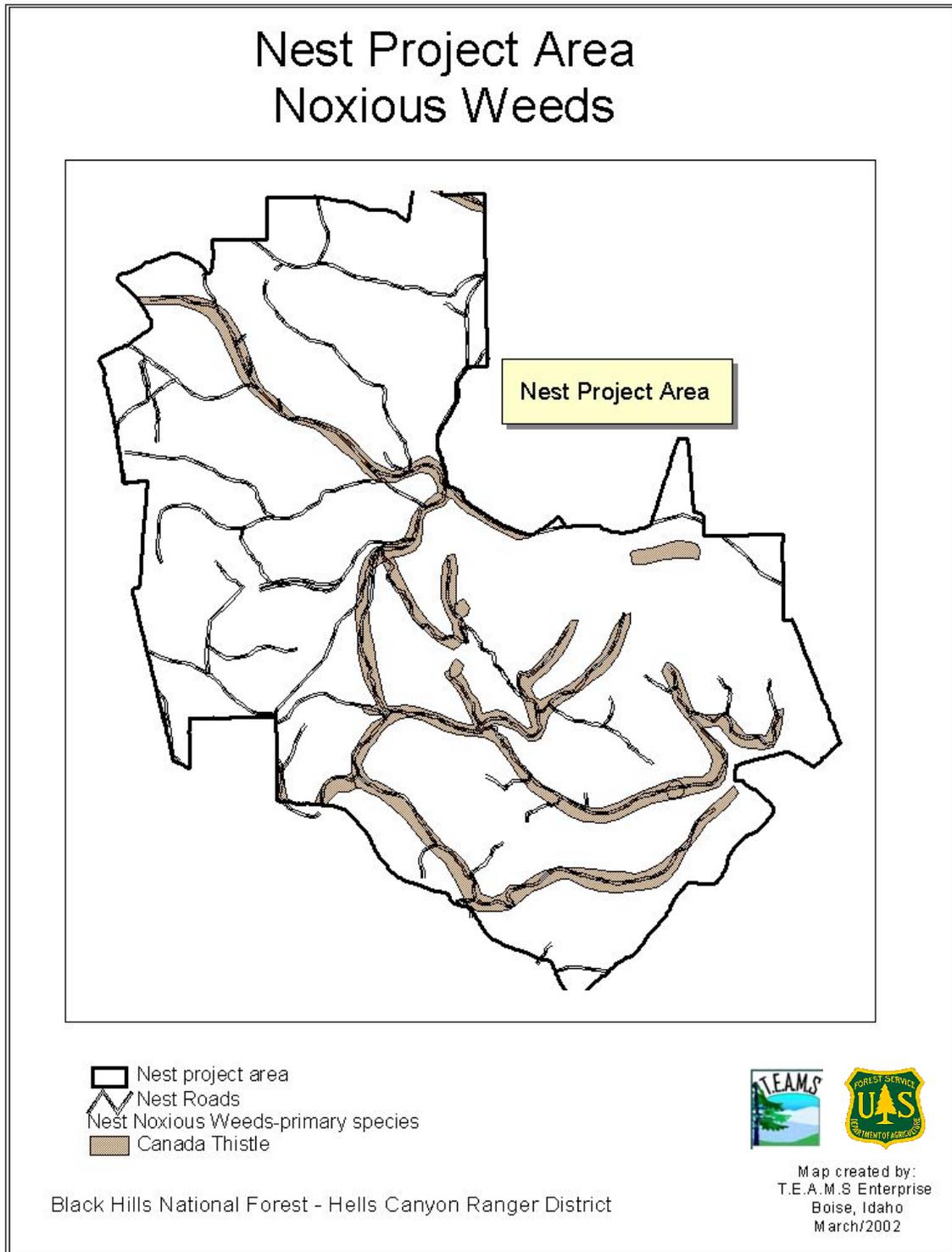
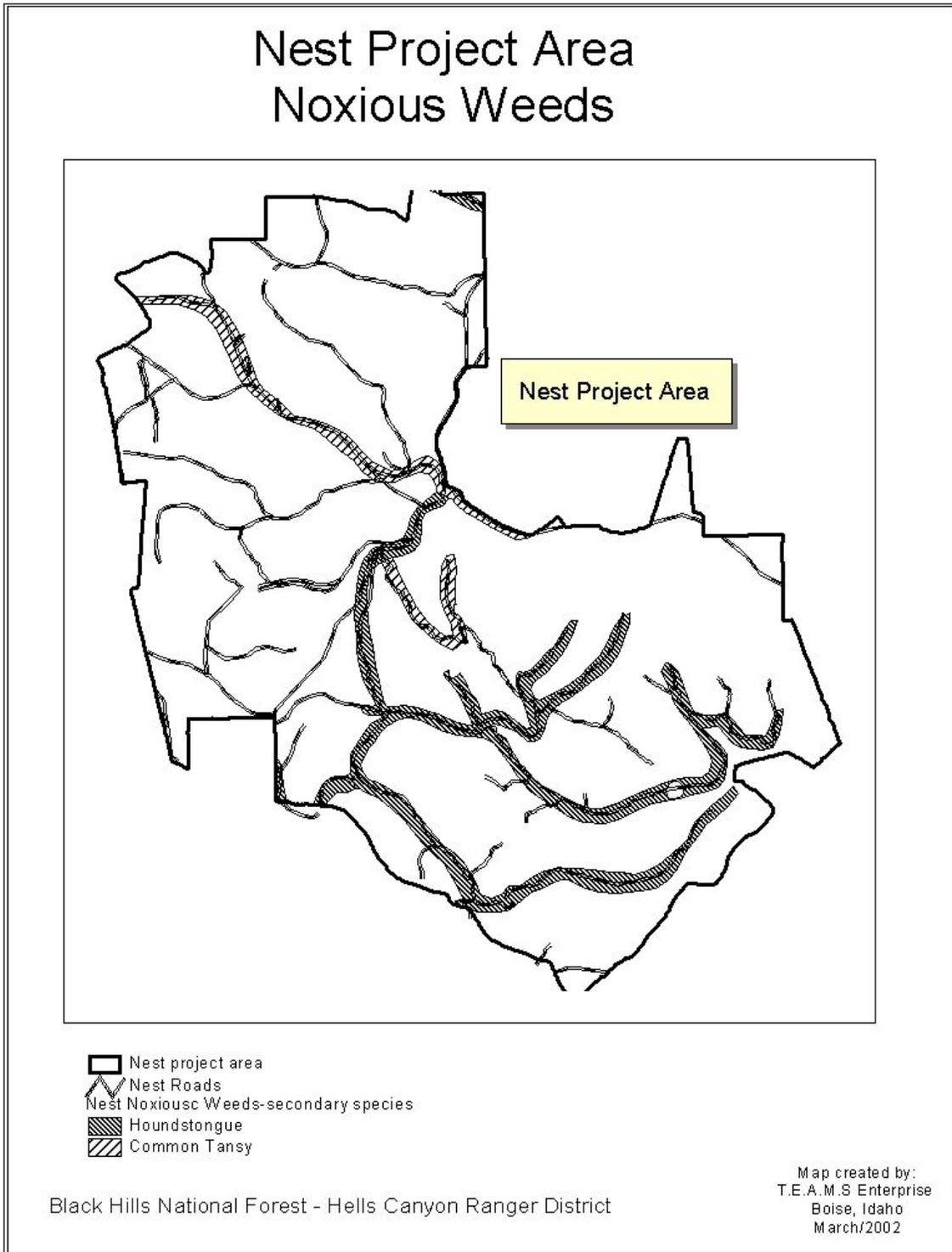


Figure 3-15: Secondary Noxious Weed Species in Nest Project Area



### 3.6.5 Environmental Effects

Environmental effects will be discussed for the rangeland resource and noxious weeds. The effects of each alternative in each of the two project areas will be discussed.

### **3.6.5.1 Alternative A: No Action**

The no-action alternative is the baseline for comparison and will not affect the rangeland resource in either project area in the short-term; however, in the long-term the increasing density of the forested stands will reduce the available forage in the Canyon and Nest project areas and limit the livestock usage in those dense forested stands.

The no-action alternative will have no effects on the distribution and acres of noxious weed infestation in either of the Canyon or Nest project areas. No ground disturbing activities would occur with the no-action alternative; however, existing uses, including vehicle use, recreational access, and livestock grazing would continue. Existing populations of noxious weeds in each project area should be controlled by ongoing chemical, mechanical, and biological control activities.

### **3.6.5.2 Alternative B: Proposed Action**

Management activities would include silviculture treatments, fuels treatments, and harvest yarding methods that include tractor, tractor/cable and cable/skyline. See the description of each alternative activity in the environmental document for maps and detailed descriptions of the management activities.

#### ***Rangeland Resources***

Management activities that reduce the tree density of the forested stands will increase the available forage for livestock grazing in both the Canyon and Nest project areas. The current estimated amounts of the grass-forb structural stage in each area are 3.6% for Canyon and 3.0% for Nest. The management activities to reduce tree densities should increase the grass-forb structural stage to close to the Forest Plan objective of at least 5.0% grass-forb structural stage for each project area. However, there may be some short-term loss of grazing access during the timber harvest and burning activities.

#### ***Noxious Weeds***

Noxious weeds are widespread along the existing road systems in both Canyon and Nest project areas. Management activities that result in ground disturbance and vehicle access will increase the size and distribution of existing noxious weed populations and may result in the introduction and new noxious weed species to both project areas. The Black Hills Forest Plan EIS notes that a review of timber sales in 1993 revealed that, on the average, a typical timber harvest project resulted in an increase of noxious weeds by 2.0% to 3.5% ([Black Hills Forest Plan EIS, pg III-192](#)). In addition, that same review noted that noxious weeds will increase on average about 0.12 acres for each mile of road construction activity ([Black Hills Forest Plan EIS, pg III-194](#)). Based on those monitoring results, it is estimated that the noxious weed infestation will increase by approximately 80 acres in the Canyon Project area and approximately 83 acres in the Nest Project area. This will result in an estimated total noxious weed infestation of 513 acres in both project areas. In the long-term, ongoing noxious weed control activities would treat existing and new noxious weed populations and the total acres of noxious weeds should be reduced over time. See [table 3-35](#) for the estimated increases in noxious weeds by project area.

### **3.6.5.3 Alternative C**

Management activities would include silviculture treatments, fuels treatments, and harvest yarding methods that include tractor, tractor/cable and cable/skyline. See the description of each alternative activity in the environmental document for maps and detailed descriptions of the management activities.

#### ***Rangeland Resources***

The effects of Alternative C are the same as Alternative B, however fewer acres of dense forested stands are treated, and the resulting increase in available forage for livestock grazing in both the Canyon and Nest project areas will be less than the

increase expected for Alternative B. In addition, there may also be some short-term loss of grazing access during the timber harvest and burning activities.

**Table 3-35: Estimated Noxious Weed Increases for Alternative B: Proposed Action**

	<b>Current Estimated Noxious Weed Acres</b>	<b>Estimated Increase in Noxious Weed Acres</b>	<b>Total Acres of Noxious Weed Acres Post Project</b>
Canyon Project Area	130 acres <sup>1</sup>	80 acres	210 acres
<b>Nest Project Area</b>	220 acres <sup>2</sup>	83 acres	303 acres
<b>Totals</b>	<b>350 acres</b>	<b>163 acres</b>	<b>513 acres (46% increase)</b>

<sup>1</sup> Based on 2,660 acres (x 3% = 79.3 ac.) of timber treatments and .5 acres increase from 5.6 miles new road construction.

<sup>2</sup> Based on 2,730 acres (x 3% = 82 acres) of timber treatments and .3 acres increase from 2.9 miles new road construction.

**Noxious Weeds**

The effects on noxious weeds in Alternative C are similar to those noted in Alternative B, however, the acres treated are lower and that will result in a lower estimate for the increase of noxious weeds in the project areas. Based on the activities noted for Alternative C, it is estimated that the noxious weed infestation will increase by approximately 80 acres in the Canyon Project area and approximately 85 acres in the Nest Project area. This will result in an estimated total noxious weed infestation of 515 acres in both project areas. In the long-term, ongoing noxious weed control activities would treat existing and new noxious weed populations and the total acres of noxious weeds should be reduced over time. See [table 3-36](#) for the estimated increases in noxious weeds by project area.

**Table 3-36: Estimated Noxious Weed Increases for Alternative C**

	<b>Current Estimated Noxious Weed Acres</b>	<b>Estimated Increase in Noxious Weed Acres</b>	<b>Total Acres of Noxious Weed Acres Post Project</b>
Canyon Project Area	130 acres	66 acres <sup>1</sup>	196 acres
<b>Nest Project Area</b>	220 acres	56 acres <sup>2</sup>	276 acres
<b>Totals</b>	<b>350 acres</b>	<b>122 acres</b>	<b>472 acres (34% increase)</b>

<sup>1</sup> Based on 2,176 acres (x 3% = 65 ac.) of timber treatments and .3 acres increase from 2.9 miles new road construction.

<sup>2</sup> Based on 1,856 acres (x 3% = 56 acres) of timber treatments and .2 acres increase from 2.1 miles new road construction.

**3.6.5.4 Cumulative Effects**

**Rangeland Resources**

No cumulative effects are expected on the rangeland resource for either the Canyon or Nest Project areas. Project activities should result in long-term increases in available forage for livestock grazing.

**Noxious Weeds**

Ongoing activities in both project areas include recreational use, vehicle use, hunting, berry picking, firewood cutting. All these activities increase the spread of noxious weeds and increase the probability of introduction of new species of noxious weeds to the area. Additional projects ongoing or in the immediate future include those noted in the cumulative effects activities section 3.1.1. The cumulative effects of these projects would result in a short-term increase in noxious weeds for the cumulative effects analysis area. The cumulative effects will result in an overall likely increase in noxious weeds in the short-term for the project area and adjacent areas. Any long-term increases in noxious weed infestations in the project area and adjacent project areas should be mitigated by aggressive weed control efforts.

**3.7 Fire and Fuels**

**3.7.1 Introduction**

This fuels prescription is for areas proposed for silvicultural treatments in the Canyon/Nest EA on the Hell Canyon Ranger District of the Black Hills National Forest. The prescribed fuels treatments include treatment of activity-generated fuels. The analysis area is located northeast of Newcastle, Wyoming and lays south of Oatman Springs and Beaver Creek Campground. Access to this area is north via National Forest System Road (FSR) 117 off highway 16. A no action, and two action alternatives were developed. The following table displays the alternatives considered for implementation at this time.

**Table 3-37: Alternatives Considered, Acres of Treatment**

Alternative	Acres Treated
A – No Action	0
B – Proposed Action	2660
C	2176

The Black Hills National Forest amended the 1997 Land and Resource Management Plan (Forest Plan) through the Phase 1 amendment, providing new standards and guidelines for management of activities on the Black Hills National Forest. The Phase 1 Document was signed on May 18, 2001. The Canyon/Nest Analysis area had been analyzed prior to this and a Decision notice was signed. That decision had been appealed and the Forest Supervisor decided to withdraw the decision notice and analyze Canyon/Nest under the new standards and guidelines set forth under Phase 1. This report documents an analysis conducted by an interdisciplinary team on the Fuels management situation in Canyon/Nest, as well as the decisions/recommendations made, subsequent to Phase 1 implementation. This report will discuss the recommendations made, how they tie to the Forest Plan and Phase 1, and the effects of these actions.

The interdisciplinary team that conducted the first planning had put together a complete project based on direction in place at the time, and the results of that planning was used as a starting block for the planning and proposals made here. All actions proposed in these alternatives, meet Forest Plan and Phase 1 standards and guidelines for fuels. The provisions of the Clean Air Act would be addressed as burn plans are formulated, with the aid of the SASEM program. The original boundaries for the Canyon/Nest Analysis area have remained primarily intact. A recent land exchange resulted in a small change to the Canyon Project Area. About 183 acres of previously included land within the State of Wyoming has now been dropped from the project area.

**3.7.2 Field Surveys/Resource Contacts**

Black Hills National Forest personnel participated in the formulation of this prescription. This included: Jim Myers- Silviculture; Brian Daunt-fire management and original fuels specialist; Jeff Knutson-engineering; Alice Allen-wildlife. Two days were spent reviewing stand conditions on the

ground with project Silviculturist, Rob Schantz, and one day reviewing ongoing harvesting/slash treatment procedures with forest personnel in management, silviculture, and sale administration. Pertinent weather information was obtained from forest personnel for use in calculations to determine if forest standards would be met. The following publications were used to help formulate prescriptions: *Anderson 1982*, *Brown 1980*, *Brown 1977*, and various Forest Service Technical Reports.

### 3.7.3 Forest Plan Direction/Other Direction

Fire and fuels standards and guidelines are listed in the forest-wide standards and guidelines #4101-4113, and the forest-wide goals and objectives for fuels are found in #223-#227. The objective of fuel treatment is to reduce fuel levels and or redistribute it to avoid large catastrophic wildfires. Fuel characteristics that we deal with include amount (tons per acre), size, arrangement, continuity, and moisture content. The amount of fuels remaining after treatment would vary depending on stand structure prior to treatment and what level of cutting takes place. Forest Plan and Phase 1 standards guide the selection of recommended courses of action. Protecting resource values, including water quality, timber, and wildlife habitat were also included. As an interdisciplinary team, we were directed to analyze Canyon/Nest in light of changes made in management direction established by the Phase 1 Amendment. We were to make use of previous work to the greatest extent possible, and to use Black Hills personnel as much as we could for direction. We were not to pursue any additional ground disturbing activities, so as not to necessitate any additional cultural activities surveys. We were given a timeline in which to complete our work, which was negotiated due to delays in starting work. The prescriptions developed are consistent with management direction in The Forest Plan and Phase 1. Black Hills National Forest personnel have been brought along in the process.

The following direction was established in the Forest Plan for fuels management:

#### STANDARDS/GUIDELINES

- 4102- Protect heritage resources, streams, stream-banks, shorelines, lakes and associated vegetation from degradation by wildfire suppression efforts.
- 4103- Utilize prescribed fire through planned and natural ignitions to achieve management objectives for each management area as shown in the Fire Management Direction Summary table in The Forest Plan.
- 4104- Visual effects of prescribed fire would comply with the approved SIO of the area.
- 4105- When feasible and appropriate use broadcast burning to dispose of slash in order to return the inorganic and organic chemicals in the foliage and small woody material to the soil to reduce the fire hazard, and to provide seed beds for natural regeneration.
- 4110- Base activity and natural fuel treatment on area matrix values within the Black Hills National Forest FPA in accordance with the following .
  - In areas having moderate ratings for risk, hazard or value, which includes Canyon/Nest:
    - Reduce or otherwise treat all fuels (activity fuels within three years of cutting) so the fire-line intensity does not exceed 300 BTUs/second/foot on 90 percent of the days when fires occur, or break up continuous fuel concentrations exceeding the above intensity into units 40 to 50 acres maximum size, surrounded by fuel breaks.
    - Interim activity fuel treatment would be accomplished by requiring all slash to be lopped to 18 inches at the time of cutting.
- 4111- Locate slash piles that are scheduled for burning out of meadows that contribute to Waters of the United States. Use a buffer distance to keep sediment, ash and debris out of channels.
- 4112- Treat activity fuels adjacent to roads and trails as follows:
  - For Forest Development Roads classified as collectors, and Forest Development Trails, manage activity fuels to meet adopted SIO.

- For federal, state, county, and Forest Developmental Roads classified as arterials, remove 70-90 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.

Other forest-wide standards and guidelines that could impact how management of the fuels situation in the project area are implemented include:

- Protect heritage resources, streams, stream-banks, shorelines, lakes, and associated vegetation from degradation by wildfire suppression efforts.
- Reduce the threat of wildfire to public and private developments by following the standards in the National Fire Protection Association Publication 299, "Protection of Life and Property from Wildfire", and reduce the fuel loading to acceptable standards.
- All sale activities would maintain snags and green tree replacement trees at levels determined to be non-detrimental to wildlife populations. This would include trees greater than or equal to 20" in diameter, or whatever representative dbh of the overstory is deemed possible, to maintain potential population levels of cavity excavators. This is not intended to preclude the use of prescribed fire as an activity fuels treatment. Fire prescription parameters would assure that consumption of snags, as well as down woody material, meets viability requirements for wildlife use.
- All fuels treatments would meet with the provisions of the Clean Air Act. District personnel would be monitoring burn conditions, and the SASEM or an equivalent program would be used to assure provisions are being met. The impacts of burning on metropolitan areas such as Rapid City would be assessed at the time of burning.

#### 3.7.4 Affected Environment

An analysis of site conditions and historic fire frequencies for the project area shows that wildfire risk is currently moderate. This area has a tendency to be more moist on a year round basis than other portions of the Black Hills National Forest. Thirty-five wildfires have been recorded in the project area since 1951. Twenty-nine of these fires have been controlled as class A fires, less than ¼ an acre, and the remainder as class B, or less than 9 acres

Values in the Canyon/Nest project area, which would be threatened by wildfire include:

- Commercial timber stands
- Power lines
- Range improvements, such as fences and spring developments.
- Cabins, trailers, and outbuildings on private land.
- Investments in timber stand improvement and reforestation.
- Wildlife habitat, including snags, forage, riparian areas, security, cover, and mid to late stage ponderosa pine stands.
- Long-term dispersed camping sites.

The existing transportation system in the project area provides good access for engine crews. A network of fuel-breaks is in place. Landing sites for helicopters are limited.

Existing fuels conditions in the Canyon/Nest Analysis area have been determined through the use of appropriate fuels publications, aerial photo interpretation, discussions with BBNF personnel, field reviews, and professional judgment. Fuels conditions in the analysis area can be described as a mosaic with at least 6 of the Fire Behavior Models ([Anderson, 1982](#)), represented. These include:

- Fuel Model 1- Short Grasses
- Fuel Model 2- Grass with Timber Overstory
- Fuel Model 5- Low Shrubs
- Fuel Model 9- Timber Litter
- Fuel Model 10- Timber Litter and Understory
- Fuel Model 11- Light Slash

**Table 3-38: Existing Fuel Models and Acreages within the Project Areas**

Fuel Model #	Fuel Model Description	Acres w/in Canyon	Acres w/in Nest
1	Short Grasses	217	478
2	Grass with Timber Overstory	1936	2351
5	Low Shrubs	54	186
9	Timber Litter	1870	2123
10	Timber Litter and Understory	1252	977

*Fuel Model 11 is present as inclusions within model 9 and 10. The acres presented in this table do not include about 770 acres of private ground that would be primarily fuel model 1.*

**Table 3-39: Existing Conditions within the Project Areas**

Fire Intensity and Return Interval	Canyon	Nest
Low Severity/High Return Interval (7-15 years)	2201 acres	2942 acres
Mixed Severity/Moderate Return Interval (15-25 Years)	1975 acres	2554 acres
High Severity/Low Return Interval (>25 years)	1153 acres	619 acres

*\*Timeframes are shown to illustrate comparisons.*

Most of the area has been harvested in the last fifty years with varying levels of fuels treatments having been done. Fuel breaks have been established over the years, and are planned for maintenance. Higher fuel moisture levels are found in this area of the BHNH than throughout the rest of the forest at any time of the year. This results in a longer fire return interval in an unmanaged state. Aggressive fuel suppression activities and prescribed silvicultural practices have resulted in uniform continuous stands of younger trees with larger crowns and fewer forest openings throughout the area. It would be advantageous to reduce the amount of area in the high severity/low return interval category not only from a silvicultural perspective but from a fuel profile perspective as well. This could be accomplished through thinning and treating activity slash. [Table 3-39](#) shows the current balance in severity and return interval for this area. If fires had been allowed to burn, instead of pursuing an aggressive program of fire suppression over the last 75-100 years, there would be a significant increase in the amount acreage in stands that would burn at a more frequent interval and a lower intensity. A large stand replacement fire (approximately 85,000 acres-the Jasper fire) occurred slightly west of Canyon/Nest during 2000 in slightly warmer and drier forest regimes. In order for a fire to reach proportions of this again, weather conditions would have to be extreme in nature, outside the 90<sup>th</sup> percentile regime used to program fuels treatments in the Forest Plan.

The Federal Clean Air Act is a legal mandate. It is intended to set limits on air pollution, thus safeguarding human health, air visibility, and welfare from air pollution. Forest Service policy is to integrate air resource objectives into all Forest Service planning and management activities. For the Canyon/Nest project area analysis, the stage would be set for cooperation with the states of Wyoming and South Dakota as implementation of site preparation and fuel management prescriptions are carried out. State fire agencies would be notified that burning is to occur, following the procurement of the appropriate permits to proceed. Due to the westerly flow of winds in the project area, the main cities of interest in burning would be Hill City, Custer, Deadwood and Rapid City. Due to the distance from the project area, and the mixing and dispersal normally generated, it is unlikely that project burning would intrude on any of these cities. Rapid City is identified as a non-attainment city, and cautions must be taken to meet air quality objectives for burning. Particulate levels generated would be discussed for each alternative later in this document. These levels would have to be verified in post harvest examinations and air quality within the project maintained.

**3.7.5 Environmental Effects**

**3.7.5.1 Alternative A: No Action**

Selection of this alternative would not change the existing conditions from a fuels management perspective. The only changes that would occur on the landscape would be those that occur as a result of natural occurrences, or those relative to wildfire suppression. Any management direction that calls for manipulation of the forest environment, such as treating of fuels on 8,000 acres per year, would not be met unless those objectives can be made up in another analysis area. Stands of medium sized to large sized Ponderosa Pine that are currently silviculturally overstocked (See silvicultural input) would certainly continue to lose trees to Mountain Pine Beetle at a more rapid rate than if trees were thinned, and fuel loadings would increase over time if trees falling to the forest floor were left untreated. This alternative is the poorest in relation to the original purpose and need for this proposal in that it does nothing too alleviate the domination of the landscape by overstocked multi-aged ponderosa pine stands (See silvicultural input).

Modeling of the existing situation in the Canyon/Nest area shows what impact implementing the no action alternative would have on the fuels situation. Currently, about 3,990 acres in the area are characterized by fuel model 9, and about 2,225 acres characterized by fuel model 10. Fuel model 9 acres would develop into fuel model 10 in the next 5-10 years, and fuel model 10 would develop more compact ladder fuels and heavier ground fuels. Using the BEHAVE SYSTEM, *Andrews, Andrews and Chase*, it can be shown that a fire start in fuel model 10 stands cannot be contained under 90<sup>th</sup> percentile weather conditions at or below the forest standard suppression objective of 5 acres, and the same fire would generate more than 300 BTUs/ft/sec, which also exceeds forest plan standards. Fuel model 10 stands would exhibit similar numbers over the next 5-10 years. [Table 3-40](#) illustrates this modeling. It also illustrates that flame lengths of a fire in this fuel type preclude suppression with hand-crews that are not supported by air suppression tactics, as flame lengths would exceed 5 feet in length with mid-flame wind speeds over 5 MPH.

**Table 3-40: Fire predictions based on fuel model 10.**

MIDFLAME WIND SPEED	RATE OF SPREAD	HEAT PER UNIT AREA	FIRELINE INTENSITY	FLAME LENGTH
MI/HR	CH/HR	BTU/SQ FT	BTU/FT/SEC	FT
4	8	1378	194	5.1
6	13	1378	317	6.4
8	18	1378	459	7.5
10	24		618	8.6

**3.7.5.2 Effects common to all action alternatives include:**

- The risk of lightning caused ignitions would not be affected by the proposed alternatives. However, the risk of a lightning caused fire starting up in a proposed unit reaching catastrophic proportions would decrease as fuel profiles would be reduced to levels that would likely allow suppression under 90<sup>th</sup> percentile weather conditions.
- Implementation of any of the alternatives that call for a reduction in encroachment into meadow habitats would increase the amount of Fuel Model 1 (Grasses) in the project area. Maintenance of grass fuel types will aid in fuel suppression in the long term, as these areas tend to make good fuel breaks, and facilitate line construction.
- A short-term (1-3 year) increase in fire intensities due to logging slash accumulations would be expected until fuels management activities are completed, helping to maintain fuel breaks in the area.
- Additional ground fuels adjacent to untreated timber stands would increase the risk of a surface fire making the transition to a crown fire, until fuels can be treated, especially under severe weather conditions.

- Any harvest or pre-commercial thinning treatment in conifer stands would have the effect of opening up the tree canopy, thus breaking up fuel continuity of aerial fuels. This would limit the movement of a crown fire, forcing it back to the ground
- Treatments that regenerate aspen and birch stands would, in the short term, expand natural fuel breaks, as larger openings occupied predominantly by grasses would be created, and easier access would be created. This would increase the acreage in Fuel Model 5 (Low shrubs).

Description of the fuels to be treated:

- Dead woody material and activity slash in excess of fuels levels that would generate fire intensities in excess of Forest Standards would be treated.
- Dead woody material and activity slash that would result in wildfires acreages in excess of suppression objectives when ninetieth weather conditions are not exceeded would be treated.
- Fuels would be in the form of limbs, tops, boles, needles, and bark that are not transported to landing sites.
- Most of the silvicultural treatments proposed as part of Canyon/Nest would generate fuel levels that would necessitate treatment.
- The Photo Series for Quantifying Natural Forest Residues in Common Vegetation Types of the Pacific Northwest, [GTR PNW-105](#) was used to describe stands before treatment. The Handbook For Predicting Slash Weight of Western Conifers, USDA FS, [GTR-37, Brown, Snell and Bunnell, 1977](#), was used to estimate slash weights following harvesting.

Several fuels treatments were considered for each harvest unit. The existing fuel loading, other resource values that could be impacted, and the desired outcome were considered when selecting fuels treatments. In some cases, multiple fuels related treatments are recommended. Fuels treatment prescriptions that were considered include:

▪ **No treatment-ntm**

This prescription was selected when fuel levels are not expected to generate fire intensities in excess of 300 BTUs/ft./second, and the fire suppression objective of 5 acres could reasonably be met within 90 percentile weather conditions without treating created slash. This category is also used to clarify that no treatment is prescribed for following the interim lop and scatter.

▪ **Lop and scatter-L/s**

This alternative is called for as an interim treatment to reduce immediate risk in all harvesting units, with the exception of pine and spruce removal units. It also is the only prescription used in low volume removal prescriptions where fuels would be light and scattered following treatment. Fuels would be lopped into smaller pieces and left scattered on the ground with a maximum height of 18". Fuels profiles created under this prescription would have loadings of generally less than 8 tons per acre; create fuel intensities of less than 300 BTUs/ft/sec; and wildfires would be containable at less than 5 acres.

▪ **Machine piling- Mp**

Machine piling would be used where a localized heavy concentration of fuel is undesirable, such as in the middle of a wet meadow being cleared of all encroaching pine or spruce, or adjacent to a major travel route. The type of machinery that could accomplish this type of work could include a grapple skidder or backhoe. It is likely that piles would have to be constructed a short distance from where the slash actually originates.

▪ **Whole tree yarding- wty**

Whole tree yarding would be used in harvest units where heavy concentrations of volume are removed and there is not a high level of concern for damage to the residual stand, be

it in advanced young regeneration or smaller saw-timber being left on the site. Typical silvicultural prescriptions for this fuels prescription are clearcuts of any type, a preparatory cut, or a seed cut. The top of the tree is left attached to the normally merchantable bole and yarded to the landing. Once at the landing, the top is severed from the merchantable bole and pushed aside for subsequent piling and burning. Larger landings are required for this process.

In silvicultural prescriptions where there is a dense stand of residual timber to be maintained, or there is an advanced understory, this method is normally not effective. However, it can be an effective tool in patch clearcuts that are surrounded by mixed pockets of regeneration

▪ **Jackpot or broadcast burning- jp/bc**

The use of these prescriptions indicates three things:

1. There is a need to reduce fuel loadings rather continuously from a sizable piece of ground.
2. There is a desire to prepare the ground for natural seeding.
3. There is little or no risk to losing advanced natural regeneration or small saw-timber through the use of fire.

A jackpot burn is called for where small pockets of fire would be created and it is likely that snow-banks, openings, burned areas, roads and minimal stretches of constructed fire-line can be used to contain the burning area. It is also likely that fire would only smolder or burn out as it moves from an open burnable area out under an existing canopy. In jackpot burns, fuels are normally not continuous, and the fire does not run unchecked to an established boundary.

Broadcast burns are normally used within a predetermined boundary put in place by hand or with heavy machinery.

It is likely there would be movement back and forth from one level of burn in this category that would take place as a result of the writing of final silvicultural prescriptions. If volumes harvested drop substantially, a broadcast burn unit would become a likely candidate for jackpot burning, the level of burn necessary for planning would drop. The use of natural breaks in fuel continuity for fire control would be more likely.

**3.7.5.3 Effects Specific to Alternative B (Proposed Action)**

This alternative would affect the fuels resource in several ways. Forest direction for generated slash would be met. Residual slash would be left at less than 10 tons per acre, except in isolated occurrences. Suppression objectives of less than 5 acres under 90<sup>th</sup> percentile weather conditions for wildfires would theoretically be attainable. Based on fuels modeling using the BEHAVE program, *Andrews, Patricia L; Chase, Carolyn H.* fire-line intensities in treated areas would not likely exceed 300 BTUs /ft/sec. Continuous crown closures/densities would be reduced, thereby reducing the risk for large crown fires in the project areas. Losses to bugs in overstocked stands would be reduced as stocking levels are reduced to below threshold levels identified by silvicultural personnel, thus reducing fuel loadings in the long- and short-term. About 2,263 acres of treatment would count towards meeting Forest Plan generated burning targets.

The following table illustrates what fuels prescription would be used following each of the prescribed silvicultural treatments. These are consistent for all action alternatives. [Figure 16](#) shows where these activities would occur for Alternative B.

**Table 3-41: Proposed Fuels Treatment by Silvicultural Treatment**

Silvicultural RX	Rx Volume	Range of tons/acre	Proposed Fuels Treatments	Comments
Aspen Regeneration	0	0-20	Ntm	High levels of residual fuels would be spotty and uncharacteristic.
Pre-commercial Thinning	0	2-20	Ls-Ntm	Maybe fuel breaks, based on final numbers for loading, and acres
Post & Pole			Ls-Ntm	
Pine & Spruce Removal from Aspen				Clearcut all pine and spruce from within aspen clone
Pine & Spruce Removal with Aspen Regeneration	<1	2-4	Ls-Ntm	Clearcut all trees from within fading aspen clone. Cattle impediment
Individual Tree Selection	<2	0-4	Ls-jp	Light removal, more a partial cut, Prescription hard to categorize
Meadow Restoration	0	1.1	Ls-Mp	Piling needs to occur outside meadow proper
Pine Encroachment	.5-1.0	2-4.5	Ls-Mp	Piling needs to occur outside meadow proper
Overstory Removal	1-4	2-8.5	Ls-Ntm	Adv Regen critical
Overstory Removal w/ Prep-Cut Shelterwood	1-4	2-8.5	Ls-Ntm	Adv Regen critical
OR/SC-OR w/seed cut	3-5	6-11	Ls-Ntm	Pockets of fuel in Rx more like an OR
Overstory Removal w/ Patch Clearcut			Ls-Ntm Wty-jp,bc	Lop & Scatter in OR area only. Other treatments in Patch CC.
Deferred Treatment w/ Patch Clearcuts	3-5	6-11	Wty-jp,bc	Similar to CC Rx, but less area in created openings
Patch Clear Cut	3-5	6-11	Wty-jp,bc	25% of stand in created openings
Seed-Cut Shelterwood	3-5	6-11	Wty-jp,bc	Post exam critical to determine level of burn to meet standards
Prep-Cut Shelterwood	3-5	6-11	Wty-jp,bc	Post exam critical to determine level of burn to meet standards
Seed Cut w/ Patch Clearcut	3-5	6-11	Wty-jp,bc	Post exam critical to determine level of burn to meet standards.

*Ntm- No treatment*

*Ls – Lop and scatter to height of 18”*

*Mp – Machine Pile*

*Wty – Whole tree yarding*

*Jp,bc – Jackpot or broadcast burn dependent on level needed*

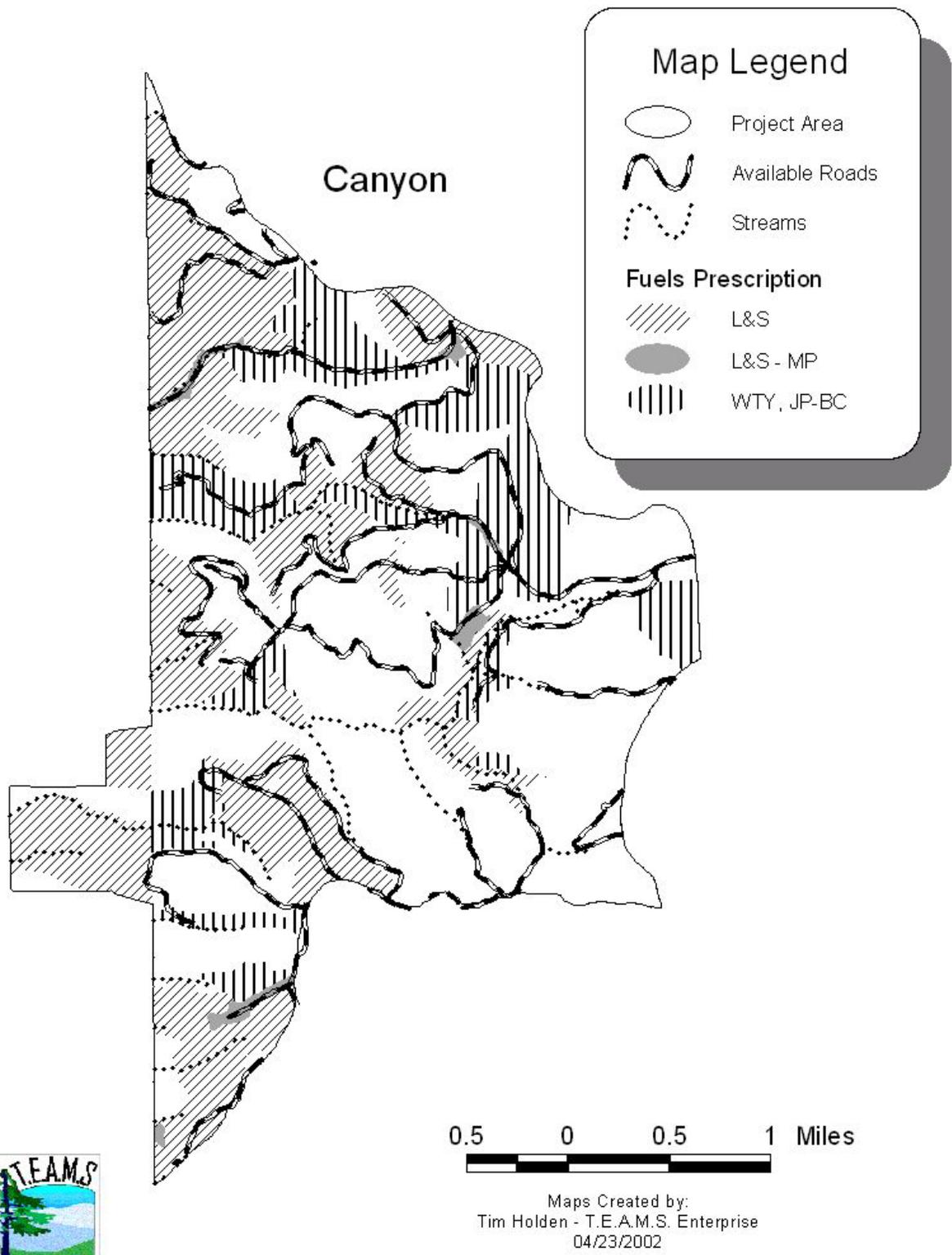
*Ls-Ntm – Lop and scatter with no additional treatment*

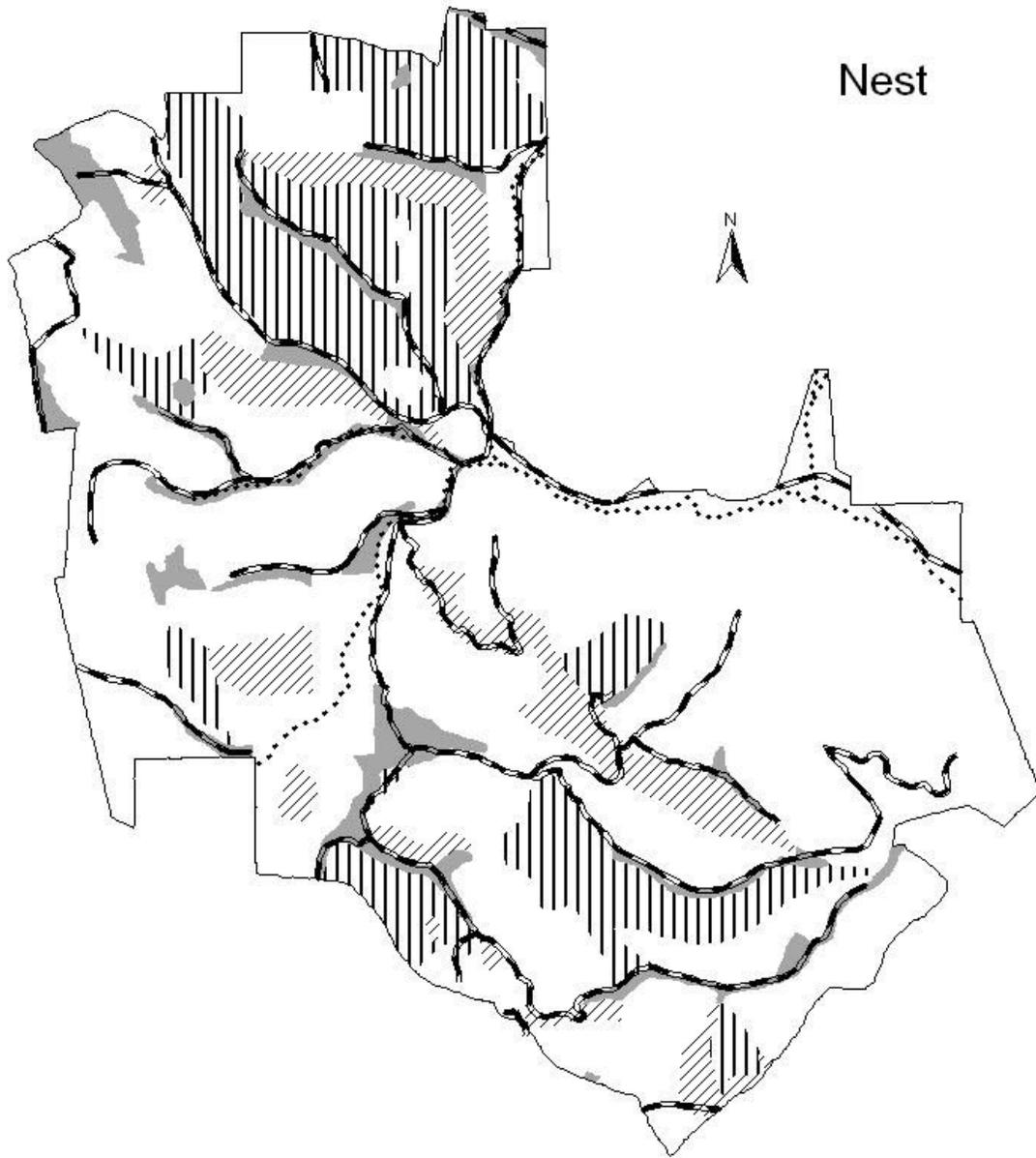
**Table 3-42: Summary of Proposed Post-harvest Fuels Treatments**

Treatment Prescription	Acres in Canyon	Acres in Nest
Ls-Ntm	1,630	603
Ntm	0	369
Ls-Mp	63	461
Wty-Jp,bc	967	1,296

Prescription recommendations made here would be tempered with fuels analysis done following harvest operations, and changes made to better meet resource objectives and the Forest Plan and Phase 1 Standards and Guidelines. Treatment of created fuels slash by either jackpot or broadcast burning would have the effect of lowering existing fuel levels. In many cases, especially in broadcast burned areas, the fuel model would be changed to one

Figure 3-16: Proposed Fuels Treatments for Alternative B





having lower fuel loadings. Fuel model 10 profiles would be changed to fuel model 9 in many cases. There would still be pockets of higher fuel loadings due to inconsistent fuel consumption and initial spatial arrangement of created slash. In general, treatment of created slash would result in the treatment of natural slash. Risks for catastrophic fire, as well as fire intensities, would drop with increases in fuel treatments.

Stands that are currently fuel model 10 will be treated and reduced to a fuel model 9 where suppression objectives are more readily attainable. Stands that are fuel model 9, and would move into fuel model 10 in the near future, are treated now, setting back the timeframe in which they would move into a fuel model 10. This would result in stands being less susceptible to catastrophic fire as well as stands burning at lower intensities. Reductions in the existing level of fuel models 9 and 10 would reflect this. Existing stands characterized as fuel model 9 would be reduced by about 1,008 acres, and stands characterized as fuel model 10 would be reduced by about 1,035 acres.

Road access for fire suppression efforts would be changed as part of this proposal. Currently there are 4.7 miles/section of road available for use in fire suppression in Canyon and 3.5 miles/section available in Nest. Following implementation of Alternative B there would be 3.4 miles/section available in Canyon and 2.9 miles/section available in Nest. These road densities include administrative access to some roads closed to public use.

Historically, fire suppression efforts have been successful in this area. This, coupled with the fuels treatments being scheduled for Alternative B that would reduce fuels loadings, and reduce fuel continuities, lead to a professional judgment that there would be no significant increase in wildland fire size within 90<sup>th</sup> percentile weather under Alternative B as a result of road closures/obliterations.

This alternative would have impacts on the quality of air in surrounding areas. For areas projected for broadcast and/or jackpot burning an average of 0.227 tons/acre of PM-10 particles and 0.192 tons of PM2.5 are projected to be generated. (PM-10 and PM 2.5 are size classes of particles suspended in the air used to measure air quality.) Lower levels would be generated for areas identified with other burning treatments. The states of Wyoming and South Dakota would have to be coordinated with to determine how and when these particulates can be released. It is likely that forest roads 117 and 110 in the local area would have to be patrolled and/or signed to keep forest visitors informed on what is happening. It is unlikely there would be any significant health or environmental impacts of particulate emissions, and the intent of the Clean Air Act could be met.

**3.7.5.4 Effects Specific to Alternative C**

Fuels treatments for this alternative would not differ substantially from Alternative B, with the exception of acres treated. As the amount of acreage proposed for treatment decreases, the amount of land that would not have fuel loadings reduced would increase, and the risk of a catastrophic fire escaping from the project areas increases. About 2,263 acres of treatment would count towards meeting Forest Plan generated burning targets. There would be an increase in the acreage that suppression objectives would not be assured. Fuels treatment by silvicultural prescription would be constant between action alternatives. All alternative fuel treatment schemes would meet The Forest Plan and Phase 1 Standards, in that forest suppression objectives would be attainable and fire-line intensity levels would be met under 90<sup>th</sup> percentile weather conditions. [Figure 17](#) depicts where these activities would occur.

**Table 3-43: Summary of Proposed Post-harvest Fuels Treatments**

Treatment Prescription	Acres in Canyon	Acres in Nest
Ls-Ntm	1,359	374
Ntm	0	369
Ls-Mp	63	450
Wty-Jp,bc	754	663

Silvicultural treatments and fuels treatments under this alternative would result in changes in fuel model occurrences. This would result in stands being less susceptible to catastrophic fire as well as stands burning at lower intensities. Reductions in the existing level of fuel models 9 and 10 would reflect this. Existing stands characterized as fuel model 9 would be reduced by about 58 acres, and stands characterized as fuel model 10, would be reduced by about 490 acres.

Road access for fire suppression efforts would be changed as part of this proposal. Currently there are 4.7 miles/section of road available for use in fire suppression in Canyon and 3.5 miles available in Nest. Following implementation of alternative C there would be 3.1 miles/section available in Canyon and 2.9 miles/section available in Nest. These road densities include administrative access to some roads closed to public use.

Historically, fire suppression efforts have been successful in this area. This, coupled with the fuels treatments being scheduled for Alternative C that would reduce fuels loadings, and reduce fuel continuities, lead to a professional judgment that there would be no significant increase in wildland fire size within 90<sup>th</sup> percentile weather under alternative B as a result of road closures/obliterations.

This alternative would have impacts on the quality of air in surrounding areas. For areas projected for broadcast and/or jackpot burning an average of 0.227 tons/acre of PM-10 particles and 0.192 tons of PM2.5 particles are projected to be generated. Lower levels would be generated for areas identified with other burning treatments. The states of Wyoming and South Dakota would have to be coordinated with to determine how and when these particulates can be released. It is likely that forest roads 117 and 110 in the local area would have to be patrolled and/or signed to keep forest visitors informed on what is happening. It is unlikely there would be any significant health or environmental impacts of particulate emissions, and the intent of the Clean Air Act can be met.

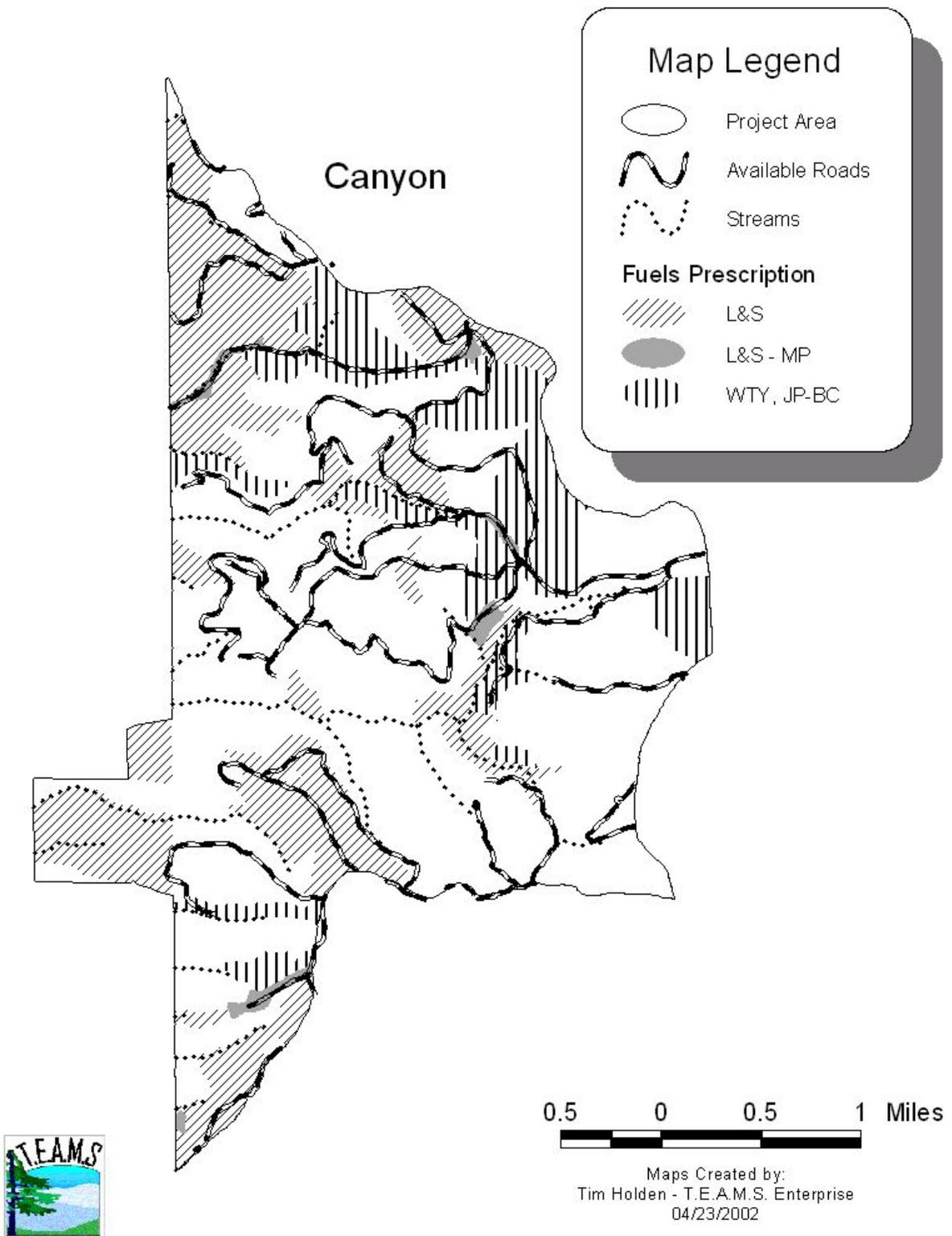
### **3.7.5.5 Cumulative Effects**

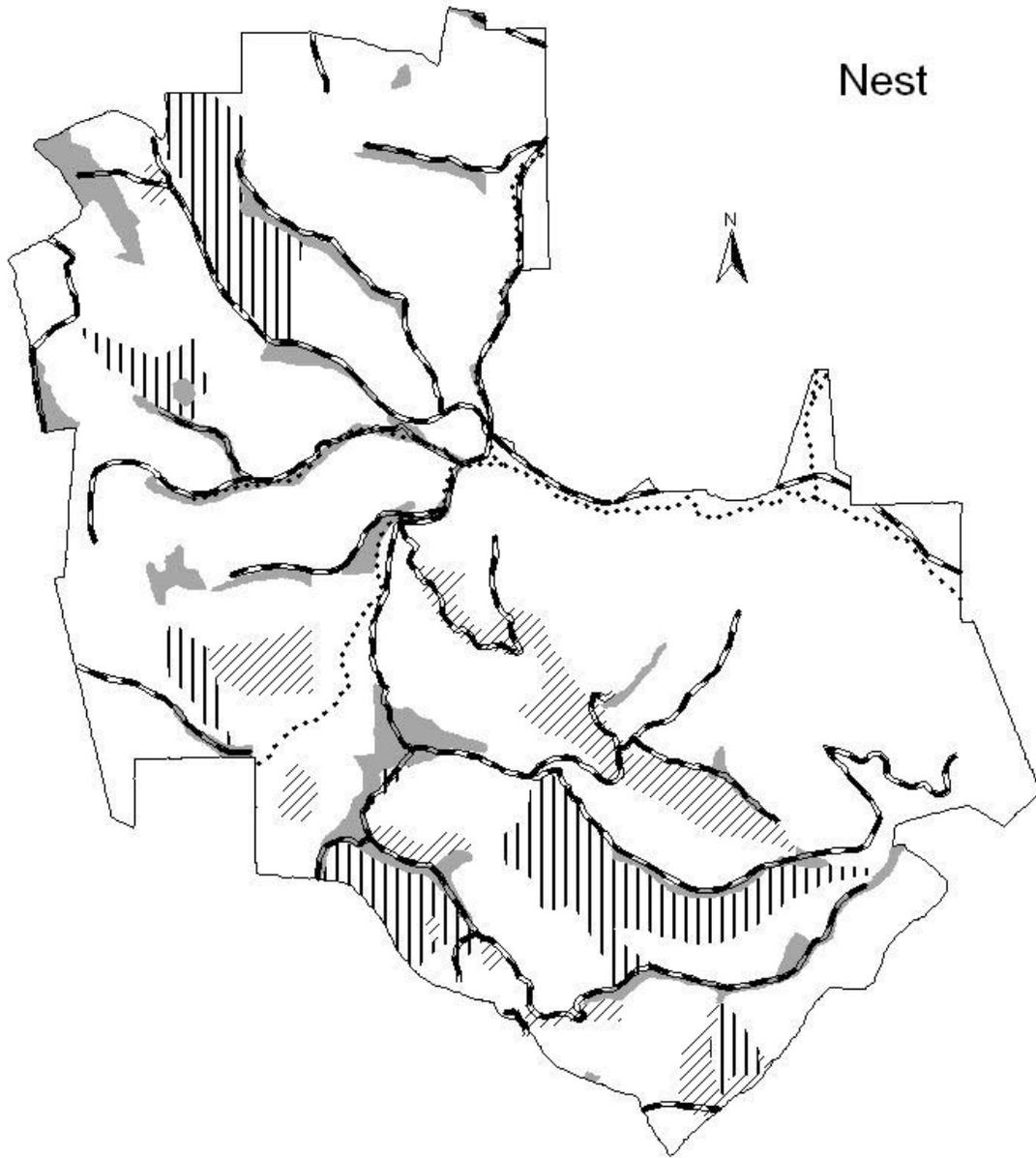
In the Canyon/Nest project area past, present, and reasonably foreseeable future actions are applicable to interpreting changes in fuel conditions. Due to the nature of air movements and somewhat unpredictability of wildfire spread, no specific boundary for cumulative effects can be assigned. See section 3.1.1 for a description of ongoing and foreseeable future project areas near the Canyon/Nest project. Past timber management activities have had impacts that have created situations that have both increased the risk of catastrophic fire and reduced the risk of catastrophic fire. Thinning and fuel treatment procedures have reduced risks. Grazing practices that lead to increases in small down woody material, or increases in ladder materials increase risks. Wildfire suppression that leads to a buildup in down woody material, increased stocking, or ladder fuels, increases risks. Lack of thinning in dense stands has contributed to an increase in wildland fire risk. Tree densities, the presence of ladder fuels, and dense crown closures contribute to higher risks. The trend has been to increase risk levels of having catastrophic fires over most of the project area.

Alternative A, the no action alternative, would continue the trend associated with increasing fire risks. No action would be taken to reduce stocking levels in dense stands with overcrowding. In the absence of vegetation treatments, tree densities would continue to increase, as would crown cover, ladder fuels, losses to insect and disease, and the result would be a higher risk of losses to wildland fire. This trend would continue until interrupted by a natural disturbance such as a catastrophic fire or insect epidemic outbreak.

Alternatives B and C would address the fuels situation by reducing stand densities, reducing ladder fuels, improving individual stand thrift conditions and treating created and existing fuels. Alternative C reduces the number of acres treated over the level in alternative B. Both, however, help move the project area toward a more desirable condition. Both alternatives would allow suppression objectives to be met, and allow fires to be controlled within 90<sup>th</sup>

Figure 3-17: Proposed Fuels Treatments for Alternative C





Nest



percentile weather conditions on stands proposed for treatment, and therefore decrease chances of a catastrophic fire taking place.

The cumulative impacts of alternative A on air quality in the area surrounding area would mirror the impacts on the other elements of fuels management. On the short term, air quality would not be impacted. When a catastrophic event occurs, there would be no control over the timing or amount of emissions released into adjacent airsheds, as there would be under controlled events under the proposals made here.

The fuels situation in the project area can be stabilized over the long-term. Each entry into this area must treat activity generated slash to avoid build-ups occurring, and treat to similar standards. Stands need to be managed to keep stocking levels where losses to disease and insects are minimized, except where down woody material and snags are managed for. In the short-term, until fuels prescriptions can be implemented, risks for catastrophic fires following harvest activities are increased, but implementing an action alternative with appropriate fuels treatments at this point minimizes long-term risks.

- The predicted fuel model and subsequent fuel profiles for harvest units in the project area have been analyzed for conformance to fire intensities and maximum fire sizes under 90<sup>th</sup> percentile weather conditions for the project area. It is anticipated that a worst condition scenario of fuel model 9 would describe harvest units following treatment. The following weather conditions were used, as provided by Back Hills National Forest personnel:
  - 1 hr fuels- 4%
  - 10 hr fuels-6%
  - 100 hr fuels-8%
  - 1000 hr fuels-12%
  - Max air temp-87
  - Minimum relative humidity-12%
  - Windspeed-10 mph (This translates to mid-flame wind speed of 4 mph)
  - 1:00 weather observation.

The Forest Plan calls for a suppression objective of 5 acres. Assuming a mid flame wind speed of 5 mph, an elapsed time to attack of 0.5 hours, 20% ground slopes, and the above conditions, a crew would have to have the capability to construct 22 chains of fire-line an hour to keep a fire below 5 acres. This represents a hand-crew composed of 11 individuals, or two type-6 engine crews with 6 people. The presence of a medium sized helicopter to deliver people and/or water would reduce the need for personnel or equipment. These suppression responses are within the capabilities of the Hell Canyon Ranger District.

Analysis of predicted fuel intensities shows that 6 mph winds in Fuel Model 9, which is the Fuel Model that describes the goal of fuel treatments in this proposal, would generate intensities of about 112 BTUs/ft./sec. This is well within The Forest Plan standards of 300 BTUs/ft/sec for this area.

*(Analysis was done using the "BEHAVE: Fire behavior prediction and fuel modeling system—BURN subsystem, Parts 1 and 2", Andrews, Patricia L., and Chase, Carolyn H.)*

### 3.8 Recreation

#### 3.8.1 Affected Environment

The Recreation Opportunity Spectrum (ROS) classification for the project area is Roaded Natural. Roaded Natural is defined in the Forest Plan as: Area is characterized by predominantly natural-appearing environments with moderate evidence of the sights and sounds of people. Such evidence usually harmonizes with the natural environment. Interaction between users may be moderate to high, with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is allowed and incorporated into construction standards and design of facilities.

The predominant evidence of humans within the project area are the buildings on private land, power lines, signing, and the strong evidence of designed roads. The predominant use of the project area for recreation is hunting, hiking, snowmobiling, and cross-country skiing. Hunting opportunities exist for turkey, grouse, deer, and elk. Open road densities are high in both Canyon and Nest areas. There are 4.1 miles per section in Canyon and 3.3 miles per section in Nest. In addition, there are about 8 miles of closed roads within the project area. The closed roads are typically used for hunting, hiking, and biking opportunities. In addition to using roads for recreation, there are currently no restrictions for use of off-road ATV's within the project area; although it is discouraged. Past use of ATV's and off-road driving by individuals created many of the existing unclassified roads within the project area (Roads Analysis 2002).

No Forest Service facilities exist within the project area. During hunting seasons, there are usually several dispersed campsites that are occupied annually. Designated snowmobile trails occur along the north and west boundaries of the Nest portion of the project area. Snowmobilers and other winter recreationists also utilize areas off of these trails.

#### 3.8.2 Environmental Effects

##### 3.8.2.1 Alternative A

This alternative would have no impact (Direct, Indirect, or Cumulative) on the existing conditions. No recreation opportunities would change as a result of this alternative.

##### 3.8.2.2 Alternatives B & C

Implementation of either action alternative would change several recreation opportunities; 1) they would restrict all wheeled vehicles to open roads only through the use of an Area Closure; 2) they would substantially change the open road density within the project area; and 3) they may change the access to dispersed campsites historically used.

These alternatives would reduce the open road density from the existing high level to a moderate level. Canyon would be reduced from 4.1 to 2.2 miles per section. Nest would be reduced from 3.3 to 2.1 miles per section, if only FSR roads were included. There is an additional 0.3 miles per section of private road within the Nest area, but many of these roads are closed to public access. Therefore, they were not included in the calculation.

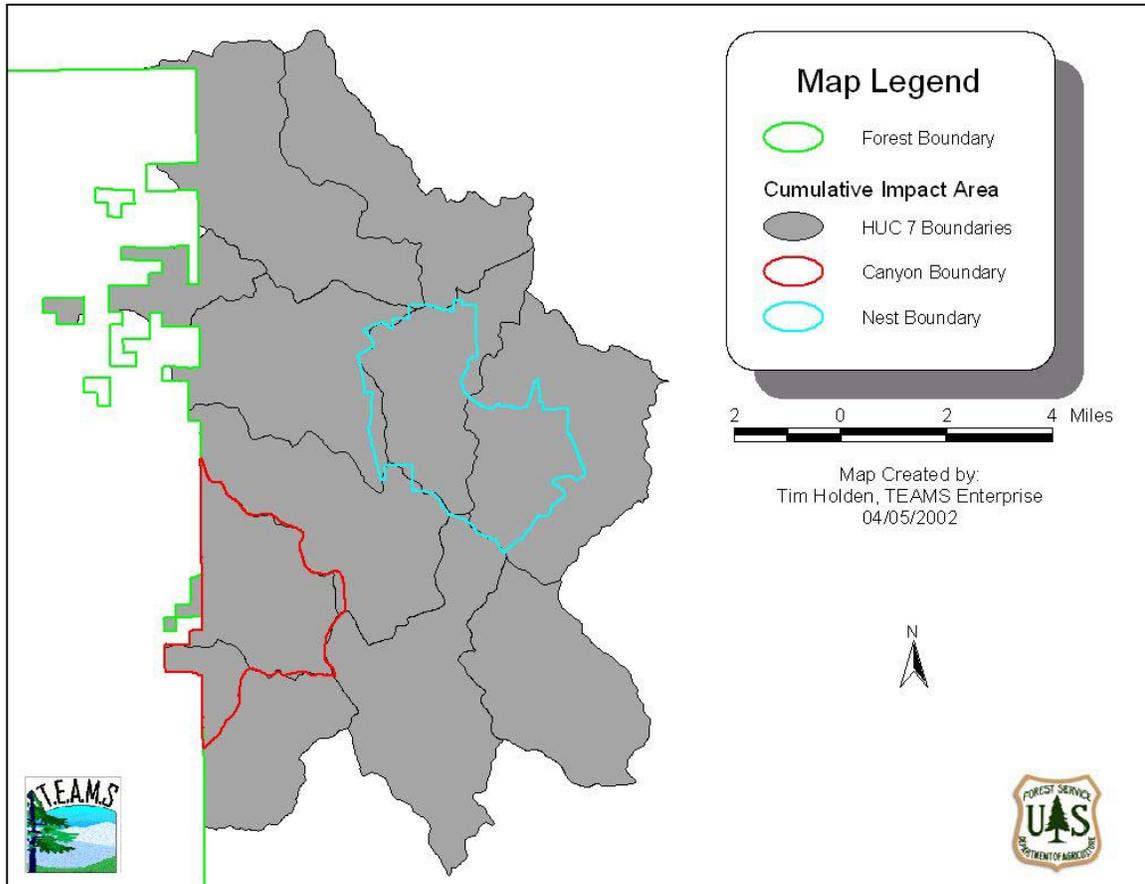
Hunting opportunities would not decrease with the implementation of either action alternative, with the exception of handicapped individuals. They would merrily change. The reduction of open road densities would: 1) reduce vulnerability of animals to road related deaths, including road hunting; 2) provide people with more closed roads to hunt; 3) improve habitat effectiveness for turkeys, deer, and elk during spring, summer, and fall months (Wildlife Report); and therefore 4) likely result in an increase in animal densities.

With the implementation of design features recommended, no change to winter recreation is expected with implementation of either alternative.

**3.8.2.3 Cumulative Impacts**

The cumulative impact area for this recreation analysis is defined as: all lands within the Forest Boundary that are within HUC 7 subwatersheds within or immediately adjacent to the project area (Figure 3-18). This area was chosen, because the Forest Service has no control outside its administrative boundary and the subwatershed boundaries form logical boundaries. People visiting the project area could be expected to visit other places within the cumulative impact area during the same outing. This area consists of 62,468.89 acres or 97.61 square miles. There are currently about 330 miles of open road within the area for an existing open road density of about 3.4 miles per square mile.

**Figure 3-18: Recreation Cumulative Impact Area**



**Alternatives B & C**

The action alternatives would change the open road density within the project area substantially, but have little impact on the cumulative impact area as a whole. There would be about 305 miles of open road within the cumulative impact area remaining following the proposed decommissioning and area closure implementation. This would result in an open road density of about 3.1 miles per square mile within the cumulative impact area.

There are several ongoing and future foreseeable projects within the cumulative impact area. See section 3.1.1. These five ongoing timber sales (Mallo, Run, Redbank, Sohlt, and Thumb) have a cumulative planned closure of about 55 miles of existing roads. These closures are expected to be implemented within the next five years. The cumulative effects of these closures and the proposed closures/decommissioning in the Canyon-Nest action alternatives would result in an open road density of 2.6 miles per square mile. Future foreseeable projects may include more road and area closures. However, there is no way to

document which direction those project areas are headed without a forest-wide roads analysis or all the project areas having individual roads analyses completed. All future foreseeable projects within the cumulative impact area would need to take into consideration any changes made if this project were to implement an action alternative.

### 3.9 Scenic Resources

#### 3.9.1 introduction

The Canyon / Nest Planning Area encompasses the lands along the west edge of the Black Hills National Forest, south and east Beaver Creek Campground, along the Wyoming & South Dakota border. Almost all of these planning areas have a scenic integrity objective of low; timber management should maintain the scenic integrity of these areas. The Canyon / Nest planning area has a scenic make up of:

##### 3.9.2.1 Landscape character

Landscape character gives a geographic area its visual image and consists of the combination of physical, biological, and cultural attributes that make each landscape identifiable or unique. Landscape character embodies distinct landscape attributes that exist throughout an area. The Canyon / Nest planning area is located within the Moderately Dissected Terrain / Mixed Forest Landscape Character Unit. Landscape use patterns throughout this area include developed/transitional uses, natural appearing, historic mining, and rural uses. Management of this area includes evidence of timber harvests, recreational uses, and grazing. Although these activities are occurring and have occurred in the past they are subtle and not visually dominant.

Moderately Dissected Terrain / Mixed Forest Landscape Character Unit:

This LCU covers a broad range of characteristics, from deep stream carved canyons to moderately dissected high plateau landforms. The Nest portion of the planning area is located within that high plateau area, while the Canyon portion is along the top and down the side of the west edge of the plateau. Within the plateau, the forest has more openings and is less dense due to the more gentle rolling landscape. Along the west edge of the plateau, the forest is dense and blankets deeply dissected canyons and drainages. The stands are typically dominated by ponderosa pine, with aspen, spruce and grassland scattered throughout.

The greater portion of this LCU is only seen after one leaves the black top roads and enters onto the secondary road system. Away from the heavily used recreational facilities, a person will find more unsophisticated, quieter, and primitive recreational facilities. Hunters, tent campers, and people wanting to get away from the busy, more advanced facilities use these facilities.

##### 3.9.2.2 Visual absorption capability

Visual Absorption Capability is the ability of an area to withstand management manipulations without significantly affecting its visual character. Approx. 1/3 of the Canyon planning area has a Low VAC, this indicates that the area has a lower than average capability to absorb resource management activity alterations without changing the scenic appearance - these areas are primarily along the west side of the plateau, and the remaining areas, and primarily all of the Nest planning area, have a Moderate or High VAC, indicating areas with a better than average capability to absorb resource management activity alteration without changing the scenic appearance.

##### 3.9.2.3 Inherent scenic attractiveness

Scenic attractiveness is obtained by classifying the landscape into different degrees of variety. This determines those landscapes which are most important and those which are of lesser value from the standpoint of scenic quality. The classification is based on the premise

that all landscapes have some value, but those with the most variety or diversity have the greatest potential for high scenic value. The combination of valued landscape elements such as landform, water characteristics, vegetation, and cultural features are used in determining the measure of scenic attractiveness.

Scenic attractiveness classifications are: **Class A - Distinctive, Class B - Typical and Class C - Indistinctive**. Class A refers to those areas where landform, vegetative patterns, water characteristics and cultural features combine to provide unusual, unique or outstanding scenic quality. These landscapes have strong positive attributes of variety, unity, order, harmony, uniqueness, pattern and balance. Class B refers to those landscapes where landform, vegetation patterns, water characteristics and cultural land use combine to provide ordinary or common scenic quality. Class C refers to those landscapes where landform, vegetation patterns, water characteristics and cultural land use have low scenic quality. Often water and rockform of any consequence are missing in class C landscapes.

The Canyon / Nest project area was considered to have a scenic attractiveness classification A, B and C. There are few very small locations within the planning area that have Scenic Attractiveness A; they are located along ridge tops in the southern portion of the planning area and near Beaver Creek Campground. Scenic class A features are associated with rock, streams, and vegetation to create diverse visual features. Scenic Attractiveness B classification, comprised of a typical Black Hills National Forest scene, makes up less than 1/2 the planning areas. The majority of the project lies within the scenic attractiveness C areas which are associated with dense, even age stands of Ponderosa Pine with few openings, few dominant rock formations, little or no water bodies/streams. Less than 5 % of the planning area is in **Class A - Distinctive** classification, approx. 40 %, is in the **Class B - Typical classification**, and approx. 55% in the **Class C - Indistinctive** classification.

#### 3.9.2.4 Seen areas

Travelways are identified and classified in order to determine which existing observer positions to use in the landscape visibility analysis. Travelways represent linear concentrations of public viewing including freeways, highways, roads, railroads, trails, commercial flight paths, rivers and other waterways. Portions of the landscapes visible from travelways are important to constituents for their scenic quality, aesthetic values and landscape merits. Travelways that lead to important scenic features, residential areas, resorts, recreation areas, unique natural phenomena, wilderness trailheads, national parks, state and county parks, attract higher percentage of users having high concern for scenic quality, thus increasing the importance of those travelways.

Sensitivity Level 1 category travelways that the west half of the Canyon planning area can be viewed from include US Highway 85 and State Highway 585. Sensitivity Level 2 travelways in and around the planning area include County Road 811, and Forest Service Roads 110, 111, 117. All of the planning area is in the Level 2 and 3 categories. (See Agriculture Handbook #701, chapter 4, page 8)

#### 3.9.2 Affected Environment

Existing scenic integrity represents the current status of a landscape. It is determined on the basis of visual changes that detract from the scenic quality of the area. Direct human alterations may be included if they have become accepted over time as positive landscape character values. Existing scenic integrity is the current visual state, which is measured in degrees of deviation from the natural appearance of the landscape character type. These ratings give an indication of the present level of visual quality and visual evidence of management activities. The frame of reference for measuring achievement of scenic integrity levels is the valued attributes of the existing landscape character unit being viewed. In natural or natural appearing character this is limited to natural or natural appearing vegetative patterns and features, water, rock and landforms.

The existing scenic integrity of Canyon / Nest is Moderate to High. The majority of the area is consistent with a natural appearing landscape with past management activities not evident in, or subordinate to, the natural environment.

**3.9.2.1 Inventoried scenic classes**

The inventoried scenic class values are 2, 3, and 4. Within the planning area, Scenic Class 2 areas are along the foreground of the Sensitivity Level 2 travelways in and around the planning area include County Road 811, and Forest Service Roads 110, 111, 117. Approx. 5 % of the planning area has an inventoried scenic class value of 2. Scenic Class 3 - 4 areas are scattered throughout the project area and are associated with areas seen from sensitivity level 3 travelways or small, unseen areas. The scenic class values demonstrate the importance of the views in different areas.

**3.9.2.2 Scenic integrity objectives**

Scenic Integrity Objectives were adopted from the scenic class values. Areas with High Scenic Integrity Objectives should appear natural; management activities should be unnoticeable within 1 year after the completion of the project. Areas with Moderate Scenic Integrity Objectives should appear only slightly altered from the more natural appearing forest. Spacing and age diversity is not as important as in areas of High Scenic Integrity Objectives. Management activities should be unnoticeable within 1 year after the completion of the project. Areas with Low Scenic Integrity Objectives should appear moderately altered with management deviations becoming more noticeable. Management activities, in the form of slash and logging systems, should be unnoticeable within 3 years after the completion of the project. Approximately 5 % of the planning area has a Moderate SIO with the remaining area having a Low SIO.

**3.9.2.3 ROS**

The ROS classification for this project area is Roded Natural (Mgmt Areas 5.1 Resource Production Emphasis). ROS is a function of management areas, which are displayed in the maps section. The physical, social and managerial settings support the Forest Plan ROS classifications of this area. The existing road system and current development of this area do not provide an opportunity for designation of roadless areas. The ROS is compatible with the Scenic Integrity Objectives.

**3.9.2.4 Forest plan direction**

The overall Forest Plan Goals identified in the Black Hills National Forest Land Management Plan are to maintain, protect and if possible enhance the aesthetic values of the forest.

To accomplish the above goals the general forest plan direction for scenic resources requires that the Scenery Management System (SMS) be applied to all National Forest System lands. The SMS methodology is detailed in Agricultural Handbook 701. Specifically, the Forest Plan requires project activities meet adopted Scenic Integrity Objectives (SIO). Field inventories and GIS mapping determine existing SIO's. If the Forest Plan mapped scenic integrity objectives need to be modified to meet management objectives, the scenic integrity objective can be modified if the change is warranted and documented. Criterion for SIO achievement should be met within 1 full growing season after completion of the project for areas with High and Moderate, and 3 full growing seasons after completion of the project for areas of Low and Very Low SIO's.

**3.9.2.5 Desired future condition**

The Canyon / Nest project area borders 2 highly sensitive travelways that provide visitors opportunities to experience the Black Hills National Forest, US Highway 85 and State Highway 585. These travelways provide the average forest visitor access to the general forest. The management of these corridors should borrow valued attributes such as size, shape, edge effect and pattern of natural openings.

Within the immediate foreground of concern level 2 viewsheds, emphasis should be for a natural appearing landscape. Forested areas should appear natural with vegetative treatments creating a balance of differing structural stages. Opportunities to expand or maintain natural vegetation diversity, such as hardwoods & shrubs, should be considered whenever possible.

Landscapes adjacent to private lands need not be managed as restrictively as travel corridors but there should be a blending from the managed forest to the private. Treatments around private lands should blend with both the current condition of the private and Forest Service lands. Attempts should be made to reduce the possible creation of the sometimes-strong line between the private and Forest Service boundaries. The zone width is dependent upon management and use of private lands, slope and variety of vegetation now occurring. Usually, a transition zone of 1.5 times the height of the overstory is recommended.

There are opportunities to provide additional vegetative diversity with areas designated for old growth, yield of timber products, and openings (grass forbs stage), all which can be achieved through timber management. Achievement of the Desired Future Condition goals will not change the adopted scenic integrity objectives but it will enhance the existing scenic quality values by increasing the vegetative diversity of the ponderosa pine stands and making non-pine stands more visible.

### **3.9.2.6 Visual issues / enhancement opportunities:**

Hardwood stands located along the edges of travelways and meadows provide desirable strong color contrast with the surrounding forest, throughout the year. However, encroachment by softwood tree species is taking place and choking out these hardwoods. These hardwood stands should be maintained, and enhanced, where possible, by reducing or eliminating competition.

There are opportunities to provide additional vegetative diversity with areas designated for old growth, yield of timber products, and openings (grass forbs stage), all which can be achieved through vegetative management. Achievement of the Desired Future Condition goals will not change the adopted scenic integrity objectives but it will enhance the existing scenic quality values by increasing the vegetative diversity of the ponderosa pine stands and making non-pine stands more visible.

## **3.9.3 Environmental Effects**

### **3.9.3.1 Alternative A - No Action**

No vegetative treatments would occur under this alternative. The existing stands would continue to grow at the current or reduced levels and in the short term no apparent changes to the scenic resources would occur. In the long term, approx. 25-50 years, the stands will have become dense and move away from the desired open appearance. Continued softwood competition with hardwoods, and encroachment upon the meadows, will reduce vegetation diversity and visual penetration in the forest, thus lowering the Scenic Attractiveness. The more open stands the public expects to see, and consider to be the "natural forest", will be reduced. Those portions of the western half of the Canyon planning area, only viewed in the middleground from the US and State Highways, will experience no visible change from the existing condition.

### **3.9.3.2 Alternatives B & C**

The pre-commercial thinning treatments planned along travelways will open up the stands and allow for visual penetration into the forest. There will be a change in the texture and visible colors in the immediate foreground, foreground, and some middleground views. Landforms, previously hidden by the dense stands of trees will be more discernible. Once the stands are opened, seasonal changes will be more evident such as color changes of grasses, shrubs, and leaves, snow covered ground, and in general more sun light will reach

the forest floor highlighting shrubs, grasses, seedlings and the orange-brown bark of larger diameter ponderosa pine tree boles. However, stumps will be evident in the foreground for a minimum of 20 to 30 years, depending upon the rate of decay. At middle ground views, the lighter colors and textural changes will be more visible. In those units where the trees are relatively evenly spaced and of similar ages, the texture will have a managed appearance.

The hardwood and meadow retention, restoration, and regeneration harvest will help maintain and increase vegetative diversity by maintaining stands of hardwoods and meadows. In the case of hardwood regeneration harvest, there will be an immediate loss of vegetation, however, within five to ten years the stand should be flush with young seedling/saplings 4 to 8 feet tall.

The prescribed fire will have an immediate effect in the landscape that will be evident in the form of fire killed: seedlings and saplings, branches on pole and mature trees, as well as some pole and (if any) mature trees. The smaller trees that are fire killed should be down and well into decomposition at the end of three years - and thus meet the Scenic Integrity Objective of Low to Moderate depending upon the size of the unit. Pole sized fire killed trees will generally remain standing for up to ten years and should meet the SIO if number of trees killed is at natural levels. Branches that are killed will have red needles for 1-2 years (in contrast with the rest of the green needled tree), before they fall and leave needle free branches; at this point they will meet the SIO and appear as a natural condition. Mature fire killed trees can remain standing for up to 50 years or more; if any are killed they should be at natural levels and would meet the SIO once the red fire killed needles have fallen (1-2 years). Black scorch marks will be evident on the boles of the trees from less than one foot, to six feet, in height; these marks will fade over time - at three years they should blend with the bark on trees and appear natural. Overall appearance of the stands should be more "park-like" - with few young trees and an overstory canopy, however this is a short-term effect that will change in approx. ten years or less. In addition, some hardwood shrubs may be stimulated and be evident providing additional visual diversity.

Units with proposed commercial thinning along travelways, meadows and private land should attempt to visually blend existing meadows into denser stands - mimic natural patterns. Many current proposed commercial thin stand locations are visible from private lands and forest roads. These activities should meet the SIO of Low if tree spacing is not uniform.

Seed cut harvests will open up stands creating lighter textured stands with greater viewing depth. Units with proposed seed cuts would remove some screening along travelways. In these areas the boles of tall trees remaining in the foreground may create a very distinct vertical line. To reduce this effect, varying the spatial density of the remaining trees is recommended.

Most overstory removals will remove the overhead canopy leaving a variety of seedlings/saplings and pole sized trees, depending on the site-specific conditions. When trees remaining for wildlife are kept together in a clump, the scenic resource can also benefit; these clumps help to create natural appearing vegetative patterns, within the harvest unit, that are found in the surrounding landscape. Designing these units with irregular shapes, blending the edges into surrounding vegetation patterns, and attempting to simulate the extension of a natural meadow, are techniques used to reduce visual impacts of overstory removals. Heavier overstory removal treatments, where there is only a seedling/sapling understory, will result in the greatest visual impacts to the characteristic landscape. From a middle ground or background viewing distance these changes will be noticeable to the average forest visitor because of the contrast in texture, seasonal/color (snow covered ground vs. dense forest), lighter colors and the possible formation of shadow lines between adjacent stands of denser timber. As re-vegetation occurs, these units will have a finer texture, and lighter green color, than surrounding stands of more mature pine.

Skid trails used to remove trees, as well as landings and slash (piles or scattered), can introduce strong color contrasts and lines in the landscape that appear un-natural or out of place, resulting in a reduction in Scenic Integrity. Mitigation measures should reduce these impacts and the desired SIOs should be achieved.

In general, as a result of timber harvest, tree boles and hardwood inclusions will become more visible in foreground views. This would introduce more dominance from vertical lines created by tree trunks and lighter colors from understory shrubs, grasses and other vegetation. At middleground views the lighter colors, texture changes, and large openings will be visible. Though these changes will visually dominate the landscape, they are acceptable because they would not significantly deviate from the characteristic landscape for this area of the Black Hills.

The proposed actions should meet the SIO for the proposed units from Foreground, Middleground, and / or Background viewing distances.

### **3.9.3.3 Cumulative effects**

#### **3.9.3.3.1 Past activities that have affected present conditions**

Lands within and adjacent to the Canyon / Nest planning area have had vegetation management in the form of timber harvest, salvage, and hardwood restoration with generally limited visual impacts; however, these activities shaped/modified the vegetative patterns we perceive in the landscape. Past vegetative treatments have opened Pine stands up, allowing visual penetration into the forest, and have maintained a natural appearance.

#### **3.9.3.3.2 Present Activities**

On-going resource management projects occurring at this time were designed utilizing visual resource management principles and LRMP Standards and Guidelines that were in affect at the time.

#### **3.9.3.3.3 No action alternative**

On going resource management projects occurring at this time within the planning area were designed to meet designated Scenic Integrity Objectives for this project area.

In the long term, the scenic beauty may be reduced because of a continued loss of vegetation diversity. The overstory will remain monotonous while hardwood and meadow areas will be reduced. The denser forest will reduce the viewing depth from roads and private lands and the potential for natural changes to the landscape such as fire, insect activity, and disease may increase. Depending on the severity of these natural changes, the ability to meet the recommended scenic integrity objectives could be reduced and changes may be much more dramatic.

#### **3.9.3.3.4 Alternatives A & B**

The existing meadows will appear larger as encroaching hardwoods and conifers will have been removed. In other areas, hardwoods will be healthier and register as a mass of specimen trees as competing species will have been removed.

Overall appearance of the stands that receive prescribed fire should move towards a "park-like" appearance, a characteristic desired by the public, as the immediate effects of fire fade over time. Depth of view into the stands will be enhanced, reducing the strong contrast of open space and closed space (dense forested stands).

The forest will have a variety of textures, patterns, vegetation diversity, and seasonal colors. Vegetation will display a variety of age classes, sizes, and densities. There will be greater visual penetration and the understory vegetation will be more visible. Slash

will be at natural levels and slash piles will not be evident from highways and private land. The forest will continue to display evidence of management, as stumps will be visible for several decades within the foreground of sensitivity level 2 roads. The planning area will have the open appearance people have come to expect as the "characteristic forest" of the Black Hills NF.

At middle ground views lighter colors, texture changes, and large openings will be evident. There will be fewer large trees in the landscape, resulting in an overall finer texture and lighter color. Along the west half of the Canyon planning area the greatest impact will occur during the winter. This west side of the plateau, for approx. 15 miles to the north and the south, is densely forested with few openings. However, the valley floor parallel to this plateau is devoid of vegetation. The overstory removals will create the first large openings along this face.

### 3.10 Heritage Resources

A level III heritage resource inventory has been completed for Canyon and Nest, separately. There are 2 sites in Canyon and 3 sites in Nest that are eligible for listing on the National Register of Historic Places (NRHP). All vegetation management, road building and maintenance will protect eligible sites through avoidance. Concurrence on the eligibility determinations and determination of no effect on heritage resources has been obtained from both South Dakota and Wyoming State Historic Preservation Officer's (SHPO). These letters are in the project file. Therefore, no impacts to heritage resources would occur including cumulative.

### 3.11 Transportation System

#### 3.11.1 Introduction

This Transportation Plan was completed at the request of the Hell Canyon District Ranger. It is needed to provide for the economic development and management of the transportation system and to ensure implementation of the Forest Plan in the Canyon and Nest Planning Area.

Management Area prescription 5.1, Resource Production Emphasis is designated in this area as described in the 1997 Revised Land and Resource Management Plan, as Amended. This transportation plan recommends a transportation system based upon existing management area prescriptions.

The transportation and travel management plans were developed during the roads analysis process with an interdisciplinary team on the Hell Canyon District and the environmental assessment process with an interdisciplinary team from the USDA-FS Enterprise T.E.A.M.S. Environmental, economic and social impacts are evaluated in this assessment. The proposed transportation system was developed to meet the identified resource needs. Travel management was identified to manage the transportation system in these areas.

The existing transportation system was inventoried and reviewed in 1998. Road development needed to adequately serve and protect the resources of the area is not completed. The proposed transportation system would fully meet existing and future transportation needs. It would accomplish this by utilizing existing Forest System Roads (FSR), reconstructing existing FSR, reclassifying existing unclassified roads to FSR, constructing additional FSR, and decommissioning un-needed existing unclassified roads. Some minor reconstructing or realigning of existing FSR and unclassified roads may be necessary. Road reconstruction can include betterments, restoration or realignment. Select roads and areas would be closed or obliterated to protect and prevent damage to resources. Construction and conversion of unclassified roads to FSRs may be needed to access commercial sites, not only for this analysis but for future transportation needs. This work would reconstruct the existing road template

including betterments or minor realignment. Construction of new roads (FSR and Temporary) may also be needed to access commercial sites not previously accessed due to private land ownership patterns or steep slopes.

Existing roads that are currently unclassified need to be reclassified as FSR, trails, or obliterated and removed from the transportation layer (FSM 7700, USDA Miscellaneous Report FS-643). For disclosure purposes, all existing unclassified roads that are to be reclassified as FSR in a planning area need to be “constructed” (FSM 7700, 36 CFR212.1, USDA Misc. Report FS-643) and therefore increases the number of miles of road construction substantially disclosed in planning documents, even though they already exist on the ground. For clarification we have listed the miles of road to be “constructed/converted to FSR” and miles of road for new construction separately.

### **3.11.2 Affected Environment**

#### ***Existing Transportation System - Canyon***

The transportation system within the resource area is comprised of approximately 39.6 miles of existing roads. There are 10.9 miles of Forest System Roads and 28.7 miles of unclassified roads on forest land. Currently, 0.2 miles of system roads and 5.4 miles of unclassified road are closed yearlong, resulting in an open road density of 4.1 miles per section. Access for resource management must take into consideration soil and water resources, public safety, economy of access, wildlife and other resource needs. Additional roads would be necessary to access all commercial sites not previously accessed due to private land ownership patterns or steep slopes.

#### ***Existing Transportation System - Nest***

The transportation system within the resource area is comprised of approximately 37.3 miles of existing roads. Arterial and collector roads account for 7.8 miles. There are 15.6 miles of FSR, 10.2 miles of unclassified roads on forest land and 3.7 miles of roads on private property with no Forest Service jurisdiction. Currently, 2.3 miles of unclassified road are closed yearlong, resulting in an open road density of 3.3 miles per section. Open road density, excluding private roads, is 2.9 miles per section. Access for resource management must take into consideration soil and water resources, public safety, economy of access, wildlife and other resource needs. Additional roads would be necessary to access all commercial sites not previously accessed due to private land ownership patterns or steep slopes.

### **3.11.3 Environmental Effects**

#### **3.11.3.1 Effects of the No Action Alternative**

Alternative A, the no –action alternative, maintains the current road system for both the Canyon and Nest areas. No additional roads would be closed. Direct, indirect and cumulative effects from possible continued sediment contribution, possible noxious weed encroachment, and harassment to wildlife species would continue to occur. However, access would not be limited to forest visitors under this alternative. Hunters, people driving for pleasure, and other visitors to the forest would continue to be able to use all roads within the area.

As budgets continue to decline, fewer roads within the areas would be maintained at current standards. This may contribute to increased sediment delivery to drainages and decreased positive driving experiences as the roads become difficult to navigate.

#### **3.11.3.2 Effect of the Action Alternatives - Canyon**

Under all alternatives, existing Forest System Roads would remain open and have a travel management of Accept Use and a Maintenance Level 2, see Travel Management and Maintenance Level definitions listed later in this document.

The proposed transportation system under Alternative B would add 18.0 miles of road to the forest road system by converting 13.6 miles of unclassified roads to FSR and constructing 4.4 miles of FSR. Of this total mileage, 7.9 miles would remain open but would have a travel management strategy of Discourage Use. These maintenance level 2 roads would normally be receiving maintenance at 5-year intervals. The remaining 10.1 miles would have a travel management strategy of Eliminate Use and would be physically closed. These maintenance level 1 roads would also be on a 5-year maintenance schedule if needed. All temporary road construction and unclassified roads would be decommissioned.

The proposed transportation system under Alternative C would add 15.5 miles of road to the forest road system by converting 13.6 miles of unclassified roads to FSR and constructing 1.9 miles of FSR. Of this total mileage, 7.9 miles would remain open but would have a travel management strategy of Discourage Use. These maintenance level 2 roads would normally be receiving maintenance at 5-year intervals. The remaining 7.6 miles would have a travel management strategy of Eliminate Use and would be physically closed. These maintenance level 1 roads would also be on a 5-year maintenance schedule if needed. All temporary road construction and unclassified roads would be decommissioned.

Both Alternatives B and C would reduce the open road density from 4.1 miles/section to 2.2 miles/section. An area closure would also be established within the project area in which all roads would be closed to public motorized use unless posted open.

Direct, indirect, and cumulative effects to the aquatic and terrestrial ecosystem would diminish as these roads are closed or decommissioned. Wildlife species would experience less harassment and there would be a reduced possibility for noxious weed encroachment. Closing and decommissioning these roads would enable the Forest Service to better meet their ability to maintain the remaining road system.

Access to forest visitors would be diminished in the immediate project area, but many miles of roads still exist for those who desire access. These alternatives would have the most impact to people who desire full access to the National Forest.

### **3.11.3.3 Environmental Effects of the Action Alternatives – Nest**

Under all alternatives, the existing arterial forest system roads would remain open and have a travel management of Encourage Use and a Maintenance Level 4. Under both Alternatives B and C, the existing local forest system roads would remain open with a travel management of Accept Use and Maintenance Level 2 except for the following:

- Travel management on 1.4 miles of FSR 117.5D would change from Accept Use to Eliminate Use and this road would be physically closed.
- FSR 377.2 would be removed from the forest road system and 0.5 miles of road would be decommissioned.
- Relocation of FSR 117.5J and FSR 117.5K would result in decommissioning 0.4 miles of previous road alignment and would be removed from the forest road system.
- (See Road Classification, Travel Management, and Maintenance Level definitions listed later in this document).

The proposed transportation system under Alternative B would add 5.2 miles of road to the forest road system by converting 4.4 miles of unclassified roads to FSR and constructing 0.8 miles of FSR. Of this total mileage, 1.4 miles would remain open but would have a travel management strategy of Discourage Use. These maintenance level 2 roads would normally be receiving maintenance at 5-year intervals. The remaining 3.8 miles would have a travel management strategy of Eliminate Use and would be physically closed. These maintenance

level 1 roads would also be on a 5-year maintenance schedule if needed. All temporary road construction and unclassified roads would be decommissioned.

The proposed transportation system under Alternative C would add 4.6 miles of road to the forest road system by converting 3.8 miles of unclassified roads to FSR and constructing 0.8 miles of FSR. Of this total mileage, 0.8 miles would remain open but would have a travel management strategy of Discourage Use. These maintenance level 2 roads would normally be receiving maintenance at 5-year intervals. The remaining 3.8 miles would have a travel management strategy of Eliminate Use and would be physically closed. These maintenance level 1 roads would also be on a 5-year maintenance schedule if needed. All temporary road construction and unclassified roads would be decommissioned.

Both Alternatives B and C would reduce the open road density from 3.3 miles/section to 2.1 miles/section. An area closure would also be established within the project area in which all roads would be closed to public motorized use unless posted open.

Direct, indirect, and cumulative effects to the aquatic and terrestrial ecosystem would diminish as these roads are closed or decommissioned. Wildlife species would experience less harassment and there would be a reduced possibility for noxious weed encroachment. Closing and decommissioning these roads would enable the Forest Service to better meet their ability to maintain the remaining road system.

Access to forest visitors would be diminished in the immediate project area, but many miles of roads still exist for those who desire access. These alternatives would have the most impact to people who desire full access to the National Forest.

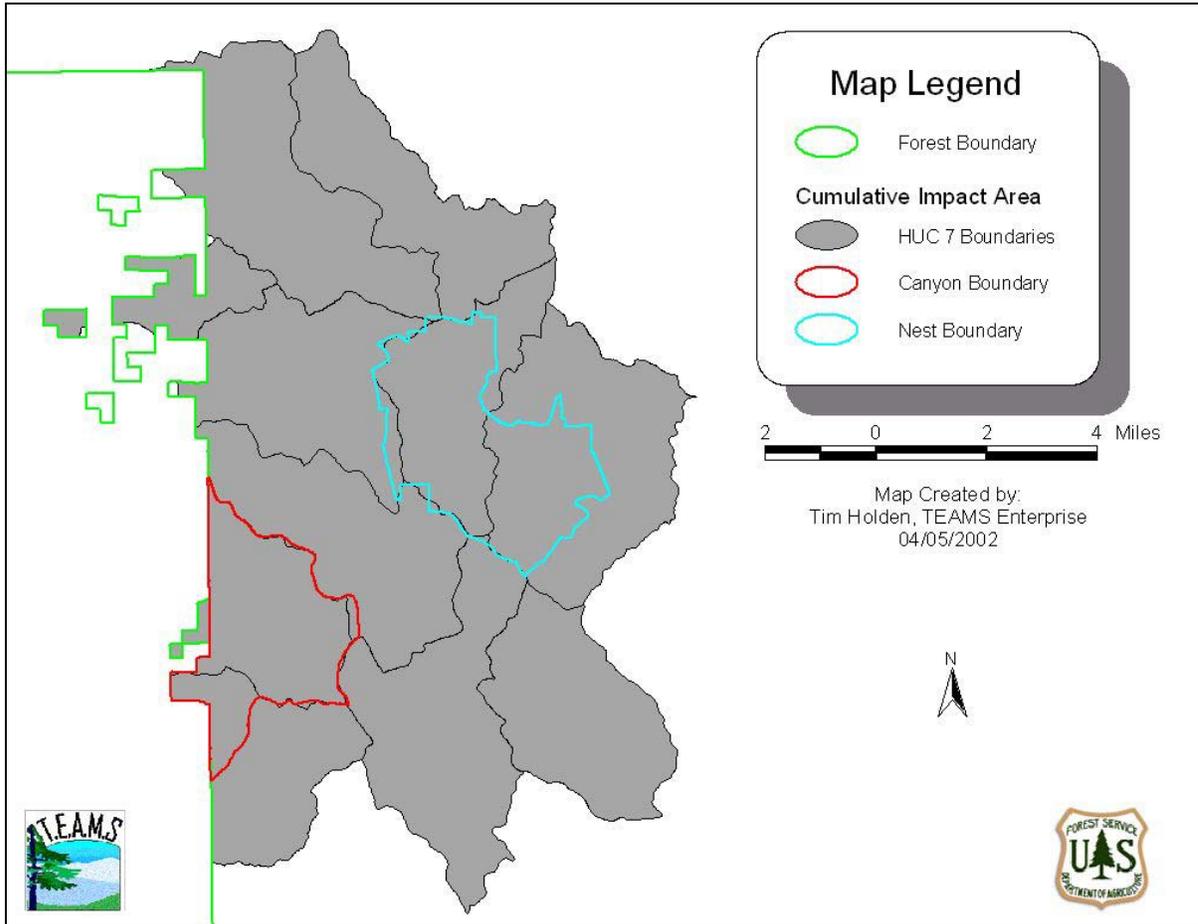
#### **3.11.3.4 Cumulative Impacts**

The cumulative impact area for this road analysis is defined as: all lands within the Forest Boundary that are within HUC 7 subwatersheds within or immediately adjacent to the project area (Figure 3-19). This area was chosen, because the Forest Service has no control outside its administrative boundary and the subwatershed boundaries form logical boundaries. People visiting the project area could be expected to visit other places within the cumulative impact area during the same outing. This area consists of 62,468.89 acres or 97.61 square miles. There are currently about 330 miles of open road within the area for an existing open road density of about 3.4 miles per square mile.

The action alternatives would change the open road density within the project area substantially, but have little impact on the cumulative impact area as a whole. There would be about 305 miles of open road within the cumulative impact area remaining following the proposed decommissioning and area closure implementation. This would result in an open road density of about 3.1 miles per square mile within the cumulative impact area.

There are several ongoing and future foreseeable projects within the cumulative impact area. These five ongoing timber sales (Mallo, Run, Redbank, Soholt, and Thumb) have a cumulative planned closure of about 55 miles of existing roads. These closures are expected to be implemented within the next five years. The cumulative effects of these closures and the proposed closures/decommissioning in the Canyon-Nest action alternatives would result in an open road density of 2.6 miles per square mile. Future foreseeable projects may include more road and area closures. However, there is no way to document which direction those project areas are headed without a forest-wide roads analysis or all the project areas having individual roads analyses completed. All future foreseeable projects within the cumulative impact area would need to take into consideration any changes made if this project were to implement an action alternative.

Figure 3-19: Roads Analysis Cumulative Impact Area



**3.12 Economics**

**3.12.1 Affected Environment:**

The objective of the financial analysis is to provide a comparison of the costs and revenues associated with implementing the various alternatives. However, there are costs, benefits, and revenues for activities occurring in the Canyon/Nest area that are not included in this analysis. The analysis does not include these activities -- recreation management, livestock grazing, and Christmas tree cutting -- because they occur across the District and Forest and they are not directly related to the proposed action. The proposed action will not substantially change these other items.

This EA presents two action alternatives for managing the Canyon/Nest area for the next 10 years. The financial analysis only includes those actions connected to silvicultural treatments that would occur over the next 10 years. The only benefit included in the analysis is the volume of timber harvest per alternative.

**3.12.2 Financial Effects**

The proposed action and other action alternative described in the EA are in compliance with the Forest Plan, as amended, and the economic assumptions upon which it is based. Any future project proposal will conduct a separate environmental analysis, including economics. The values shown are intended to show relative efficiency of each alternative and serve as a

comparison between alternatives. The values will fluctuate with changes in costs and stumpage values, and do not reflect actual costs and revenues. The following table displays the economic measures for the alternatives.

**Table 3-44: Financial Returns by Alternative**

	<b>Alt. A</b>	<b>Alt. B</b>	<b>Alt. C</b>
<b>Present Net Value (PNV)</b>	\$0	-\$114,675 (Canyon) \$200,349 (Nest)	\$47,670 (Canyon) \$28,915 (Nest)
<b>Revenue/cost Ratio</b>	N/A	0.87 (Canyon) 1.35 (Nest)	1.09 (Canyon) 1.07 (Nest)

The main factors leading to the differences between the action alternatives are:

- Volume of timber harvested, and
- Differences in road costs

The No Action Alternative has a zero Present Net Value (PNV) since no actions will occur under that alternative.

The action alternatives have a positive PNV, with the exception of the proposed action for the Canyon portion only. The main reason for the negative PNVs is the high cost of roadwork and cable logging required and low stumpage values. Alternative B has the highest total PNV. Alternative C has a lower PNV because it has similar road cost and the harvests less volume.

Another reason for the low PNVs and moderate revenue/cost ratios is the failure of this type of analysis to reflect certain benefits associated with the project. Some of the road reconstruction items correct long-standing problems affecting water quality, as addressed in previous sections. Activities such as road reconstruction, prescribed burning, thinning, and removal of pine encroachment have known costs. In this analysis the costs are attributed wholly to the timber sale, but benefits are not reflected, because it is difficult to place a monetary value on such things as an acre of winter range, an acre of thermal cover, increased browse production or a clean stream. Other possible benefits include reduced fire risk and forage for livestock. Therefore, the revenue/cost ratios are not representing the total picture of costs and benefits and tend to overweight the costs and undervalue the benefits.

Treatments associated with the hazardous fuels reduction treatments proposed in Alternatives B & C are not included in this analysis. All of the proposed fuels reduction treatments would be funded under the National Fire Plan, the primary purpose of which is to reduce the probability of a catastrophic wildfire event, or through Knutsen-Vandenburg (K-V) funding.

### 3.13 Specifically Required Disclosures

#### 3.13.1 Wetlands and Floodplains – Affected Environment and Environmental Consequences:

Hidden Lake is the only lake that occurs in the project area. There would be no trees salvaged within 50 feet of the lake in order to protect the dispersed recreation site. No wetlands are present in the project area. A 50-foot no harvest buffer would be applied to the seasonally flowing drainage bottoms under Alternatives 2 and 4. There would be no other direct, indirect, or cumulative effects to wetlands or floodplains with any action alternative. The no action alternative would have no effect on wetlands or floodplains.

#### 3.13.2 Prime Farmlands, Rangelands, or Parklands – Affected Environment and Environmental Consequences:

The project area is designated and managed in accordance to the Management Areas designated by the Forest Plan, as amended. The project area is located in Management Area 5.1. No prime farmlands, rangelands or parklands exist in the project area; therefore, no direct,

indirect, or cumulative effects would occur. Effects to forest lands are described under the Vegetation section previously in this Chapter.

**3.13.3 Roadless Areas – Affected Environment and Environmental Consequences:** The Canyon/Nest project area has an open road density of about 4.1 miles per section in Canyon and 3.3. Principal access to this area is via FSR 110. Existing or newly constructed roads would be used for proposed activities.

There are no areas of 1000 acres or more within 3 miles of the project area. No roadless or wilderness areas are adjacent to the project; thus the action alternatives would have no direct, indirect, or cumulative effect on any roadless or wilderness area. The no action alternative would have no effect on roadless areas.

**3.13.4 Environmental Justice – Affected Environment and Environmental Consequences:** Alternatives B or C do not impose a hardship on minority or low-income communities. Alternative A would maintain the existing economical status that currently exists and may continue to contribute to economic hardships in the area. The alternatives would not produce hazardous waste or conditions that might affect human populations. There would be no other direct, indirect, or cumulative effects to environmental justice with any alternatives.

**3.13.5 Public Safety – Affected Environment and Environmental Consequences:** Short-term increases in log truck traffic would occur during project operations under Alternatives B and C. These increases in traffic are not expected to cause any adverse safety problems in the area. There would be no other direct, indirect, or cumulative effects to public safety from any alternative. The no action alternative would have no effect on public safety.

**3.13.6 Potential or Unusual Expenditures of Energy:** Alternatives B and C would require expenditures of fuel for all operations. This project would not result in any unusual expenditure of fuel. No other direct, indirect, or cumulative effects are expected to occur. The no action alternative would have no effect on expenditures of energy.

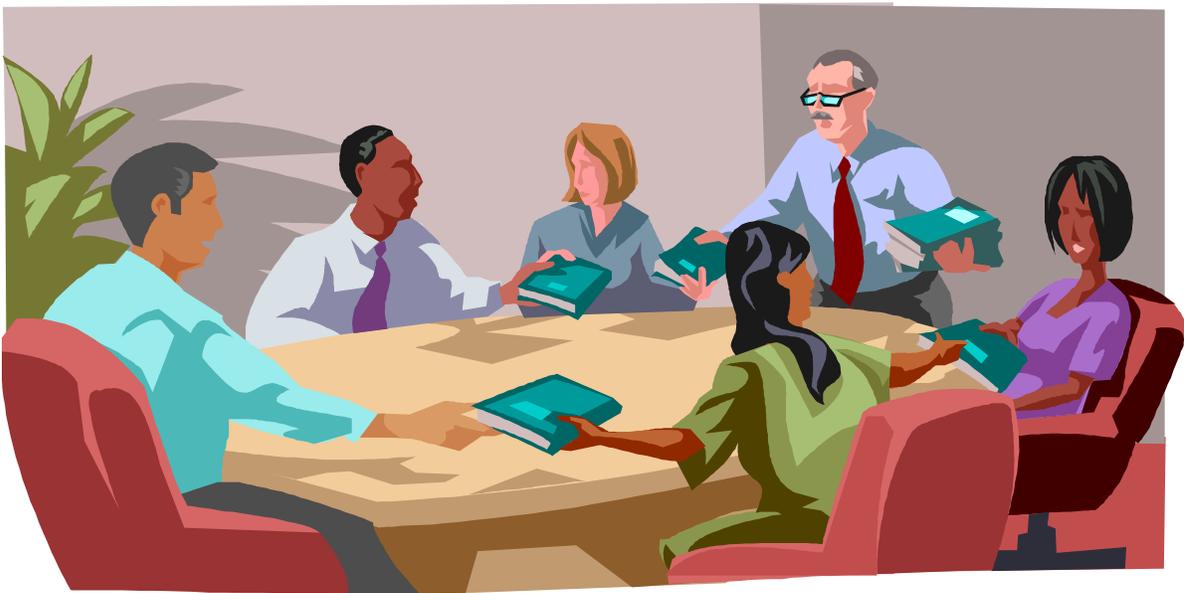
**3.13.7 Conflicts with Plans or Policies of Other Jurisdictions:** Implementation of any action alternative would not conflict with the plans or policies of other jurisdictions, as the area proposed for activities is entirely within Forest Service jurisdiction.



# CHAPTER 4

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## LIST OF PREPARERS





## Chapter 4 – List of Preparers

### 4.1 Interdisciplinary Team

The following people were members of the Interdisciplinary Team (IDT) that directly participated in the preparation of all or part of this Environmental Assessment:

Alice Allen	Wildlife Biologist – T.E.A.M.S Enterprise
Roy Beal	Fuels Specialist – T.E.A.M.S Enterprise
Tiffany Cattau	Fisheries Biologist – T.E.A.M.S Enterprise
Suzan Hixson	Hydrologist – T.E.A.M.S Enterprise
Tim Holden	Writer/Editor, IDT Leader – T.E.A.M.S Enterprise
Jeff Knutson	Engineering – Black Hills National Forest
Greg Lind	Writer/Editor, Range, Noxious Weeds – T.E.A.M.S Enterprise
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The following people were members of the Hell Canyon Ranger District or Black Hills National Forest that participated in data transfer or review of all or part of this Environmental Assessment:

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Jim Myers	District Silviculturist, Hell Canyon Ranger District
Brad Phillips	District Wildlife Biologist, Hell Canyon Ranger District
Chris Wood	South Zone Engineering Tech, Black Hills National Forest

Additional persons who assisted with providing information or other assistance in completing this Environmental Assessment include:

Debbie Anderson	NEPA Guidance and Document Review, North Umpqua R.D., Umpqua National Forest
Margaret Farrell	Geographic Information Systems Specialist, Hell Canyon R.D.



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[http://www.fw.vt.edu/fishex.nmex\\_main/species/010125.htm](http://www.fw.vt.edu/fishex.nmex_main/species/010125.htm) (creek chub)  
[http://www.fw.vt.edu/fishex/nmex\\_main/species/010615.htm](http://www.fw.vt.edu/fishex/nmex_main/species/010615.htm) (rainbow trout)
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# APPENDICES

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## APPENDIX A

### Threatened and Endangered Species Biological Assessment And Sensitive Species Biological Evaluation

#### Conclusion of Effects

The following table displays the determinations for Region 2 sensitive species. All action alternatives either, 1) will have no impact, 2) may beneficially impact, or 3) may impact individuals but is not likely to result in a loss of viability on the planning area nor cause a trend toward federal listing of a loss of species viability range wide.

#### Project: Canyon/Nest Project

Species Name	Scientific Name	Species and/or Habitat present?	Summary of BE Finding
Bald Eagle	<i>Haliaeetus leucocephalus</i>		No Affect
American Marten	<i>Martes americana</i>	Habitat present	No impact
Swift Fox	<i>Vulpes velox</i>	No	No impact
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>	No	No impact
Dwarf Shrew	<i>Sorex nanus</i>	No	No impact
Fringe-tailed Myotis	<i>Myotis thysanodes pahapensis</i>	No	No impact
Townsend's Big-eared Bat	<i>Plecotus townsendii</i>	No	No impact
Spotted bat	<i>Euderma Maculatum</i>	No	No impact
Osprey	<i>Pandion haliaetus</i>	No	No impact
Northern Goshawk	<i>Accipiter gentiles</i>	Species present	May impact individuals...
Ferruginous hawk	<i>Buteo regalis</i>	No	No Impact
Peregrine falcon	<i>Falco peregrinus</i>	No	No impact
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	No	No impact
Western burrowing owl	<i>Athene cunicularia hypugea</i>	No	No impact
Olive-sided Flycatcher	<i>Contopus borealis</i>	No	No impact
Pygmy Nuthatch	<i>Sitta pygmaea</i>	No	No impact
Black-backed Woodpecker	<i>Picoides arcticus</i>	Habitat present	May impact individuals...
Three-toed Woodpecker	<i>Picoides tridactylus</i>	Habitat present	May impact individuals...
Lewis' Woodpecker	<i>Melanerpes lewis</i>	No	No impact
Golden-crowned Kinglet	<i>Regulus satrapa</i>	No	No impact
Purple Martin	<i>Progne subis</i>	No	No impact
Fox Sparrow	<i>Passerilla iliaca</i>	No	No impact
Merlin	<i>Falco columbarius</i>	No	No Impact
Upland sandpiper	<i>Bartramia longicauda</i>	No	No impact
Loggerhead Shrike	<i>Lanius ludovicianus</i>	No	No impact
Osprey	<i>Pandion haliatus</i>	No	No impact
Black Hills Red-bellied Snake	<i>Storeria occipitomaculata pahasapae</i>	Habitat present	May impact individuals...
Milk Snake	<i>Lampropeltis triangulum</i>	No	No impact
Northern Leopard Frog	<i>Rana pipiens</i>	Species present	No impact
Tiger Salamander	<i>Ambyostoma tigrinum</i>	Species present	May impact individuals...
Tawny Crescent Butterfly	<i>Phycoides batesii</i>	Species present	May beneficially impact
Regal Fritillary	<i>Speyeria idalia</i>	No	No impact
Cooper's Rocky	<i>Oreohelix strigosa cooperi</i>	No	No impact



Species Name	Scientific Name	Species and/or Habitat present?	Summary of BE Finding
Mountain Snail			
Striate Disc	<i>Discus shemiki</i>	No	No impact
American Trailplant	<i>Adenocaulon bicolor</i>	No	No impact
Northern Arnica	<i>Arnica lonchophylla</i>	Habitat present	May impact individuals...
Greater Bladder Sedge	<i>Carex intumescens</i>	No	No impact
Long-stalk Sedge	<i>Carex pedunculata</i>	No	No impact
Treelike Clubmoss	<i>Lycopodium dendroideum</i>	No	No impact
Southern Maidenhair Fern	<i>Adiantum capillus-veneris</i>	No	No impact
Giant Helleborine	<i>Epipactis gigantea</i>	No	No impact
Large Round Leaf Orchid	<i>Platanthera orbiculata</i>	No	No impact
Great-spurred Violet	<i>Viola selkirkii</i>	No	No impact
Trailing Clubmoss	<i>Lycopodium complanatum</i>	No	No impact
Bloodroot	<i>Sanguinaria canadensis</i>	No	No impact
Dwarf Scouring Rush	<i>Equisetum scirpoides</i>	No	No impact
Marsh Muhly	<i>Muhlenbergia glomerata</i>	No	No impact
Fox Tail Sedge	<i>Carex alopecoidea</i>	No	No impact
Woolrush	<i>Scirpus cyperinus</i>	No	No impact
Autumn Willow	<i>Salix serrisima</i>	No	No impact
Autumn Coralroot	<i>Corallorhiza odontorhiza</i>	Unknown	No determination
Prairie Moonwort	<i>Botrychium campestre</i>	Unknown	No determination

/s/ *Alice A. Allen*

04/24/2002

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Prepared by: Alice A. Allen  
GS-11 Wildlife Biologist – T.E.A.M.S Enterprise

Date

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## Appendix B

### BEST MANAGEMENT PRACTICES COMPLIANCE FOR CANYON AND NEST TIMBER SALES

33 CFR 323.4(a)(6) [States that] Construction or maintenance of farm roads, forest roads, or temporary roads for moving mining equipment, where such roads are constructed and maintained in accordance with best management practices (BMPs) to assure that flow and circulation patterns and chemical and biological characteristics of waters of the United States are not impaired, that the reach of the waters of the United States is not reduced, and that any adverse effect on the aquatic environment will be otherwise minimized. These BMPs which must be applied to satisfy this provision shall include those detailed BMPs described in the state's approved program description pursuant to the requirements of 40 CFR 233.22(i), and shall also include the following baseline provisions:

(NOTE: Items in bold print are engineering design guidelines or standard operating procedures as related to each BMP.)

- i. Permanent roads (for farming or forestry activities), temporary access roads (for mining, forestry, or farm purposes) and skid trails (for logging) in waters of the United States shall be held to the minimum feasible number, width, and total length consistent with the purpose of specific farming, silvicultural or mining operations, and local topographic and climatic conditions;

Reduce steep (greater than 10%) grades where possible. Consider seasonal or annual road and area closures to protect roads. Reference FSH 7709.56 Road Pre-construction Handbook for all design standards. Road Management Objectives, including road standards, maintenance level and travel management, are documented and approved for all roads. Minimize new construction. New roads are constructed to the minimum standard necessary for the type of use in accordance with FSH 7709.56. New road construction is closed following timber management activity unless documented and approved Road Management Objective states otherwise.

- ii. All roads, temporary or permanent, shall be located sufficiently far from streams or other water bodies (except for portions of such roads which must cross water bodies) to minimize discharges of dredged or fill material into waters of the United States;

Relocate roads out of bottoms to minimize impact in intermittent draws. Outlets of drainage devices provide for dispersion of water to dissipate flow. Catchment basins are of adequate size and location to prevent soil movement off the site. Minimize crossings of perennial streams. Consult with Forest hydrologist and fisheries biologist to develop the proper structure required for the stream characteristics, flow volume, soil type and drainage area. Placement of the structure shall be in accordance with State and Federal laws regarding construction in and near waterways, including placement of fill and measures to control sedimentation. Maintain a vegetative buffer as identified by Vbfr Equation between streams and parallel roads sufficient enough to eliminate movement of soil to the stream. Catchment basins are used where terrain permits. Fill slopes and other disturbed areas are revegetated. Road construction in non-wetland meadows is in accordance with the Forest Plan.

- iii. The road fill shall be bridged, culverted, or otherwise designed to prevent the restriction of expected flood flows;

Drainage devices are designed and installed in accordance with 33CFR323.4(a)(6) and applicable State BMPs and guidelines set forth in FSH 7709.56 Road Pre-construction Handbook and FSH 7709.56b Drainage Structures Handbook. Surface drainage devices include culverts, rolling dips and water diversion structures. Culverts and water diversion structures are generally considered for use on grades steeper than 10%. Culvert size and spacing are in accordance with the above mentioned Handbooks. Water diversion structures are spaced from 150' to 200' apart

as needed on continuous grades. Culverts and stream crossings will be stabilized to the 100-year event. Rolling dips are spaced from 200' to 500' apart, on continuous grades without breaks, depending on soil type and road grade and may be plated with rocky material to protect the soil. Outlets of drainage devices provide for dispersion of water to dissipate flow. Catchment basins are of adequate size and location to prevent soil movement off the site. Subsurface drainage devices are in accordance with Handbook references. Aggregate surfaced roads shall be routinely maintained. Ditches that have revegetated may be bladed if they are not functioning as designed. Culverts and other drainage devices shall be cleaned of debris to ensure their function is maintained. Minimize crossings of perennial streams. Consult with Forest hydrologist and fisheries biologist to develop the proper structure required for the stream characteristics, flow volume, soil type and drainage area. Placement of the structure shall be in accordance with State and Federal laws regarding construction in and near waterways, including placement of fill and measures to control sedimentation. Routinely maintain bridges and culverts to ensure unrestricted flow.

- iv. The fill shall be properly stabilized and maintained during and following construction to prevent erosion

Rocky fills and geotextiles are used in marshy, wet areas when avoidance is not possible. Highly erodible soils, steep grades and flat areas may be protected by placement of aggregate on the roadbed. Depth of aggregate may vary depending on type of soil but 4" is generally the minimum depth applied to ensure proper bearing strength and soil protection. Where crossings of intermittent drainages, draws and valleys are proposed, 1' to 2' of rocky material may be used to protect the soil. Cut and fill slopes are seeded as soon as possible following completion of road template. Natural revegetation also occurs to supplement specified seeding. Aggregate surfaced roads shall be routinely maintained. Ditches that have revegetated may be bladed if they are not functioning as designed. Culverts and other drainage devices shall be cleaned of debris to ensure their function is maintained. Ensure fill slope protection with riprap, gabions, prompt seeding of slopes and/or other methods approved by the hydrologist, fisheries biologist and soil scientist. Placement of the structure shall be in accordance with State and Federal laws regarding construction in and near waterways, including placement of fill and measures to control sedimentation. Immediately repair damaged or eroded fill slopes.

- v. Discharges of dredged or fill material into waters of the United States to construct a road fill shall be made in a manner that minimizes the encroachment of trucks, tractors, bulldozers, or other heavy equipment within waters of the United States (including adjacent wetlands) that lie outside the lateral boundaries of the fill itself;

Placement of the structure shall be in accordance with State and Federal laws regarding construction in and near waterways, including placement of fill and measures to control sedimentation. Maintain a vegetative buffer as identified by Vbfr Equation between streams and parallel roads sufficient enough to eliminate movement of soil to the stream. Catchment basins are used where terrain permits. Fill slopes and other disturbed areas are revegetated. Construction equipment will not operate in vegetative buffer except as necessary to construct fills. Properly permitted (by Corps of Engineers) discharge of fill or dredged material into waters of the United States will be performed with minimal encroachment of construction equipment outside the fill itself. Minimize disturbance of vegetation in waters of the United States during construction and maintenance of roads.

- vi. In designing, constructing, and maintaining roads, vegetative disturbance in the waters of the United States shall be kept to a minimum;

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Cut and fill slopes are seeded as soon as possible following completion of road template. Natural revegetation also occurs to supplement specified seeding. Aggregate surfaced roads shall be routinely maintained. Ditches that have revegetated may be bladed if they are not functioning as designed. Culverts and other drainage devices shall be cleaned of debris to ensure their function is maintained. Minimize crossings of perennial streams. Consult with Forest hydrologist and fisheries biologist to develop the proper structure required for the stream characteristics, flow volume, soil type and drainage area. Placement of the structure shall be in accordance with State and Federal laws regarding construction in and near waterways, including placement of fill and measures to control sedimentation. Routinely maintain bridges and culverts to ensure unrestricted flow. Construction equipment will not operate in vegetative buffer except as necessary to construct fills. Minimize disturbance of vegetation in waters of the United States during construction and maintenance of roads.

- vii. The design, construction and maintenance of the road crossing shall not disrupt the migration or other movement of those species of aquatic life inhabiting the water body;

Placement of the structure shall be in accordance with State and Federal laws regarding construction in and near waterways, including placement of fill and measures to control sedimentation.

- viii. Borrow material shall be taken from upland sources whenever feasible;

Borrow material needed for road construction will be taken from upland areas. Also, discharge of waste material from maintenance of drainage structures shall be placed at upland sites.

- ix. The discharge shall not take, or jeopardize the continued existence of, a threatened or endangered species as defined under the Endangered Species Act, or adversely modify or destroy the critical habitat of such species;

The presence of Threatened and Endangered Species and their habitat is identified in Project Area analysis. Seasonal and/or annual road closures for wildlife considerations are identified in Travel Management documentation.

- x. Discharges into breeding and nesting areas for migratory waterfowl, spawning areas, and wetlands shall be avoided if practical alternatives exist;

Marshy, wet areas are avoided where possible. Rocky fills and geotextiles are used in marshy, wet areas when avoidance is not possible. Placement of the structure shall be in accordance with State and Federal laws regarding construction in and near waterways, including placement of fill and measures to control sedimentation. Immediately repair damaged or eroded fill slopes. Maintain a vegetative buffer as identified by Vbfr Equation between streams and parallel roads sufficient enough to eliminate movement of soil to the stream. Catchment basins are used where terrain permits. Fill slopes and other disturbed areas are revegetated. Road construction in non-wetland meadows is in accordance with the Forest Plan.

- xi. The discharge shall not be located in the proximity of a public water supply intake;

Specific mitigation measures would apply to municipal watersheds if utilized.

- xii. The discharge shall not occur in areas of concentrated shellfish production;

There are no areas of concentrated shellfish production on the Black Hills National Forest.

- xiii. The discharge shall not occur in a component of the National Wild and Scenic River System;

There are no components of the National Wild and Scenic River System on the Black Hills National Forest.

- xiv. The discharge of material shall consist of suitable material free from toxic pollutants in toxic amounts;

Materials to be used will be manufactured from non-contaminated sources.

- xv. All temporary fills shall be removed in their entirety and the area returned to its original elevation.

Under Public Works, compliance will be enforced by use of FAR clause 52.223-2 by the authorized contract personnel. Under timber sales, compliance will be ensured by enforcement of timber sale contract clauses (such as B6.62 and C6.62#) by designated timber sale contract personnel. All temporary structures (including fills) to be removed as part of specified work will be enforced from specifications and project notes contained and referenced in the contract.

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## APPENDIX C

### Forest Service Response to Comments On the Draft Environmental Assessment For the Canyon/Nest Project

The 30-day Public Comment period for the Canyon/Nest Project Environmental Assessment (EA) opened on April 30, 2002 and closed on May 29, 2002. The public was asked to give comment on Alternative B of the EA. Eleven timely comment letters were received.

Comments were received from the following persons:

1. Native Ecosystems Council (Sara Jane Johnson)
2. Biodiversity Associates (Jeremy Nichols and Brian Brademeyer)
3. Black Hills Forest Resource Association (Aaron Everett)
4. South Dakota Department of Game, Fish and Parks (Shelly Deisch)
5. Pope and Talbot, Inc. (David Brenneisen)
6. Black Hills Regional Multiple Use Coalition (Tom Troxel)
7. Prairie Hills Audubon Society (Nancy Hilding)
8. State of Wyoming, Office of Federal Land Policy (Tracy J. Williams)
9. Wyoming Department of State Parks & Cultural Resources, State Historic Preservation Office
10. Biodiversity Associates (Jeremy Nichols and Brian Brademeyer)
11. Office of State Lands and Investments (Ron Arnold)

All substantive comments submitted must be considered and addressed. A substantive comment is defined (Forest Service Manual 1090.5) as:

"A comment that provides factual information, professional opinion, or informed judgments germane to the action being proposed."

Examples of substantive comments are those which:

- \* provide new information pertaining to the preferred alternative or an alternative in the analysis;
- \* identify a new issue or expand upon an existing issue;
- \* identify a different (alternative) way to meet the purpose and need of the project;
- \* provide an opinion regarding one or more alternatives, including the basis or rationale for that opinion;
- \* point out a specific flaw in the analysis, or;
- \* identify a different source of credible research, which if used in the analysis could result in different effects.

It should be noted that all comments received are valuable. Alternative preferences, values and feelings also contribute to increased understanding and were carefully read and considered. The following narrative contains the comments, grouped by subject matter, along with the Forest Service response.

## ROAD CONSTRUCTION/TRAVEL MANAGEMENT

**Letter #1 Comment:** The amount of road construction requires an EIS. A total of almost 30 miles of road construction will accompany this project. This is happening at the same time that the previous Chief of the Forest Service said the agency had too many roads, and needed to cut back. Now you are converting many unclassified roads into classified roads, plus building new roads. The problem of too many roads has already been identified, so you need to address your proposal with an EIS to evaluate the significant impacts this program will have.

**Response:** As disclosed in Chapter 3 of the Environmental Assessment (EA), section 3.11, many of the roads that would be constructed under Alternative B are existing, unclassified, roads that are to be placed on to the Forest System Roads (FSR) inventory. Sections 3.11.3.2 and 3.11.3.3 document that under Alternative B, a total of 18 miles of unclassified road would be converted to FSR. Only 5.2 miles of new construction would occur. Of these roads, a total of 13.9 miles would be physically closed to users. In addition about 23.6 miles of existing unclassified road would be decommissioned. The combination of constructing new FSR roads & closing, decommissioning and converting & closing existing open unclassified roads would reduce the open road density from 4.1 miles per section to 2.2 miles per section in Canyon and from 3.3 miles per section to 2.1 in Nest. The overall changes in road management would result in beneficial effects to forest wildlife, reduce noxious weed encroachment and improve the Forest's ability to maintain the remaining road system (Chapter 3, sections 3.4, 3.11.3.2, and 3.11.3.3). These changes are not considered to be significant changes, nor are they predicted to cause significant impacts.

**Letter #1 Comment:** There was no analysis to demonstrate why the conversion of unclassified roads to classified roads, as well as new construction is a compelling management need and a public benefit. There are a host of problems identified with roads, including a few noted in your EA. These include impacts on big game, mountain lions, and snags. The problems associated with current road densities need to be more fully addressed, including the impact of closed roads. It is not clear why the public needs this massive road density on this landscape (over 4 miles per section), even if roads are intermittently closed to public use.

**Response:** A roads analysis was conducted according to the six-step process identified in the national guidance document *Roads Analysis: Informing Decisions About Managing the National Forest Transportation System* (USDA Forest Service 1999). This analysis (see the Analysis File), conducted in March of 2002, documented that the unclassified roads would contribute to the overall road system by increasing access to stands for silvicultural and fire management purposes, fully meeting existing and future management needs. In addition, by adding these roads to the system, they would be maintained on a regular basis, preventing problems that may occur due to lack of maintenance. Chapter 3 of the EA, Section 3.11, and the Roads Analysis (Analysis File) document the analysis and conclusions made by the interdisciplinary team that the proposed road system would meet current and future needs.

**Letter #1 Comment:** Please include an analysis of the unroaded habitat areas that will be provided in the project areas. We would like to know which areas will be free of any roads, including closed roads, since these roads will still be used by hunters for access and create disturbances to wildlife. In addition, closed roads will be opened intermittently for logging, and will have additional impacts, including firewood harvest. Please discuss the road management in terms of long-term security for wildlife, and please discuss the Region 1 Forest Service concept that big game need 30% of the landscape as security. Where will this security occur not only in the project area, but in the cumulative effects area? If none are available, what means do you measure impacts to wildlife?

**Response:** There are few unroaded areas in the project boundary (Roads Analysis page 18). No additional unroaded areas would be created with the implementation of either action alternative. Firewood collection would likely occur if roads were temporarily opened for

logging; however, no additional impacts are expected as the area is currently closed to cutting standing dead trees for firewood. Gated and permanent closures and decommissioning of roads would increase the security for wildlife (see the Roads Analysis in the Analysis File), especially big game. Region 2 and specifically the Black Hills National Forest have not adopted a 30 percent landscape security standard for big game. The concept of "Security Habitat" was developed in Region 1 to address specific problems with elk management. Those problems are currently not affecting elk in South Dakota. Impacts to wildlife, in this case, big game, are measured by changes in Habitat Effectiveness, as disclosed in sections 1.4.3.1.1 and 3.4.4.2.1.

**Letter #2 Comment:** The Canyon/Nest Draft EA states on page 3-97 that, "Road development needed to adequately serve and protect the resources of the area is not completed. The proposed transportation system would fully meet existing and future transportation needs." What specific needs must be met by the proposed transportation system? How will the proposed transportation system meet these specific needs? How do road developments serve and protect resources? As it is, the USFS has provided no basis for determining the proposed transportation plan is necessary and must be implemented to adequately serve and protect the resources of the Canyon/Nest project area.

**Response:** The roads analysis (in the Analysis File) identified numerous deficiencies in the current road system that impair resource values and inhibit access to commercial sites (EA section 3.11). A properly designed road system can reduce resource damage and provide access to uses identified in the Forest Plan, and as documented in the Roads Analysis.

**Letter #2 Comment:** Furthermore, what will the effects of reclassifying roads as Forest System Roads be? Will traffic increase on these roads? What will the effects of increase traffic be? Will off-road vehicle use increase as a result of reclassifying roads as Forest System Roads? What will the effects of increased off-road vehicle use be? Will illegal firewood cutting increase as a result of reclassifying roads as Forest System Roads? How many user-created routes exist within the Canyon/Nest project area? How many roads that will be reclassified as Forest System Roads were user-created? The USFS also failed to discuss any past or present actions that may cumulatively affect travel management in the Canyon/Nest project area. For example, what previous travel management analyses and projects has the USFS completed and what are the effects of these past actions? Has the USFS received any past reports of resource damage being caused from any existing roads? Has the USFS received any past reports of resource damage being caused by the creation of routes by Forest users? Has the USFS received any past reports of resource damage being caused from off-road vehicle use in the Canyon/Nest project area? The USFS has provided insufficient information to support the agency's claim that the proposed transportation plan is needed and will not significantly affect the Canyon/Nest project area.

**Response:** Reclassifying unclassified roads would give the Forest Service the ability to place these roads under the maintenance schedule. By converting these roads to classified roads, maintenance would occur, improving the ability of the Forest Service to mitigate any damage that could potentially be created by these roads. Traffic within the project area and along haul routes is expected to temporarily increase as the proposed activities take place. The effects of the expected increased traffic were taken into consideration and analyzed in the sections 3.4 and 3.11. Wheeled off-road vehicle use is expected to decrease as a result of this project, primarily through the use of area closures as disclosed in section 3.8.2.2. A total of 41.6 miles of unclassified roads exist within the project area. For the purpose of this analysis, all of the unclassified roads were assumed to be user-created. However, some of them may have been created by the Forest Service under past projects and were not added to the system at that time due to various reasons (ie – temporary roads that were not decommissioned following treatment). Of the existing 41.6 miles of unclassified road, 18 miles are being converted to FSR roads and the remaining 23.6 would be decommissioned. Sections of road known or reported to be causing resource damage would be improved with the proposed activities, including a small stretch of FSR 110 that is adding sediment and gravel directly into Castle Creek. There are no known reports of resource damage being

created from off-road vehicle use. Additional information regarding the desired transportation plan is located within the project record, including the Roads Analysis Process. Actions that contribute to cumulative effects are disclosed in section 3.1.1 of the EA.

**Letter #2 Comment:** Finally, what will the resulting open-road density be in both the Canyon and Nest areas under all action alternatives? How does the USFS assess the significance of open road densities, which are known to directly and indirectly affect deer and elk?

**Response:** Open road densities are defined as: all roads that are either physically on Forest Service System Lands or those crossing private land that the Forest Service has an easement on. The open road densities would decrease in the Canyon project area from 4.1 miles per section to 2.2, and from 3.3 miles per section to 2.1 for either Alternative B or C. However there are additional roads on private land that the Forest Service has no control over. These roads could add cumulatively to the “effective” open road density and are displayed in the EA as part of the Total Road Density. The Total Road Density also includes roads under Forest Service control that are closed to public use. The Total Road Density would decrease in Canyon from 4.7 miles per section to 3.4 under Alternative B or 3.1 under Alternative C. In Nest, the Total Road Density would decrease from 3.5 miles per section to 2.9 under either Alternative B or C. Open road density is one part of the calculation used to assess impacts on deer and elk through the use of the Habitat Effectiveness (HE) model. A reduction of open road density typically improves HE values for deer and elk.

**Letter #3 Comment:** We are additionally concerned with the amount of unclassified road decommissioning proposed for all action alternatives. We understand that the Roads Analysis Procedure allows the Forest only limited options for the way in which unclassified roads can be dealt with once the analysis is complete. However, we have and will continue to maintain that access for future management activities and fire suppression, especially in MA 5.1 must weigh most heavily on the recommendations made after the RAP is complete.

**Response:** The proposal includes decommissioning approximately 15.4 miles of unclassified road in Canyon and 8.2 miles of unclassified road in Nest. With the decommissioning, reconstruction, and construction proposed, the road system would adequately access future management activities and would result in adequate access for fire suppression.

**Letter #5 Comment:** It is our opinion that all temporary roads used during the course of this project be added to the transportation and not be decommissioned. Roads that are useful today will likely be useful during the next entry. These roads should be stabilized following use, and if necessary to mitigate impacts on soils and wildlife, closed to public traffic. Again, scheduled maintenance should be deferred until the time of the next entry, unless needed to prevent erosion.

**Letter #5 Comment:** Unclassified roads likewise should be added to the system if they prove useful during any phase of the project. Whether used during this project or not, unclassified roads should be stabilized following use, and if necessary to mitigate impacts on soils and wildlife, closed to public traffic. Again, scheduled maintenance should be deferred until the time of the next entry, unless needed to prevent erosion.

**Letter #5 Comment:** Experience has shown us that needed roads are often dropped from the system, only to be re-opened as a temporary road (following attendant surveys) twenty years later during the next entry. It makes more sense to leave them on the system. Experience has also shown that the presence of roads is extremely valuable during wildfire suppression. Roads that are to be closed to the public should be closed in such a way as to remain available for administrative use.

**Response:** All 3.0 miles of temporary roads would be decommissioned following use, as they were determined to not contribute to the overall road needs for the project area. Of the

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existing 41.6 miles of unclassified road, 18 miles are being converted to FSR roads and the remaining 23.6 would be decommissioned. Sections of road known or reported to be causing resource damage would be improved with the proposed activities, including a small stretch of FSR 110 that is adding sediment and gravel directly into Castle Creek. The remaining road system would provide adequate access to the areas for management activities.

## BIG GAME

**Letter #1 Comment:** An EIS is required because you are creating significant impacts on big game by maintaining open road densities below the Forest Plan standard. Please define what criteria you use to measure when significant impacts occur on big game. If the Forest Plan standard for habitat effectiveness is not a measure of impacts, what is the point of the standard?

**Response:** Management Area 5.1, where the project is located, does not recommend or set a Standard for a specific open road density. Implementing any of the action alternatives would result in a substantial decrease in open road density from current values, as described in sections 3.11.3.2 and 3.11.3.3 and as summarized in Table 2-5.

**Letter #1 Comment:** Please use standard validated methods to evaluate roading impacts on wildlife, in addition to your own methods. We would like to have you include an analysis of road impacts on wildlife using Region 1's validated methods developed by Dr. Jack Lyon. You are required by NEPA to use the best science, and to address alternative methodologies if they would be a reasonable means of evaluating environmental impacts.

**Letter #4 Comment:** While Standard 5.1-3201 for elk winter habitat effectiveness will not be met in Nest Project Area with Alternative B, you have not shown how the two values (34 vs. 20) statistically and significantly differ? And what does that significance mean as far as on-the-ground, actual habitat impacts?

**Letter #4 Comment:** Your EA pointed out that the model does not show impacts to deer on a year-round basis and that elk summer HE is still within acceptable values. And, the project area may not be critical winter range for elk but we encourage you to contact Dr. Mark Rumble to find out what he learned from studying seasonal movements of radio-collared elk.

**Letter #4 Comment:** We ask that your ID team conduct a more thorough literature search on big game winter thermal cover requirements and consult other HE model users to help answer: 1. How significantly different are the two values? (34 vs. 20); 2) Is SS 4C a variable in the HE model and if so, how does that particular variable change the model predictions between Alternative B and C?

**Response:** The Habitat Effectiveness Model and ARC-HABCAP were both used to assess impacts of roads on wildlife. Each model acknowledges the affect that roads have on big game and other wildlife. The methodology developed by Dr. Jack Lyon was developed based on specific problems with elk herds identified by Montana game biologists. His approach was designed to address those specific problems. Those problems, including but not limited to: 1) low bull to cow ratio, and 2) decreasing herd size, are not affecting elk in the Black Hills. Therefore use of his analysis methods is not warranted at this time.

The difference between the desired condition of .34 and the existing condition of .228 in the Nest portion of the planning area indicates that the winter habitat is not currently providing highly effective cover, forage, and potential for harassment from vehicular traffic remains. The Nest area is not likely capable of sustaining the standard of .34 for winter range, as the area contains much spruce, which does not provide high quality forage or cover (EA section 3.4.4.2.1). For on-the-ground impacts, there would be an imperceptible difference in the change from the existing .228 to .221, as would occur under Alternative B.

**Letter #4 Comment:** Also, how does minimal removal of SS 4C in Alternative C affect the HE model for winter elk? Until I better understand the model, we reserve opinion of accepting a project-specific Plan Amendment. That is not to say we would not, in this one-time, cautiously accept a deviation in model values, but we need to better understand what variables determine the model output.

**Response:** Habitat Effectiveness for Alternative C does not decrease, but shows a slight increase due to less harvest activities.

### SNAGS/CAVITY NESTING SPECIES

**Letter #1 Comment:** You have not provided an adequate analysis or inventory of snag habitat. First, you have no monitoring data on populations of cavity-nesting wildlife in the project areas. Second, you have no valid inventory of snag habitat. The EA indicates only that snag habitat is limited. So how do you know what the current viability level of cavity-nesting wildlife is? We would like to know what the average current snag density is within each structural stage of the two project areas. Then we would like to know what the projected landscape level of snag habitat will be after your project is complete. Since you are significantly impacting snag habitat with your proposal, you need to demonstrate to the public that you are maintaining viable populations of cavity-nesting birds. Also, please define why created snags will be as effective as naturally-developed snags.

**Response:** As documented in Section 3.4.4.1.1, hard snags were documented to occur at a rate of approximately 0.97 snags/acre for Canyon and 0.85 snags/acre for Nest. As documented in the EA, Sections 3.3.5.1, 3.3.5.2, and 3.3.5.3, and in the Analysis File (see document titled "Landscape Level Snag and Green Tree Retention Modeling – Canyon/Nest Project Area"), implementation of either action alternative would meet all Forest Plan requirements for snags. In addition, numerous Design Features (Section 2.4.2 of the EA) are designed to protect existing soft and hard snags. Monitoring would occur to ensure snag creation and retention is effective (EA Section 2.4.3). Created snags may not be as effective as naturally-developed snags, but use of created snags by a wide variety of species ranging in size from black bears to bees is well documented. Use of the created by species is usually dictated by size of the snag; as the size of the snag increases, so does the number of species that may use it (Brown pers. com. 2002).

**Letter #1 Comment:** Please define what the firewood policy will be on any and all roads in this analysis area, and how this will affect the snag standard. You did not address firewood harvest. What is the current level, what is the impact on snags, and how will this continue?

**Response:** Firewood harvest was not brought up during scoping as an issue to be addressed in this EA. However, the current firewood policy on the Black Hills National Forest does not allow the cutting of standing dead for personal firewood. As stated in Sections 3.4.4.3.4 and 3.4.4.3.5 of the EA, there is a current prohibition on cutting snags for firewood across the forest; therefore, no impacts would be expected, unless snags are cut illegally.

**Letter #2 Comment:** You did not address the cost of creating 2 snags per acre, or define the size of the trees to be killed. Please include a cost of mitigation for snags that will be incurred by killing trees. This is a taxpayer cost of your current timber management program, and it should be clearly disclosed as a management cost."

**Response:** Snags would be created using Knutsen-Vandenburg (KV) funds, if possible. Snag creation may also occur using wildland fire crews that need training on chainsaw use. Otherwise, snag cost would range from \$19 to \$56 per snag depending on the method used.

**Letter #1 Comment:** Please define how one large green tree per acre over 20 inches will maintain the required snag levels. What Forest monitoring data do you have on the snag recruitment impact of

your logging program? It seems like a real stretch to maintain any large snags if you have one large green tree per acre.

**Response:** As stated in Section 2.4.2.2, no trees greater than 20" would be harvested. In addition, 10 or more green-tree replacement trees would be provided in overstory removal units. Treatment areas other than overstory removals would maintain sufficient larger tree stocking to provide for future snags as well. These two Design Features in addition to areas with no harvest will provide adequate large trees across the landscape. Vegetation management usually reduces the density of snags within treatment units due removal of safety hazards. Ocular estimates of past vegetation management units within the project area have not shown that additional snags are usually created unless intentionally by logging activities.

**Letter #1 Comment:** Please address the cumulative impact of timber harvest on cavity-nesting wildlife when historical, unmanaged forest conditions are compared to your current management regime. The public should have the opportunity to understand what the cost of your timber management program is on cavity-nesting wildlife. Please provide a comparison of what viability of cavity-nesting wildlife would be with the no action versus any of the action alternatives.

**Response:** The effects of the proposed activities on cavity-nesting species are detailed in the discussions of the black-backed woodpecker and Northern three-toed woodpecker in sections 3.4.4.3.4 and 3.4.4.3.5. The effects to these species are disclosed by both the no action alternative and the action alternatives.

**Letter #2 Comment:** Additionally, how much illegal cutting of snags is taking place on the BHNF? Is this affecting the ability of the USFS to meet snag retention requirements? Is the USFS adjusting management practices to ensure illegal snag cutting does not adversely impact snag dependent species of wildlife?

**Response:** It is only speculative that there may be illegal firewood cutting. In any given year, Forest Service Law Enforcement Officers cite about 20 people for illegal firewood gathering, only some of which comes from snags. The possibility of illegal snag removal is not affecting the ability of the Forest Service to meet snag requirements. No adjustments in management practices are needed.

## MIS SPECIES/SENSITIVE SPECIES

**Letter #1 Comment:** Please demonstrate why significant impacts have not occurred to the goshawk within these project areas. You have provided no basis for any conclusions that goshawk productivity has not been significantly impaired in this project area due to past management. If past management has impacted viability, then the proposed action will just be more of the same. Please provide a history of goshawk nesting in this area. What is the current productivity of the known nesting area. If you aren't monitoring this, then how can you determine what impacts from logging are?

**Letter #7 Comment:** The Canyon/Nest project is tiered to the Phase I Amendment and the Forest Plan. The continuation of timber sales such as the Canyon/Nest Project under the current inadequate, amended Plan can compromise the continued viability and distribution of species of wildlife and their habitat. As stated above, only 9 goshawk pairs can be found and only 42-46 territories are recently monitored forestwide.

**Response:** Section 3.4.4.3.1 of the EA documents the predicted effects to goshawk and includes a discussion of regional and local population trends. The EA also documents that a Post Fledging Area was created in the Canyon portion of the project area and that no suitable goshawk habitat exists in the Nest portion of the project area. Goshawk viability has likely been impacted primarily by past forest fires. This project is specifically designed to reduce

the risk of high-intensity wildfire that would continue to impact current and potential goshawk habitat (EA Sections 1.2 and 1.3). In addition, Section 2.4.2.3 identify Design Features of the project that would contribute to goshawk protection. Historic goshawk nesting is documented in section 3.4.4.3.1. Current goshawk use in the known nest stands in the Canyon area would continue to be monitored as required in the Forest Plan (Wildlife Report page 47). Viability is a Forest-wide obligation and as such is outside the scope of this analysis. The Forest conducts annual monitoring (USDA Forest Service 2000). This project complies with Phase I direction for goshawk management and is therefore expected to contribute to maintaining a viable goshawk population on the Forest.

**Letter #1 Comment:** Please define why the total elimination of goshawk nesting habitat in the Nest area, and a postfledging area in the Canyon area that is almost completely devoid of older age classes, does not represent a significant impact on goshawk productivity in this area. It appears that past logging has significantly affected the ability of this landscape to provide habitat for nesting goshawks. If the current conditions are not considered a significant impact, please clarify this by defining what is required before a significant impact on goshawk productivity in a project area is identified?

**Response:** The EA documents that the Nest area currently does not provide suitable nesting habitat (Section 3.4.4.3.1 Existing Condition). The PFA in the Canyon area is described as being made up of numerous structural stages, some of which are developing larger trees over time. A Design Feature requires all trees over 20" in diameter to be left. In addition, at least 10 trees per acre greater than 10 inches in size would be retained in all overstory removal units. These design features will increase the older tree component over time. As documented in Section 3.4.4.3.1 (Existing Condition), goshawk habitat has been primarily impacted by past large wildfires.

**Letter #1 Comment:** You did not define why the almost complete elimination of forest interior habitat will affect wildlife. You have no analysis of forest interior habitat. There is very little there now, and much of this will be removed with your logging. Please define how this will affect goshawks, brown creepers, and golden-crowned kinglet viability. What monitoring data do you have to address the management of interior habitat and its impact on wildlife?

**Response:** There is no Forest Plan direction regarding forest Interior habitat, and it was not identified as an issue during scoping. Therefore, it was not addressed in the analysis.

**Letter #1 Comment:** You did not define the conservation strategies that are in place for management of the home ranges of goshawks, as well as habitat for the brown creeper, golden-crowned kinglet, and the mountain lion. Since these are MIS and sensitive species for the Forest, we would like to know what specific plans are in place to ensure that viable population of these species will be maintained. Please define what their habitat needs are, what measures will be implemented to meet these needs, and how you know these measures will be effective.

**Response:** Each of these species is addressed adequately in the EA. Section 3.4.4.2.3 addresses the brown creeper, Section 3.4.4.2.4 addresses the mountain lion, and Section 3.4.4.3.6 addresses the golden-crowned kinglet.

**Letter #1 Comment:** "You did not provide any information on wildlife surveys in the project areas. We would like to know which areas are currently occupied by sensitive species, such as the brown creeper and golden-crowned kinglet. These areas should be protected from any disturbance. If you have not identified these areas, how will these species be protected?"

**Response:** The brown creeper (a Management Indicator Species) is associated with mature and late succession forest conditions as described in Section 3.4.4.2.3. Impacts disclosed in this section show that only short term, minor impacts would occur to one brood of brown creeper within the project area. The golden-crowned kinglet is an uncommon resident in the

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Black Hills, and disturbances to one brood are expected (EA Section 3.4.4.3.6). Although surveys did not locate these species, their presence is assumed based on the availability of habitat in the project area. Effects to these species are based on expected changes to habitat and expected disturbances.

**Letter #1 Comment:** You did not define what you (sic) conservation strategy will be for pine marten. Please define what the management strategy is for pine marten, including areas to be managed, and a map to show where these areas are. Also, where will connecting corridors be provided?

**Response:** The American marten was addressed in Section 3.4.4.3.2 of the EA. Guidelines 3215, 3117, and Standard 2308 all address marten management direction for the Canyon/Nest project area. Areas in Nest that are considered marten habitat are described in the Existing Condition portion of Section 3.4.4.3.2. A map of these stands is located in the GIS files on the BHNF. As described, adequate connectivity corridors would be deferred from treatment to maintain effective corridors.

**Letter #1 Comment:** Please address how the size of treatment units will affect goshawk management. The experts interviewed for the Forest Plan Amendment indicated that no treatment units should be over 60 acres in size, in order to avoid large areas of open forest habitat. You did not address this identified problem in your EA. We would like to know the cumulative size of open forest habitat, including nonforested areas, and how this may be impacting goshawks.

**Response:** Goshawks are addressed in the EA Section 3.4.4.3.1. Openings that occur (EA Tables 3-9 and 3-10) include grass cover type (137 acres in Canyon) and 455 acres in the Nest area. A small gravel pit also occurs in Nest (2 acres). Of the treatments proposed, the meadow maintenance activities and creation of small patch clearcuts (each 2 acres or less) would increase the openings within the project area to the Forest Plan objective of 5% of the project area. As disclosed in the Goshawk section of the EA, the proposed activities may impact individuals, but are not likely to result in a loss of species viability or cause a trend toward federal listing (EA Section 3.4.4.3.1 Determination).

**Letter #2 Comment:** As discussed earlier, the USFS has failed to present any population trend data for the brown creeper. This data is not only required by 36 CFR § 219.19(a)(6), but is required to provide a context for the habitat declines that would result from the proposed Canyon/Nest project.

**Response:** As stated in Section 3.4.4.2.3 (Existing Condition) of the EA, brown creeper densities are twice as high in late successional pine habitat as in other habitat types. Population trend data is not currently available but a total of 122 brown creepers were observed during the 2001 monitoring season. This species should be effectively monitored as part of the on-going monitoring being done by Rocky Mountain Bird Observatory (USDA Forest Service 2002 Monitoring Report, Panjabi 2001). This monitoring effort indicates that brown creepers occur at low abundances throughout the Black Hills and occur most frequently in or near late-successional and white spruce habitats (Panjabi 2001). Late succession habitat was designated under the Revised Forest Plan to maintain adequate habitat for species associated with this habitat type. No late-succession stands are being treated with this project. Only minimal amounts of white spruce stands are being treated (EA Section 3.4.4.1.1). A 10% reduction in habitat capability for this species is within the range analyzed under the EIS for the Revised Forest Plan. This analysis is tiered to the Forest Plan EIS. Therefore this reduction is not considered significant.

**Letter #2 Comment:** Additionally, the EA discloses the reduction in pine and spruce structural stages yet entirely fails to analyze the effects of specific actions that may not affect structural stage, but that affect brown creeper habitat. For example, how will thinning, overstory removal, road construction and reconstruction, and individual tree select treatments affect the brown creeper? These activities may not reduce overall structural integrity of stands of trees, but may take place in brown creeper habitat and therefore affect the brown creeper.

**Response:** Section 3.4.4.2.3 (Conclusion) of the EA discloses that any harvest activities that occur during the nesting season may have a short-term impact on one brood of the brown creeper. Disturbances can also occur to the brown creeper during the nesting season from other related activities such as road construction and reconstruction.

**Letter #2 Comment:** The USFS also fails to assess the significance of the declines in brown creeper habitat in the Canyon/Nest Draft EA. The USFS fails to assess the significance of the effects of the proposed Canyon/Nest project to broods of brown creeper.

**Response:** As stated in Section 3.4.4.2.3 (Conclusion), the habitat reductions may potentially affect one brood of brown creeper. The planned treatments are mitigated by the retention of all trees over 20" dbh and a minimum of 10 trees over 10 inches dbh in overstory removal units.

**Letter #2 Comment:** When analyzing the cumulative impacts to the brown creeper in the Canyon/Nest project area on page 3-32 of the Canyon/Nest Draft EA, the USFS omitted any discussion of the effects of past and present actions. What specific projects have occurred and are occurring in or near the project area in the past that may have affected the brown creeper in the project area? How have these specific projects affected the brown creeper in the project area? Without such disclosure, the USFS cannot possibly conclude that the effects of the proposed Canyon/Nest project to the brown creeper are not significant.

**Response:** All past activities that have occurred within the project area are reflected by and displayed in the existing condition portion of Section 3.4.4.2.3 of the EA. There are no ongoing vegetation altering activities occurring within the project area other than grazing and fire suppression, which would have no direct impact on large ponderosa pine trees. As displayed in Section 3.1.1, there are several ongoing vegetation management projects and foreseeable future management activities within the cumulative effect area for the Canyon/Nest project area.

Timber harvest and livestock grazing have been traditional land practices in the project area for over 100 years. These practices along with fire suppression have resulted in the existing vegetative conditions. Timber harvest has reduced the size and density of trees. Livestock grazing has likely affected the species composition of herbaceous and shrub communities. Fire suppression has interrupted the natural cycle of forest regeneration and allowed an increase in dead wood and the size and density of live trees. Fire suppression has also resulted in a decrease in the extent of fire dependent species such as aspen and allowed pine to encroach into meadows. These effects are analyzed in this document as baseline of existing conditions for the proposed project. Additional proposed timber harvest is analyzed as the proposed action. Livestock grazing and fire suppression are expected to continue. Continued fire suppression will allow accumulation of dead wood throughout the project area, as well as the accumulation and growth of live trees in areas not treated with this project. Herbaceous and shrub communities will continue to be affected by livestock grazing since this project will not alter grazing patterns or intensities.

Population trend data is not currently available but a total of 122 brown creepers were observed during the 2001 monitoring season. This species should be effectively monitored as part of the on-going monitoring being done by Rocky Mountain Bird Observatory (USDA Forest Service 2002 Monitoring Report, Panjabi 2001). This monitoring effort indicates that brown creepers occur at low abundances throughout the Black Hills and occur most frequently in or near late-successional and white spruce habitats (Panjabi 2001). Late succession habitat was designated under the Revised Forest Plan to maintain adequate habitat for species associated with this habitat type. No late-succession stands are being treated with this project. Only minimal amounts of white spruce stands are being treated (EA Section 3.4.4.1.1). A 10% reduction in habitat capability for this species is within the range

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analyzed under the EIS for the Revised Forest Plan. This analysis is tiered to the Forest Plan EIS. Therefore this reduction is not considered significant.

**Letter #2 Comment:** The USFS states on page 3-42 of the Canyon/Nest Draft EA that the most recent “field visits” occurred in January and February of 2001 and 2002. What does “field visits” mean? Was the USFS surveying for specific sensitive species? If so, which species? The USFS is required by the Black Hills supplement to the Forest Service Manual at FSM 2672.103 to assume the presence of sensitive species where adequate population data does not exist and where such data would be difficult to obtain. Given this requirement, why did the USFS not include the fringed-tailed myotis, Townsend’s big-eared bat, pygmy nuthatch, and the Lewis’ woodpecker in the list of sensitive species that could be expected to occur in the Canyon/Nest project area? The USFS does not have adequate population data for these species and it does not appear the USFS attempted to obtain such data. The fringed-tailed myotis, Townsend’s bit-eared bat, and pygmy nuthatch are also an MIS on the BHNF. The USFS must assume their presence and analyze the effects of the proposed Canyon/Nest project to these species and their habitat.

**Response:** As stated in Section 3.4.4.3, surveys were conducted for nesting goshawks, amphibians, reptiles, and terrestrial snails, and marten tracks in particular. General forest habitats were also surveyed for suitability for other management species. Pages 42 to 44 of the Wildlife Biological Evaluation (in the Analysis File) and Appendix A of the EA display that no habitat is present for the fringe-tailed Myotis, Townsend’s big-eared bat, or pygmy nuthatch, or Lewis’ woodpecker; therefore, no impact would occur to these species.

**Letter #2 Comment:** The Canyon/Nest Draft EA discloses that there are no known goshawk nests in the Nest area and no suitable nesting habitat in the Nest area. Are there any goshawk territories that overlap into the Nest area? What criteria was used to determine there is no suitable goshawk nesting habitat in the Nest area? Additionally, the USFS currently has no adequate population data for the northern goshawk and the last time surveys for the goshawk occurred in July of 1998. The USFS is therefore required to assume the presence of the goshawk in the Nest area in order to comply with FSM direction and to fully analyze the effects of the proposed Canyon/Nest project to the northern goshawk. The viability determination made for the northern goshawk on page 3-46 of the Canyon/Nest Draft EA is also wholly unsupported. The USFS has not provided any forest-wide goshawk population data to provide a context for the viability determination. This is especially glaring since the goshawk is an MIS. It is impossible to tell if goshawk populations are currently viable and it is highly uncertain whether the proposed Canyon/Nest project will actually maintain viable populations of the northern goshawk without population information. Additionally, when analyzing the cumulative effects to the northern goshawk, the USFS failed to discuss any past or present actions and their effects to the northern goshawk.

**Response:** No known territories for the goshawk overlap into the Nest area. Surveys were conducted in 1997 and 1998, with monitoring of these sites in 2000 and 2001 (EA Section 3.4.4.3.1 Existing Condition). Additional field reviews (habitat surveys) were conducted in January and February of 2000 and 2001 as disclosed in Section 3.4.4.3 of the EA. Viability determinations for the goshawk were made in Section 3.4.4.3.1, and are supported by field surveys, monitoring, and professional judgment. The activities that contribute to cumulative effects are disclosed in Sections 3.1.1 and 3.4.4.3.1 of the EA.

**Letter #2 Comment:** The Canyon/Nest Draft EA discloses no population information for the black-backed woodpecker that would provide a context for the viability determination. This is especially glaring since the black-backed woodpecker is an MIS. The Draft EA discloses that habitat for the black-backed woodpecker will decline, but there is no assessment of the significance of this decline nor any attempt to correlate this decline to the current status of black-backed woodpecker populations. How can the USFS possibly conclude the proposed Canyon/Nest project will maintain black-backed woodpecker viability without such discussion? The USFS also failed to discuss any past or present actions that may cumulatively affect the black-backed woodpecker.

**Response:** Viability determinations and the basis for that determination are found in Section 3.4.4.3.4 of the EA. Mitigation measures that include the retention of the largest trees and snag creation minimize the impacts of the action alternatives on black-backed woodpecker habitat. While no regional or local population trends are available, surveys conducted in the project area indicate that the species is present in burned areas and in late successional stands (Section 3.4.4.3.4 Existing Condition). The minor impacts expected to the black-backed woodpecker habitat, coupled with the mitigation measures for the project would not affect the viability of this species. The activities that contribute to cumulative effects are disclosed in Sections 3.1.1 and 3.4.4.3.4 of the EA.

**Letter #2 Comment:** The Canyon/Nest Draft EA discloses no population information for the northern three-toed woodpecker that would provide a context for the viability determination. This is especially glaring since the northern three-toed woodpecker is an MIS. The Draft EA discloses that habitat for the northern three-toed woodpecker will decline, but there is no assessment of the significance of this decline nor any attempt to correlate this decline to the current status of northern three-toed woodpecker populations. How did the USFS conclude that habitat capability will not be “significantly” reduced? What does “significantly” mean in quantitative terms? How can the USFS possibly conclude the proposed Canyon/Nest project will maintain northern three-toed woodpecker viability without such discussion? The USFS also failed to discuss any past or present actions that may cumulatively affect the northern three-toed woodpecker.

**Response:** Viability determinations and population trends are disclosed in Section 3.4.4.3.5 of the EA. Mitigation measures that include the retention of the largest trees and snag creation minimize the impacts of the action alternatives on northern three-toed woodpeckers. This project is not likely to contribute to downward trends, and beneficial effects would occur based on snag creation (EA Section 3.4.4.3.5 Alternative B & C). The activities that contribute to cumulative effects are disclosed in Sections 3.1.1 and 3.4.4.3.5 of the EA.

**Letter #2 Comment:** Additionally, the USFS contends that both action alternatives would provide the greatest benefits to the northern three-toed woodpecker in the short term by providing snags immediately. However, the USFS discusses the possibility of wildfires occurring in the Canyon/Nest project area, which would also create snags and does not discuss how many snags will be created by the No Action Alternative. What are the chances of a wildfire occurring in the project area? How many snags may be created by wildfire? How many snags would be created by the No Action Alternative?

**Response:** Typically, stand-replacing fires benefit woodpecker populations by creating large numbers of snags while destroying the existing snags at the time of the fire. Thus, stand replacing fires create many more snags than they destroy. Fires that just burn in the understory also create snags in pockets with higher fire intensity but do not create nearly as many snags as stand-replacing fires. Most fires on the Black Hills are not stand-replacing fires. All fires benefit woodpeckers by creating snags. The current mortality rate in the Black Hills for mature green trees is 0.128 trees per decade. This will occur in addition to the snag creation planned under the action alternatives. The potential for a wildfire are described in section 3.7 of the EA. It would be speculative at best to estimate the potential snags that might be created by a wildfire (and with the no action alternative).

**Letter #2 Comment:** The USFS states that no sensitive plant surveys have been completed in the Canyon/Nest project area since 1994 – eight years ago. Despite the fact that no recent surveys have been done, the USFS has concluded that only the northern arnica may be present in the Canyon/Nest project area. How can the USFS adequately determine which sensitive plant species may be affected by the proposed Canyon/Nest project without up-to-date surveys? Given the lack of adequate information, the USFS must assume the presence of all sensitive plant species and protect their habitat accordingly. The USFS also failed to discuss any past or present actions that may cumulatively affect sensitive plants in the Canyon/Nest project area.

**Response:** Each plant species has a specific habitat that it is associated with. All other plant species have specific habitats that are not present in the Canyon/Nest project area or their habitats are not included in proposed activities, therefore, no impacts would occur (Wildlife Biological Evaluation pages 42-44, in the Analysis File and Appendix A of the EA). The activities that contribute to cumulative effects are disclosed in Section 3.1.1 of the EA.

**Letter #3 Comment:** With regard to the application of Phase I direction to Canyon/Nest, specifically for marten and goshawk, we are concerned with both the content of the analysis and the resultant recommendations in the Preferred Alternative. Marten: We were foremost troubled to find that the Forest, despite monitoring evidence suggesting that marten are not present and do not use the area, even after having very recently been introduced within the Project Area by SD GFP, deleted significant proposed treatment units from the Nest portion of the Project Area. Further troubling, was the Forest's apparent incorporation of research which has neither been finalized nor peer-reviewed (Fescke, in press) in making the determination to exclude these areas from treatment. We feel the project analysis clearly indicates that the "(prevention) of decrease in patch size of current or high-potential marten habitat" and abstention of thinning in "important connectivity habitat areas" (G 3215) is unnecessary because the area has not been sufficiently demonstrated as current, high-potential, or important connectivity habitat in the first place. Clearly, the original Project Analysis designated these areas because there were desired silvicultural objectives to meet. We fail to see that sufficient justification has been presented in the new EA pursuant to Phase I's requirements to warrant the deletion of these units. We would further point out that the wildlife biologist's assessment of the affected environment came to the determination that marten would be unimpacted because they do not inhabit the project area (p. 3-48). The subsequent arrival at the conclusion that treatment of the units in question would represent an adverse impact on animals that are not present is completely incongruous with this determination.

**Response:** Suitable high potential marten habitat exists in the Nest portion of the project area as disclosed in the EA (Section 3.4.4.3.2 Existing Condition). The project design features and habitat conservation measures in the EA follow current Forest Plan direction. Although marten are not believe to be present at this time, the modifications made to the alternatives are designed to improve habitat so that marten may inhabit this area in the future. No determination of adverse impact to marten was made.

**Letter #3 Comment:** We have, and will continue to maintain that FSM Supplement 2672.10-2001-1 regarding the "presumed presence" of goshawks was a completely inappropriate circumvention of the publicly vetted amendment process for forest planning. The public was expected to somehow have assumed that "non-significant changes to the 1997 Revised LRMP" in the form of "short-term" interim Phase I Amendment direction were inevitably to include directing the Forest to "presume" the presence of goshawks in all cases and adjust their management prescriptions accordingly. We therefore believe that the proposed PFA and suitable nest habitat designations, with the exception of the lone identifiably active nest, in addition to the seasonal restrictions on operability related to goshawk fledging, are arbitrary and capricious measures, unsubstantiated by science or reason.

**Response:** The "appropriateness" of the specifics of the Phase I Amendment direction are outside the scope of this project. The designation of a PFA and suitable habitat follows current Forest Plan direction (EA Section 3.4.4.3.1 Forest Plan and Phase I Direction).

## OLD GROWTH

**Letter #1 Comment:** Please provide a map of the old growth habitat that will be provided, as well as a complete description of the stand characteristics of each designated stand. You did not provide any inventory data on selected old growth stands. We would like to know what the qualities of these stands are to show why they have been selected for old growth management. What are their current old growth characteristics?

**Response:** All late successional stands identified by the Forest Plan would be retained under all alternatives (EA Section 2.4.2.2). Overall, the project area would consist of about 7.4 % late successional stands (Section 3.4.4.1.1 Alternative A). These stands were defined by the Forest Plan and the selection of these stands is outside the scope of this project.

**Letter #1 Comment:** Please define why the selected old growth stands in each project area will maintain viable populations of wildlife, including the goshawk. To date, the agency has failed to provide any rationale as to why 5% old growth habitat was selected as a management criteria for viability of associated wildlife. Please discuss why old growth is needed, and why the selected old growth in the project area will meet wildlife needs.

**Response:** The selection of the late successional stands and the 5% criteria were defined by the Forest Plan and are outside the scope of this project.

**Letter #1 Comment:** Please define what the landscape strategy for old growth is within the cumulative effects area, including corridors and replacement old growth. How will old growth wildlife move between selected stands? Where will replacement old growth be provided? If these attributes are not provided, how effective will be the small, isolated stands you have decided to select for the old growth requirement.

**Response:** The Forest's landscape strategy for old growth is discussed in the FEIS for the Revised Forest Plan. This project preserves all areas designated for late succession management under that Plan. The Plan does allow for exchange of designated late succession stands for stands with better late succession characteristics identified during project level analysis. No replacement old growth was designated because no stands with better old growth characteristics were identified during the analysis. Old growth related species move between stands utilizing other denser, untreated stands.

## NEPA/FOREST PLAN

**Letter #2 Comment:** The Forest Service must delay the proposed Canyon/Nest Project until the Phase II Amendment is completed. If the USFS elects to proceed with the Canyon/Nest project, we request the Forest Service delay the proposed project until the Phase II Amendment process is completed. ... The proposed Canyon/Nest project is therefore not tiered to an adequate programmatic environmental impact statement ("EIS") in accordance with the NEPA and must be delayed until Phase II is completed.

**Response:** The Phase II Amendment is not expected to be completed until December 2003. The Phase I Amendment revised numerous management objectives, standards and guidelines, improving protection measures for many species. The Canyon/Nest project is correctly tiered to the 1997 Forest Plan, as amended by the Phase I Amendment.

**Letter #2 Comment:** Additionally, the proposed Canyon/Nest project may limit the choice of reasonable alternatives and future management direction for the BHNH by adversely impacting imperiled species of wildlife such as the northern goshawk and other species and their habitat, adversely impacting management indicator species and their habitat, and degrading other natural values such as watershed health and riparian areas. The proposed Canyon/Nest project and associated environmental analysis must be delayed in the interim if a reasonable choice of alternatives are to be available for future management direction and if the BHNH is to be in accordance with NEPA during the amendment process (see 40 CFR §1502.2(f)).

**Response:** The proposed Canyon/Nest project explored all reasonable alternatives (Chapter 2 of the EA) and disclosed all potential effects as a result of the proposed activities. Because the Canyon/Nest project follows the guidance of the Phase I Amendment, it is not expected to

conflict with the Phase II Amendment, when completed. The purpose of the Phase I amendment was to preserve options for future management while allowing some management activities to occur. By adhering to Phase I management direction, this project will maintain options for future management. The effects to the northern goshawk are disclosed in Section 3.4.4.3.1. Neither action alternative is expected to substantially adversely impact the goshawk. For Management Indicator Species, the effects are disclosed in Section 3.4.4.2. None of the action alternatives are expected to cause substantial adverse impacts to MIS. Watershed health and riparian areas were addressed in Section 3.2. Use of Best Management Practices would decrease or eliminate impacts to watershed values. No ground disturbing activities would occur within riparian corridors; therefore, no impacts are expected.

**Letter #2 Comment:** The Forest Service must complete an Environmental Impact Statement for the proposed Canyon/Nest Project. The Canyon/Nest Draft EA discloses on page 3-41 that, "Both action alternatives reduce habitat for the brown creeper, Alternative C is less detrimental than Alternative B." Habitat capability for the brown creeper, a management indicator species ("MIS"), in the Canyon area is disclosed as dropping from .459 to .401 under Alternative B and .415 under Alternative C. This translates to, at the least, a 10% reduction in habitat capability for the brown creeper in the Canyon area. Habitat capability for the brown creeper in the Nest area is disclosed as dropping from .330 to .322 under Alternative B and .325 under Alternative C. This translates to, at the least, a 1.5% reduction in habitat capability for the brown creeper in the Nest area. Unfortunately the USFS provides no context for these reductions, specifically population trend data for the brown creeper which the USFS is required to obtain in accordance with 36 CFR §219.19(a)(6). Since the USFS has failed to assess the significance of this decrease and indeed has no context within which to assess the significance anyway, the impacts to the brown creeper are highly uncertain and controversial and an EIS must be completed. If the USFS does not believe the impacts to the brown creeper are uncertain and/or controversial, please fully explain the reasoning for this conclusion. If the USFS believes it is not required by 36 CFR §219.19(a)(6) to gather population trend data for the brown creeper, an MIS, please fully explain why.

**Response:** As disclosed in Section 3.4.4.2.3 of the EA, while habitat reductions are expected to occur, these reductions are not considered significant as all large diameter trees would be retained, contributing to large green trees and snags, and reducing potential effects. These reductions in habitat are not considered significant, uncertain, or controversial, as impacts would be lessened by mitigation and maintenance of late successional forests designated by the Forest Plan. As disclosed in Section 3.4.4.2.3, monitoring has begun recently for the brown creeper. Population trend data is not currently available but a total of 122 brown creepers were observed during the 2001 monitoring season. This species should be effectively monitored as part of the ongoing monitoring being done by Rocky Mountain Bird Observatory (USDA Forest Service 2002 Monitoring Report, Paniabi 2001). This monitoring effort indicates that brown creepers occur at low abundances throughout the Black Hills and occur most frequently in or near late-successional and white spruce habitats (Paniabi 2001). Late succession habitat was designated under the Revised Forest Plan to maintain adequate habitat for species associated with this habitat type. No late-succession stands are being treated with this project. Only minimal amounts of white spruce stands are being treated (EA Section 3.4.4.1.1). A 10 percent reduction in habitat capability for this species is within the range analyzed under the EIS for the Revised Forest Plan. This analysis is tiered to the Forest Plan EIS. Therefore this reduction is not considered significant.

**Letter #2 Comment:** The Canyon/Nest Draft EA discloses on page 3-45 that, "Regional population trend of the northern goshawk is downward since 1980 (BBS data). Local population trend is unknown...local habitat trend is downward due to recent large wildfires in the Southern Black Hills." The EA continues to claim, "Goshawks using these territories may be able to find territories outside the burn," and that the, "effects of the fires on population trend are uncertain." Despite the obvious lack of information required to actually assess the status of the northern goshawk on the BHN in

order to ensure the proposed Canyon/Nest project does not jeopardize the viability of the northern goshawk, the USFS concludes there exist no viability concerns. How can the USFS possibly assess the significance of the effects of the proposed Canyon/Nest project to the northern goshawk and its habitat if there is so little information? Since the effects of the proposed Canyon/Nest project to the northern goshawk and its habitat, in the context of viability of the goshawk on the BHNF and the distribution and abundance of suitable habitat, are admittedly uncertain and highly controversial (i.e., the USFS doesn't really know), an EIS must be completed. If the USFS does not believe the effects of the proposed Canyon/Nest project to goshawk viability are not uncertain, please fully explain the reasoning for this conclusion. If the USFS believes the proposed Canyon/Nest project will not further limit goshawk habitat on the BHNF, please fully explain the reasoning for this conclusion.

**Letter #7 Comment:** I also understand that there is only one goshawk territory identified in the Canyon project area and no goshawk territories and nests identified in the Nest project area. How recent and reliable are the surveys that determined that there were no goshawk nests in the Nest area? Should you not be conservative, in case you have not identified all potential/past goshawk nest sites and provide for potential goshawk nesting and fledging habitat in Nest project area also?

**Letter #7 Comment:** The forest service needs to clarify why a maximum of about 42-46 out of an estimated 70 territories are being monitored. Is this because about 34-36 territories have no known viable goshawk nests or is it that the wildlife biologists repeatedly don't bother to monitor all potentially active nests? Whatever, the reason, as stated above, with more territories monitored, they could only find 9 nesting pairs in 2001.

**Response:** The effects to the goshawk are disclosed in Section 3.4.4.3.1. Surveys and monitoring that have been thoroughly conducted since 1997 have concluded that no goshawk activity is occurring in the area. One PFA has been designated in the Canyon portion of the project area, while the Nest portion contains no suitable nesting habitat. Adequate information exists to document that there would be little effect to the goshawk with the proposed activities. These impacts are not considered uncertain or highly controversial.

**Letter #2 Comment:** The Canyon/Nest Draft EA discloses on page 3-30 that there are currently no stands of ponderosa pine in structural state 5 ("SS 5"), or late succession, in the Canyon or Nest areas. These stands are invaluable to many species of wildlife such as the northern goshawk, brown creeper, black-backed woodpecker, northern three-toed woodpecker, and golden-crowned kinglet. Despite this lack of ecologically essential habitat within the Canyon/Nest project area, the USFS is proposing to log stands of ponderosa pine that will grow into SS 5, specifically stands in SS 4C. The Canyon/Nest Draft EA discloses that, under Alternative B and C, ponderosa pine stands in SS 4C will be reduced by several hundred acres. Unfortunately, there is no assessment as to whether or not this reduction in potential late successional habitat is significant or not. Regardless of Forest Plan direction, how will this reduction in potential late successional habitat affect species of wildlife dependent on late successional habitat on the BHNF? Since the USFS has failed to complete this assessment and given the decreases in habitat for the brown creeper, northern goshawk, black-backed woodpecker, and the northern three-toed woodpecker, the effects of the proposed Canyon/Nest project are highly uncertain and highly controversial. An EIS must be completed in order to fully analyze the effects of the proposed Canyon/Nest project to late successional habitat and potential late successional habitat.

**Letter #7 Comment:** As I understand it, there are currently 968 acres of structural stage 4C in the Canyon area and 362 acres of 4C in the Nest area. These will be reduced to 364 acres and 136 acres respectively after the proposed harvest. Neither area provides Structural Stage 5 or 6 stands near goshawk nests and therefore structural stage 4 must be relied on to meet all late successional needs. According to the Forest Plan's revised guideline 3144, about 20% of the 420 acres of a goshawk fledging habitat needs to be in structural stages 5 and 20% in structural stage 6 and 20% in structural stages 4. 82 acres is 20% of 420 acres. These timber sales don't leave much in the way of reserve late successional stands, in case of future unplanned stand killing events.

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**Letter #7 Comment:** The Forest Service can't control windthrow, fire, or beetles and the "cure" for beetles is to cut down beetle killed trees and open up denser stands by cutting trees. All of these natural and man made events could erode the 2% remaining in old growth and the late successional trees near nesting and fledgling habitat around existing or potential goshawk nest sites.

**Response:** No SS 5 stands are listed under tables 3-17 or 3-18 as none currently existing within the project area. All existing designated late successional stands in the project area would be maintained as per current Forest Plan direction (Section 3.4.4.1.1). The reduction in SS 4C is not considered significant, as adequate habitat would be retained in other structural stages that can provide late successional components. All existing late successional stands would be retained and left untreated (EA section 2.4.2.2). Proposed treatments would also lessen the risk of beetle infestations and high intensity wildfire, which may reduce the acres of these stands that may proceed into the next successional stage. The effects of the amount of old growth to be maintained on the Forest were analyzed in the EIS for the Forest Plan. This project is tiered to that analysis.

**Letter #3 Comment:** Several concerning common design features also present themselves in Canyon/Nest's proposed action, however. First we would like to point out that, in the wildlife biologist's report (p3-45), the Jasper, Elk Mountain, and Roger's Shack fires were used as justification for portraying a downward trend in goshawk habitat on the forest due to habitat loss. In following with this logic, it seems inappropriate to apply a 20" diameter limit for Canyon/Nest's proposed timber sales, along with prescribing the creation of 2 snags per acre on commercially treated sites, and leaving 10 replacement green trees in overstory removal units, all in the name of ensuring sufficient snag-related habitat and forage. If the analysis of green tree retention was truly conducted at a landscape level, as the project file implies, it should have considered the massive amount of snag "recruitment" caused by our recent fire events, and furthermore, the heavy mountain pine beetle activity that continues to "recruit" snags across the Black Hills landscape.

**Response:** The 20" diameter limit, creation of 2 snags/acre, and the leaving of 10 replacement green trees in overstory removal units are appropriate mitigations for goshawk, as well as for woodpeckers and other cavity-nesting species. The snag analysis was conducted at the 7<sup>th</sup> level watershed scale as per Phase I and Forest direction. This method does not take into account the snags created by recent fires. However, these events do contribute to an upward trend in woodpecker habitat across the Black Hills. The EA mentions this increase of snags in Cumulative Effects portion of Section 3.4.4.3.4.

**Letter #3 Comment:** Furthermore, these sort of green tree retention standards fly in the face of the very silvicultural premise upon which treatments like overstory removals and the preceding intermediate cuts are based. The purpose of the various stages in a shelterwood silvicultural system is to progressively cultivate a healthy and vigorous crop of regeneration, culminating in the removal of competition from the regenerated stand so as to facilitate accelerated growth rates. An added ecological component of the final stage of this system is to create a diverse mix of structural stages across the landscape, enhancing wildlife habitat and curtailing the propagation of crown fire. Retaining significant numbers of large-diameter trees simply does not accomplish these objectives and is an arbitrary and unacceptable way of conducting silvicultural business, completely unsubstantiated by proven science.

**Response:** The retention of trees over 20" in diameter and the retention of 10 green trees per acre would accomplish Forest Plan objectives as documented in Sections 3.3.5.2 and 3.3.5.3 of the EA, and as in the report "Landscape Level Snag and Green Tree Retention Modeling – Canyon/Nest Project Area", located in the Analysis File.

**Letter #3 Comment:** The No Action Alternative is described in the Affected Environment portion of the EA as having no effect on noxious weeds. We feel this is completely inaccurate; wind, rain and wildlife contribute far more to noxious weed propagation than any "ground-disturbing activity" the Action Alternatives propose. Long have we said that comparing "action" alternatives against a stand-

and-stare management scenario lends itself neither to developing a well-explored range of management options, nor to accurately assessing the impacts associated with various action/inaction. For example, none of the described KV Opportunities, vegetative, silvicultural, or habitat management objectives would be accomplished under a no-action alternative. While the project analysis acknowledges some of these items, it does not include any measure of the opportunity cost associated with doing nothing. For consideration in this EA and in future document, we believe an analysis of similar rigor is necessary for a more objective comparison of alternatives.

**Response:** The disclosure in Section 3.6.5.1 of the EA states that while no ground disturbing activities would occur, ongoing uses would continue to contribute to noxious weeds in the project area. Disclosure found throughout Chapter 3 of the EA documents the effects of No Action, including the opportunities lost from KV projects or other management objectives.

**Letter #3 Comment:** For this and other project decisions which were withdrawn as a result of the Veteran/Boulder lawsuit and reanalyzed to meet the requirements of the Phase I Amendment, it is helpful to include a brief summary of the changes occurring between the original (withdrawn) project decision and the newly formed Preferred Alternatives.

**Response:** As documented in Sections 1.4.1 and 1.4.2.3, the Canyon/Nest Project Environmental Assessment incorporates the original project and changes made to the project were based on the Phase I Amendment. These changes are cited throughout the EA, where they occur.

**Letter #3 Comment:** For resource professionals, the reasoning behind the proposed Project-specific Forest Plan Amendment for elk winter range habitat effectiveness was relatively easy to discern. For the general public, however, a more concise, plain-language explanation of the purpose and need for this component of the Preferred Alternative is probably in order.

**Response:** To clarify, the site-specific Forest Plan Amendment would be needed to implement Alternative B because the existing habitat effectiveness for winter range for elk in the Nest portion of the project is below the desired level of 34% (Guideline 5.1-3201). The proposed activities reduce the winter habitat effectiveness from 22.8% to 22.1%. Because the proposed activities reduce the current habitat effectiveness (instead of improving it), a site-specific Forest Plan Amendment is required.

**Letter #3 Comment:** Among the KV Opportunities are various monitoring projects. These are essential components of bettering multiple-use forest management and of assessing the extent to which the project accomplished its objectives. We think an important item conspicuously absent from the proposed monitoring is the assessment of the extent to which wildlife habitat is actually improved by snag creation/retention, not just the effectiveness of the creation/retention itself. Additionally, we would like to see the Forest monitor the tangible improvement in habitat effectiveness and use for elk, marten, and goshawk resultant from the amendments to the original Project Decision pursuant to Phase I direction.

**Response:** The specific monitoring plan will be developed for the selected alternative and disclosed with the project's decision document as disclosed in Sections 2.4.2.8 and 2.4.3. This suggestion will be forwarded to the decision maker for further consideration.

**Letter #4 Comment:** Our position on this potential impact is that if there were a significant project-specific Plan Amendment, what sort of precedence does that action establish for other projects? Granted the MA is 5.1, not 5.4, never the less, it is precedence setting that is more disturbing at this point and potential inappropriate use of project-specific Plan Amendments in the future.

**Response:** The amendment proposed is a site-specific, non-significant amendment designed to allow management activities in an area where the standard of 0.34 is likely to be

unattainable due to currently existing stand structures. It is not believed to be precedent setting.

**Letter #6 Comment:** The Forest Service has failed to present a reasonable range of alternatives, including options for achieving state resource management objectives and meeting Forest Plan direction which do not include mass Area Closure. We firstly dispute the legitimacy of the HABCAP model's deference to open road density as the apparent end-all, be-all of rating elk habitat effectiveness. We understand this measure to have been a critical motivation for the ID Team in suggesting the Area Closure, and find this argument to be without substance. Forage is clearly the most important habitat component for elk in the project area, as it affords principally summer range. Logic and science would suggest that cover and "disturbance" resultant from vehicular traffic are of secondary consideration.

**Letter #6 Comment:** That said; there certainly exist alternative measures effective in both the limitation of wildlife "disturbances" and the eradication of noxious weed species which could be implemented in conjunction with the concept of multiple-use, instead of those necessitating the implicit exclusion of it. We would invite the Forest Service to, at a minimum, discuss alternatives to Area Closure in their analysis.

**Response:** The no action alternative (Alternative A), does not propose an Area Closure. The Area Closure proposed under Alternative B and C would limit off road vehicle use to roads posted only as open. This would not limit snowmobile use or administrative use by permittees (EA sections 2.4.4.2.1 and 2.4.4.2.2 for Alternative B, and 2.4.4.3.1 and 2.4.4.3.2 for Alternative C). The Area Closure was proposed in order to mitigate effects to big game. Research has long shown the relationship between open roads and off highway vehicle use and harassment to big game. The area closure, coupled with closing roads and increasing forage opportunities, would increase the habitat effectiveness by decreasing harassment to big game (EA section 3.4.4.2.1).

Noxious weeds location in the Canyon and Nest area are directly correlated to the location of roads (EA section 3.6.5.1 and 3.6.5.2). Decreasing road use would help decrease the spread of noxious weeds in the area.

## WATER

**Letter #2 Comment:** With regards to the effects of the proposed Canyon/Nest project to waters in the project area, the USFS merely states that, "Implementing BMPs would protect water quality," and that, "Site-specific mitigation measures that relate directly to these BMPs would be implemented to minimize on-site erosion and instream water quality and aquatic habitat impacts." This is an inadequate analysis and completely fails to discuss the effects of specific activities to waters in the Canyon/Nest project area. For example, what are the effects of road construction and reconstruction to waters? What are the effects of paving a 100 foot section of FSR 110 along Castle Creek to Castle Creek? What are the effects of yarding and skid trail construction to waters? What are the effects of all vegetative treatments to waters? Furthermore, the USFS has continually failed to assure BMPs implemented during timber sales on the BHNF are effective. There is no information or analysis presented in the Canyon/Nest Draft EA that supports the use of BMPs as effective mitigation measures. Without such information and analysis, the USFS is improperly relying on inadequate measures to protect waters in the Canyon/Nest project area. The USFS has also failed to disclose what "minimize" means and whether or not the impacts will still be significant or not. A mere listing of mitigation measures does not mean that the effects of the proposed Canyon/Nest project to waters will not be significant. Unless the USFS presents a quantifiable estimate of the effects of the proposed Canyon/Nest project to waters in the project area, there is no basis for the determination that the effects will not be significant. Additionally, unless the USFS provides a context (i.e., a baseline to compare the effects to) for the effects of the proposed Canyon/Nest project to waters, the agency cannot support any effects assessment.

**Response:** As disclosed in Section 2.4.2 of the EA, Section 3.2 of the EA, and included in Appendix B of the EA, the project design features, mitigation measures and Best Management Practices (BMP) would minimize the impact of any activities on watershed values. The effects of paving (resolving the sediment bleed) along the 100-foot section of FSR 110 are disclosed in Section 3.2.6.1; not paving this section would maintain airborne dust and sediment delivery to Castle Creek. Yarding and skid trail construction would have no impacts to waters, as BMPs and mitigation measures would be followed. The application of vegetative buffers adjacent to each creek would also minimize sediment delivery to streams. “Minimize” means that the risk of any adverse affect occurring is unlikely and remote.

**Letter #2 Comment:** With regards to the effects of the proposed Canyon/Nest project to the Castle Creek watershed, the USFS has failed to present any analysis of any effects to this watershed. While the USFS notes that Castle Creek has the beneficial use of coldwater permanent fish life propagation waters, the USFS fails to analyze how the proposed Canyon/Nest project may affect the ability of Castle Creek to support its beneficial uses. For example, how will road construction affect the ability of Castle Creek to support its beneficial uses (see above questions as well, substituting “beneficial uses of Castle Creek” for “waters”). This question and others are not answered in the Canyon/Nest Draft EA. Again, the USFS improperly relies on unsupported BMPs and a listing of mitigation measures as an appropriate analysis of the potentially significant effects of the proposed Canyon/Nest project to the beneficial uses of Castle Creek.

**Response:** Road construction is not likely to affect Castle Creek as all road construction would occur under Best Management Practices (Appendix B) and project design features (Section 2.4.2 of the EA). Use of BMPs is a standard and accepted practice in the Forest Service and is required.

**Letter #2 Comment:** The USFS also relies primarily on a “Watershed Sensitivity Class” to analyze the potential effects of the proposed Canyon/Nest project to waters in the project area. This “Watershed Sensitivity Class” is ill-defined and the USFS has provided no clear relationship between the “Watershed Sensitivity Class” and the effects of the proposed Canyon/Nest project – including all proposed treatments – to waters.

**Response:** The watershed sensitivity index is described in Appendix J of the Black Hills NF Final Environmental Impact Statement. It is an indicator of how sensitive a watershed is to off-site and downstream impacts from management activities. The more sensitive the watershed, the more impacts that can be expected.

## SOILS

**Letter #2 Comment:** The USFS states on page 3-11 of the Canyon/Nest Draft EA for the Canyon area that: “In Alternative B 1129 proposed for treatment are located within severe erosion areas and 501 acres of treatment units are on slopes greater than 30 percent. Localized areas of rilling and gullyng will likely occur in treatment units on slopes greater than 30 percent and in severe erosion areas, but the extent of the rilling and gullyng would be reduced by the implementation of the BMPs...”. Notwithstanding the failure to provide any information and analysis supporting the effectiveness of the BMPs, this analysis provides no insight whatsoever into the effects of the proposed Canyon/Nest project to soil erosion. What does “likely occur”? What does “rilling and gullyng” mean? What does “localized areas of rilling and gullyng” mean? Are these areas large? How much will rilling and gullyng be reduced by BMPs? How much gullyng and rilling will occur? How much rilling and gullyng naturally occurs? What is the basis for determining the significance of the effects of rilling and gullyng? The USFS fails to present any substantive information and analysis that could possibly allow the agency and the public to understand and determine the significance of the effects of the proposed Canyon/Nest project to soil erosion.

**Response:** “Likely” means that there is a more than average chance that an affect would occur. Rilling and gullyng refer to the movement of water over the soil surface, creating small, surface flows of water that carry sediment with them. Localized areas means that these affects are predicted to occur on small areas within the project area. Rilling and gullyng are predicted to potentially occur only on those areas with soils susceptible to erosion or with steep slopes. The basis for determining the significance of any rilling and gullyng is dependant on the number of acres that this may potentially occur. The use of BMP’s, mitigation measures, project design features, and vegetative buffers reduce the potential for any surface erosion to reach streams.

**Letter #2 Comment:** The USFS continues to state on page 3-14 of the Canyon/Nest Draft EA for the Canyon area that, “Sediment delivery to stream channels will occur....Sediment delivered to channels will not adversely impact aquatic habitat nor impair the beneficial uses of water.” What information and analysis prompted this conclusion? The USFS has provided no estimate of the amount of sediment that may be delivered to a stream. Without this estimate, how can the agency possibly assess the significance or conclude sediment delivery will not adversely impact aquatic habitat? Additionally, what levels of sediment delivery are considered significant? What levels of sediment delivery are considered significant of the Canyon/Nest project area? The USFS states on page 3-60 of the Canyon/Nest Draft EA that, “. . .80 percent of water quality degradation results from erosion,” indicating any erosion has the potential to degrade water quality.

**Response:** As disclosed in Sections 3.2.4.2.1, 3.2.6.2.2, and 3.2.6.2.3 of the EA, while localized areas of erosion would occur, increases in peak flows, channel scour, and sediment loads would be minor. Use of Best Management Practices and project design features would mitigate any adverse effects. While no estimate of the amount of sediment that may be delivered to a stream has been calculated, the Natural Watershed Sensitivity Index (NWSI) disclosed in Section 3.2.5.3, that all subwatersheds are either low or moderately sensitive to impacts from management activities. In addition, the Equivalent Roded Area disclosed in Section 3.2.6.2 also indicated that the watersheds within the project area have a low potential for increased stream channel erosion.

**Letter #5 Comment:** The requirement that temporary roads, landings, and skid trails be ripped (page 2-5) appears to be presented in order to mitigate sedimentation. We fail to see in the text, however, any explanation of how additional soil disturbance can help to prevent sedimentation. Before this requirement is incorporated into a timber sale contract, we would ask to see the locally applicable research backing up this mitigation, and we would ask that the Forest Service demonstrate this procedure on an adjacent sale under contract, so that purchasers can get the idea of what is expected and the FS can get an idea of the additional cost to be factored into the appraisal.

**Response:** The sedimentation that might be contributed from ripping the roads is offset by the increase in water percolation and the ability for vegetation to take root in the decompacted soil.

**Letter #7 Comment:** Will the Forest Service be applying for coverage under the General Permit for Storm Water Discharge Associated with Construction Activities, due to the acres of soil disturbance due to road building?

**Response:** The adherence to Best Management Practices listed in Appendix B and project design features listed in section 2.4.2.1 are designed to minimize runoff associated with road construction. No permit would be necessary.

## HABITAT CONDITIONS

**Letter #2 Comment:** When analyzing the cumulative impacts to habitat conditions in the Canyon/Nest project area on page 3-32 of the Canyon/Nest Draft EA, the USFS omitted any discussion of the effects of past and present actions. What specific projects have occurred and are occurring in or near the project area in the past that may have affected habitat conditions in the project area? How have these specific projects affected habitat conditions in the project area? Without such disclosure, the USFS cannot possibly conclude that the effects of the proposed Canyon/Nest project to habitat conditions are not significant.

**Response:** Timber harvest and livestock grazing have been traditional land practices in the project area for over 100 years. These practices along with fire suppression have resulted in the existing vegetative conditions. Timber harvest has reduced the size and density of trees. Livestock grazing has likely affected the species composition of herbaceous and shrub communities. Fire suppression has interrupted the natural cycle of forest regeneration and allowed an increase in dead wood and the size and density of live trees. Fire suppression has also resulted in a decrease in the extent of fire dependent species such as aspen and allowed pine to encroach into meadows. These effects are analyzed in this document as baseline of existing conditions for the proposed project. Additional proposed timber harvest is analyzed as the proposed action. Livestock grazing and fire suppression are expected to continue. Continued fire suppression will allow accumulation of dead wood throughout the project area, as well as the accumulation and growth of live trees in areas not treated with this project. Herbaceous and shrub communities will continue to be affected by livestock grazing since this project will not alter grazing patterns or intensities.

## SNAILS

**Letter #2 Comment:** The USFS has identified five snail sites within the Canyon/Nest project area using Frest's reports. Were these colonies identified in both the 1993 and 2000 report, just the 1993, or just the 2000? In Frest's 2000 report, he noted many snail colonies have been extirpated. Were any snail colonies extirpated in the Canyon/Nest project area?

**Response:** Colonies were identified in both 1993 and 2000 (EA Section 3.4.4.1.4). Of the five sites identified in the Canyon and Nest areas, none have been extirpated. Of the five sites, only one was included in the 1993 report. The other four were new sites added in the 1999 survey. The one colony from the original survey in 1993 was still intact.

**Letter #2 Comment:** The USFS discloses on page 3-34 of the Canyon/Nest EA that, "At some [snail] sites the distribution of dead snail shells indicated that the colonies may have been larger at one time," indicating that snail colonies in the Canyon/Nest in the project area have been affected by past actions (i.e., cumulative effects). Yet the USFS claims there will be no cumulative effects. How is this possible? The USFS also claims a buffer will protect known colonies, yet the USFS has not disclosed whether this buffer encompasses the area where live snails currently live or the area historically occupied by snails (as identified by snail shells). The USFS claims colonies will be avoided, but without a definition of "colonies", the USFS has provided no basis for its proposed buffer. Without a definition of a "colony", how does the USFS intend to protect snail species of concern?

**Response:** The 100-foot no activity buffer would protect all known snail colonies where snails currently exist (EA Section 2.4.2.3). This buffer adequately protects the habitat of this species; therefore, because there would be no activity, no cumulative effects would occur (EA Section 3.4.4.1.4).

**Letter #2 Comment:** Furthermore, there is no analysis as to whether the proposed buffer is even adequate. If a snail colony is on a slope of greater than 30% or on severe erosion areas, a snail colony may be affected by rilling and gullyng and possibly transport of sediment caused by the

proposed Canyon/Nest project. Without a site specific analysis of a snail colony, how can the USFS determine an appropriate buffer to protect snail colonies and meet Phase I Amendment Direction?

**Response:** The proposed 100-foot buffer of no treatment adequately protects the snails and their habitat (EA Sections 2.4.2.3 and 3.4.4.1.4). The current locations of the snail populations do not occur on steep slopes or severe erosion areas; therefore, the buffer adequately protects the snails.

## FISHERIES/RIPARIAN AREAS

**Letter #2 Comment:** The Canyon/Nest Draft EA states on page 3-65 that the proposed project will not affect fisheries. Given that the proposed Canyon/Nest project will deliver sediment to stream channels, how is this effects determination possible? If sediment will be delivered to streams, then there will be affects to fisheries. Additionally, the fact that treatments area proposed on slopes greater than 30% and severe erosion areas, the chance of sediment being transported to streams seems highly likely. The USFS also failed to discuss any past or present actions that may cumulatively affect fisheries in the Canyon/Nest project area.

**Response:** The proposed vegetative buffers would effectively filter out any sediment that may move down slope and the use of best management practices would effectively reduce the risk of sediment movement through proper use and location of skid trails, resulting in a no effect determination for fisheries from timber harvest (EA Sections 3.5.5.2 and 3.5.5.3). In addition, road construction and reconstruction would also have no effect on fisheries, because FSR 110 is proposed for surfacing, which would reduce the known contributor of sediment in the Castle Creek basin (EA Sections 3.5.5.2 and 3.5.5.3). Activities that may contribute to cumulative effects are disclosed in Section 3.1.1 of the EA.

**Letter #4 Comment:** On page 2-7, Yarding Item #4, we have always recommended (and so does DENR) that equipment and activities stay at least 100 feet (not only 25') from springs, riparian areas and wet meadows unless there is some specific vegetation treatment that requires decreasing distance (such as removing conifers from hardwoods along a stream). The Best Management Practice for Streamside Management Zones (SMZ) recommend a minimum of a 50 foot buffer along each side of a stream and the width should extend beyond 50 feet to include wetlands, etc. From where did this minimal, ineffective 25 foot buffer come? If you plan to conduct mechanical activities closer than 100 feet, we would like to know mitigative measures.

**Response:** The 25 foot buffer applies to first order channels, which by definition, flow water only on an intermittent basis. All third order and higher streams have 100 foot buffers; this includes all channels that flow water.

## OTHER NATIVE SPECIES

**Letter #2 (and Letter #10) Comment:** We request the USFS fully analyze and assess the effects of the proposed Canyon/Nest project to the northern flying squirrel, Atlantis fritillary butterfly (*Speyeria atlantis pahasapa*<sup>2</sup>), sharp-shinned hawk, American kestrel, western wood-pewee, and ruffed grouse, and their habitats. We are very concerned that the northern flying squirrel and its habitat is declining on the BHNF and that the Forest Service has failed to provide any analysis or information that supports the viability determination made in the 1997 Revised Forest Plan EIS. There is a significant viability concern for this species and the USFS must ensure the proposed Canyon/Nest project does not adversely affect this species and its habitat. The Atlantis fritillary is a distinct subspecies endemic to the BHNF. This butterfly has been sighted along Castle Creek in the BHNF. There are concerns

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<sup>2</sup> Note: The genus species of the Atlantis fritillary butterfly was corrected in Letter #10 from Biodiversity Associates.

that this unique and rare butterfly species is threatened by activities occurring on the BHNF, such as the proposed Canyon/Nest project. We are also very concerned that populations of sharp-shinned hawk, American kestrel, and western wood-pewee and their habitats are also declining on the BHNF. In a monitoring report completed by the Rocky Mountain Bird Observatory in December 2001, it was noted that sharp-shinned hawks, American kestrels, and western wood-pewee were rarely observed, yet both species were historically very common on the BHNF. The Forest Service must ensure the proposed Canyon/Nest project does not adversely affect these species. There have also been concerns expressed over the status of the ruffed grouse on the BHNF by South Dakota Department of Game, Fish, and Parks personnel.

**Response:** These species are not MIS under the current Black Hills Forest Plan nor are they listed as Endangered, Threatened, or Proposed for listing under the Endangered Species Act. The Regional Forester's Sensitive Species list does not include any of these species. Therefore the Forest Service is not obligated to address these species. However, recent bird monitoring efforts have identified some concerns regarding the sharp-shinned hawk, American kestrel, and the western wood-pewee. The purpose of the Forest bird monitoring program is to identify such concerns. There may be many reasons for declines in populations. These species will be further analyzed in the Phase II amendment to determine if FS management activities have contributed to any declines and if protective measures are needed.

Habitat management for ruffed grouse is based on preserving aspen and birch communities in a variety of structural stages (Johnsgard 1983). This project was designed to maintain and enhance aspen stands in a variety of structural stages (EA Section 1.3.3). The effects of treatments on aspen are displayed in Tables 3-17 through 3-22. This project is expected to benefit ruffed grouse habitat.

The northern flying squirrel is most abundant in spruce habitats similar to the American marten and the northern three-toed woodpecker. Therefore the effects of this project on the northern flying squirrel can be expected to be similar to the effects on those species. Most treatments in mature spruce stands were dropped to maintain and improve habitat for the marten. Mitigation measures are included to create snags and maintain large diameter trees for future snag recruitment. Thus this project is expected to maintain and improve habitat for this squirrel.

Viability is a Forest planning issue and as such is outside the scope of this analysis. Viability of all species on the Black Hills is the subject of the Phase II analysis. These concerns will be forwarded to the Phase II IDT for their consideration.

### ASPEN AND HARDWOOD TREATMENTS

**Letter #4 Comment:** There are numerous references to aspen treatments in the form of "cleansing", "regeneration" and/or "releasing", etc. There are also numerous references to "leaving no commercial and non-commercial conifers" in an aspen clone and then contradictory language about the guideline to leave "no more than 10 conifers/acre for wildlife trees". We objected to this practice in the name of wildlife, as it does not serve the wildlife that most need aspen stands. All it does is perpetuate conifers within hardwoods, ensure that hardwoods will more easily carry fire and increase competition for sunlight and water. Rumble found that leaving conifers in aspen stands DOES NOT increase bird diversity (Rumble et al., 2002 or in press).

**Letter #4 Comment:** Rumble, Dr. Dale Bartos and other researchers have found that the old ecological theory of "diversity in tree species means diversity in wildlife species" is not necessarily true in western states that have lost 60-90% of historic aspen stands. We do not support leaving conifers in hardwood stands in the Black Hills. Most of our clones are so small and fragmented; they

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cannot compete with conifers and additional impacts by herbivores. Please no longer conduct this archaic practice of leaving conifers in hardwoods.

**Response:** The prescription for aspen stands is documented in section 2.4.1. The retention of 10 conifers per acre for wildlife trees would occur only in the overstory removal prescription, not in the aspen prescriptions.

**Letter #4 Comment:** Page 2-4, under Aspen Regeneration (AR), the prescription mentions “clearcutting” the stand to regenerate aspen. Dr. Dale Bartos has visited the Black Hills three times in the past 2 years and has evaluated several aspen treatments on federal and state lands. He does not promote “clearcutting” entire clones because aspen regeneration is an art, science and lots of “luck”. Some clearcut treatments in the Black Hills have worked wonderfully; others have not. Some treatments included protection, others have not. The end results are mixed but usually very disappointing.

**Response:** The Black Hills National Forest has been successful in regenerating aspen clones in the past by using this method of treatment. Regeneration of senescing aspen clones was an objective identified from the Forest Plan (EA section 3.3.3.1).

**Letter #4 Comment:** With the small percentage of remaining aspen in the Black Hills (we have lost between 60-80% of historic stands), Dr. Bartos recommends selective cutting of a few or a small percentage of mature trees followed by immediate treatments such as prescribed burning, slashing and/or fencing. That way, if something fails, you haven’t lost the clone. Jim Allen, Hell Canyon Silviculturalist, accompanied Dr. Bartos on one of his visits and I highly recommend you consult Jim on treatments. Also, do not conduct prescribed burning after the sprouts have erupted or you will burn-off all regeneration efforts. Burning needs to be done prior to sprouting to decrease competition with heavy sod-forming grasses such as *Poa* spp. and smooth brome.

**Letter #4 Comment:** Bartos also recommends a buffer of two tree lengths or up to 120 feet beyond the identified edge of an aspen clone to allow clone expansion without encountering competition from conifers.

**Letter #4 Comment:** When piling and scattering slash to protect new shoots, we recommend that the 18” slash restriction be waived for hardwood treatments. The taller the slash, the more it will impede livestock and ungulates. We do not encourage firewood gathering of aspen (live, dead, down or otherwise) because the down aspen may be part of successful regeneration and removal will only allow easier access by herbivores.

**Response:** The effects of the proposed activities on aspen are detailed in section 3.3.5 of the EA. Without treatment that disturbs the aspen, reproduction is not likely to occur. The treatments proposed would induce disturbance such that regeneration occurs. Some clones are small in acreage and selective cutting only a few of the encroaching conifers would not produce the desired response. Some aspen treatment areas are adjacent to other conifer stands scheduled for treatment, which may enable the clones to expand. Mitigation for vegetation improvement lists use of slashing or fencing to protect regeneration (EA section 2.4.3). Little to no firewood gathering of aspen is expected to occur.

**Letter #3 Comment:** Of concern among the Preferred Alternative design features, however, is the emphasis of enhancing hardwood communities. We understand and appreciate that these vegetation types contribute to diversifying habitat and afford important natural barriers to the propagation of crown fire. However, we cite Forest Plan Objective 201: “During the planning period conserve existing hardwood communities and restore historic hardwood communities by 10 percent over 1995 conditions on sites capable of supporting these communities” [emphasis added]. We would like the project analysis to reflect the change in hardwood communities which has thus far occurred during the planning period, as we believe this Objective has been more than satisfied by silvicultural treatments prescribed and implemented over this period of time. We would also point out that recent

fire events, especially in areas of the Jasper fire, have observed significant hardwood coppice regeneration; we recommend that the project analysis disclose and account for this trend. We further suggest that the project analysis address the capability of the sites proposed for aspen enhancement, pine encroachment, and other such hardwood enhancement prescriptions in order to ensure that pine sites are not unduly converted to hardwoods.

**Response:** As disclosed in the EA, Sections 2.5.1.3 and 3.3, existing aspens clones would be restored by removing encroaching vegetation. Successionally, these sites were previously aspen and the proposed treatments would restore these sites to an earlier successional stage. Because no vegetation treatments have taken place within the project area since the inception of the Forest Plan, 1997, there has been no restoration of hardwood communities within the planning area. Although the Jasper fire has likely increased the amount of hardwood component within that area, it is well outside of the project area. Restoration of hardwood communities across the entire Forest is the desired outcome of Forest Plan Objective 201. The proposed activities would not convert "pine sites" to anything that they haven't been previously in the succession of the forest, and therefore they would not be unduly converted.

### PATCH CUTS/STRUCTURAL STAGES

**Letter #3 Comment:** With regard to other prescribed treatments, several items come to our attention as areas of concern. First, the Forest should ensure in its consideration of the proposed patch clearcuts that individual cuts are of reasonably operable size and spacing. The implementation of this sort of prescription becomes difficult and costly when individual cuts are very small and very widely spaced. Second, and similarly; we have consistently found pine meadow encroachment treatments to be difficult to implement in an economically efficient manner. We feel the administration and appraisal of these treatments warrants special consideration and would like the Forest's assurances to this effect. Lastly; while the objectives for prescribed burning treatments are clear and agreeable, we would like the Project Analysis to reflect the Forest's intent to take all possible measures to minimize residual stand damage.

**Response:** The patch clearcuts would average about 2 acres in size each (EA Section 2.4.1). Sale administration and appraisal of the pine encroachment would be assessed following completion of the NEPA process. Stand damage from prescribed burning would be minimized as disclosed in Section 3.7.

**Letter #4 Comment:** While pleased that you will have some patch cuts, we recommend acreages much larger than 1-2 acres. These small patch cuts will not remain on the landscape for long (probably less than the projected 15 years). Since the proposed alternative will alter the Habitat Effectiveness model for winter elk thermal cover, we recommend increasing the patch cut sizes to offer more forage for summer animals which will help better conditions them for winter. Increased patch sizes will also better meet the minimal (and too low) grass/forb structural stage goal of 5%.

**Response:** The proposal would create other transitory openings throughout the planning area with the use of the meadow restoration, pine encroachment, and seed cut shelterwood. Additional forage would be available throughout the project area with the use of these prescriptions.

**Letter #4 Comment:** In 1999, SS 4C ponderosa pine for both areas totaled 1650 acres. In this EA, it totals 1330 acres. In 1999, SS 4C was 619 acres in Nest and 1031 acres in Canyon. Now those figures are 362 in Nest and 968 in Canyon. What happened to the remaining 320 acres? Are project areas that differently delineated in 2002?

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**Response:** Acreage differences resulted from remapping the current stands using improved Geographic Information Systems (GIS) technology.

**Letter #4 Comment:** As stated in 1999, we again support deferring harvest of SS 4C ponderosa pine (Tables 3-17 through 3-22 for all Alternatives) as it only makes up 19% (1330 ac/7078 ac) of the existing conditions.

**Letter #4 Comment:** Too often we have found that a majority of the largest SS pine are removed and the remaining are designated as old growth. Wildlife prefers the early and late structural stages and we again recommend deferring harvest of 4C areas. Because of that, we prefer Alternative C for treatment of SS 4C to better meet the goals and objectives of a balance of structural stages across the landscape.

**Response:** Harvest in these areas would contribute to the overall objectives of the Canyon/Nest project as outlined in section 3.3.3.1.

**Letter #4 Comment:** While most of our August 30, 1999 comments were addressed in the original final EA and this revised EA, we again ask that you address some of our original 1999 concerns. 1. Recommend varying heat intensities of prescribed fire to enhance habitat conditions. Prescribed fires are frequently too cold and mostly conducted in the spring – this practice does not accomplish wildlife goals for the considerable cost. 2. Minimize grass seed in native mixes; prefer more shrub and forb seeding. Grass too quickly outcompetes forbs and shrubs. 3. Disappointed once again that you did not consider any uneven-aged treatment of ponderosa pine and wonder how the Phase I Plan Amendments for balance of structural stages across a landscape will be achieved with only even-aged management? Only through individual tree selection?

**Response:** The variety of fuels treatments that are proposed would result in varying intensities of burns (EA section 2.4.2.4). Native species are proposed for all seed mixes (EA section 2.4.2.4). Uneven aged treatments rely primarily on single tree selection; however, other prescriptions including the patch cut, and prep cut shelterwood would contribute to stand diversity and varying age classes within stands.

**Letter #4 Comment:** We are also concerned that under preferred Alternative B, 32.8% of Canyon and 41.5% of Nest will still be at medium to high susceptibility to mountain pine beetle infestation following treatment. We are especially concerned that the project proposes to treat only 68.6% of the high risk stands on Canyon and 27.2% of the high risk stands on Nest. These are stands with average basal area in excess of 150 sq ft/acre. Considering the current extent of beetle activity across the forest, we urge that you re-weigh the risks of leaving such a large area in an unhealthy condition against the potential benefits. A dead stand will quickly lose its usefulness as thermal and hiding cover.

**Response:** As documented in section 3.3.5.2 of the EA, only 9.4% of the area of Canyon was considered at high risk; of this, the project treats 68.6% of the high risk area. This treatment would substantially reduce the high risk portion of the project area. In Nest, the percentage of high risk area is reduced from 15.7% of the project area to 11.4%; the proposed treatment would also reduce the high risk areas. These improvements would contribute positively to the overall stand health of the area.

## CMAI EXEMPTIONS

**Letter #2 Comment:** 16 USC § 1604(m)(2) states that CMAI exemptions shall be granted with after consideration has been give to, but not limited to, recreation, wildlife habitat, and range. Accordingly, before the USFS proceeds with the proposed Canyon/Nest project and the proposed CMAI exemptions, we request the USFS give full consideration to the effects of this CMAI exemption to wildlife habitat for every native species on the BHNF, native fish habitat, every individual native fish and wildlife species, the Atlantis fritillary butterfly, all snail species of concern, and all other sensitive species and MIS. By giving full consideration, the USFS must fully analyze and assess the specific effects of CMAI exemptions in an EIS. If the USFS finds the CMAI exemption may jeopardize the agency's ability to provide for a diversity of plant and animal communities and to maintain viable populations of native vertebrate species of wildlife – which all contribute to multiple use objectives – the USFS must not allow the CMAI exemptions.

**Response:** 16 USC § 1604(m)(2) as codified in 36 CFR 219.16a2iii states that exemptions to CMAI may be allowed “after consideration has been given to the multiple uses of the area being planned and 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;...” These exemptions were analyzed in the FEIS for the Revised Forest Plan (1997), as amended by the Phase I amendment. The purpose of the Phase I amendment was to preserve options for future management and maintain viable populations of native vertebrate species of wildlife, while allowing some management activities to occur. By adhering to Phase I management direction, this project is expected to maintain viable populations of native vertebrate species of wildlife, and a diversity of plant and animal communities.

**Letter #2 Comment:** However, given the disclosed habitat declines for several native species that would result from the proposed Canyon/Nest project, given the already limited abundance and distribution of late successional habitat on the BHNF, and given the lack of required information to support any viability determination and effects determination to several MIS, we request the USFS not grant any CMAI exemptions. If the USFS chooses to proceed with the proposed CMAI exemptions, we also request the agency describe exactly how multiple use objectives will be better attained in light of the projected (and arguably significant) habitat declines for several native species.

**Response:** As disclosed in Section 3.3.3.2 of the EA, shelterwood seed cut is the only regeneration harvest treatment prescribed for even-aged stands which need to meet or surpass 95 percent of culmination of mean annual increment (CMAI). All of the sites proposed for shelterwood seed cut have achieved or exceeded 95 percent of CMAI, based on the silviculturalist's diagnosis of stand conditions. The exemptions to CMAI that are being applied are disclosed in Sections 3.3.5.2 and 3.3.5.3 (Effects on Culmination of Mean Annual Increment portions) and are consistent with the exceptions provided in part m2 of the law as stated above.

## RECREATION AND GRAZING

**Letter #6 Comment:** Several of our members have indicated that they highly value the recreational opportunities Canyon/Nest's project area offers, and do not wish to be prevented from continuing to pursue these endeavors. Additionally, while the predicted improvement in range condition resultant from silvicultural and prescribed fire treatments are important and encouraging proposals, several grazing permittees in the Crows Nest Upper Beaver, Baseline, Spring Creek, and Cold Creek allotments are members of our Coalition, and have expressed concern that their ability to gain access for fence maintenance, feeding, watering, and salting may be impeded by the proposed Closure. Overall, we find it intolerable that the Forest Service, in its analysis, acknowledged the importance of the project area for grazing and recreation interests, only to then omit the potential impacts of the proposed action on these principally important multiple-uses.

**Letter #6 Comment:** The Forest Service appears to have failed in disclosing, in sufficient detail, the impacts of the proposed Area Closure upon the human environment; specifically, recreational and grazing access. Nowhere in the Range and Noxious Weeds, Travel Management, or Recreation sections of the project analysis' Affected Environment chapter is presented a substantive discussion indicating that the Forest Service has made a rigorous analysis of current road system use. We assume that the Roads Analysis Procedure performed on the project area would have lent some insight to what roads were highly important to recreationists and permittees, and cannot imagine why a more clearly stated set of impacts to these groups was not presented in the EA. We are forced to draw the conclusion, given similar past experiences, that this lack of disclosed analysis indicates that the Forest Service's proposed action will indeed carry considerable adverse consequences for recreationists and permittees. Your Final Environmental Analysis should include a thorough discussion of these topics.

**Response:** The Roads Analysis (Analysis File) thoroughly analyzes the effect of the proposed road treatments on recreationists and recreational opportunities, and other management activities such as grazing. Sections 3.6.5.1 and 3.8.1 document the effects of the proposal on both recreational opportunities and the grazing resource. With the remaining open roads, recreational opportunities would still be plentiful in the project area. Grazing permittees would not be excluded from maintaining their allotments with any alternatives.

#### **Additional References**

Johnsgard, P.A. 1990. Hawk, Eagles, and Falcons of North America. Smithsonian Institution Press, Washington.

Johnsgard, P.A. 1983. The Grouse of the World. University of Nebraska Press, Lincoln.

**Full Copies of Letters Received**

**Letter #1**

May 16, 2002

Michael Lloyd *ML*  
Hell Canyon Ranger District  
1225 Washington Blvd  
Newcastle, WY 82701

**RE: Comments on the Draft Environmental Assessment for the Canyon and Nest Timber Sales**

Hello,

Native Ecosystems Council (NEC) would like to provide the following comments and questions regarding the draft environmental assessment for the Canyon and Nest timber sales.

**1. The amount of road construction requires an EIS.**

A total of almost 30 miles of road construction will accompany this project. This is happening at the same time that the previous Chief of the Forest Service said the agency had too many roads, and needed to cut back. Now you are converting many unclassified roads into classified roads, plus building new roads. The problem of too many roads has already been identified, so you need to address your proposal with an EIS to evaluate the significant impacts this program will have.

**2. There was no analysis to demonstrate why the conversion of unclassified roads to classified roads, as well as new construction is a compelling management need and a public benefit.**

There are a host of problems identified with roads, including a few noted in your EA. These include impacts on big game, mountain lions, and snags. The problems associated with current road densities need to be more fully addressed, including the impact of closed roads. It is not clear why the

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public needs this massive road density on this landscape (over 4 miles per section), even if roads are intermittently closed to public use.

**3. Please include an analysis of the unroaded habitat areas that will be provided in the project areas.**

We would like to know which areas will be free of any roads, including closed roads, since these roads will still be used by hunters for access and create disturbances to wildlife. In addition, closed roads will be opened intermittently for logging, and will have additional impacts, including firewood harvest. Please discuss the road management in terms of long-term security for wildlife, and discuss the Region 1 Forest Service concept that big game need 30% of the landscape as security. Where will this security occur not only in the project area, but in the cumulative effects area? If none if available, what means do you measure impacts to wildlife?

**4. An EIS is required because you are creating significant impacts on big game by maintaining open road densities below the Forest Plan standard.**

Please define what criteria you use to measure when significant impacts occur on big game. If the Forest Plan standard for habitat effectiveness is not a measure of impacts, what is the point of the standard?

**5. You have not provided an adequate analysis or inventory of snag habitat.**

First, you have no monitoring data on populations of cavity-nesting wildlife in the project areas. Second, you have no valid inventory of snag habitat. The EA indicates only that snag habitat is limited. So how do you know what the current viability level of cavity-nesting wildlife is? We would like to know what the average current snag density is within each structural stage of the two project areas. Then we would like to know what the projected landscape level of snag habitat will be after your project is complete. Since you are significantly impacting snag habitat with your proposal, you need to demonstrate to the public that you are maintaining viable populations of cavity-nesting birds. Also, please define why created snags will be as effective as naturally-developed snags.

**6. Please demonstrate why significant impacts have not occurred to the goshawk within these project areas.**

You have provided no basis for any conclusions that goshawk productivity has not been significantly impaired in this project area due to past management. If past management has impacted viability, then the proposed action will just be more of the same. Please provide a history of goshawk nesting in this area. What is the current productivity of the known nesting area. If you aren't monitoring this, then how can you determine what impacts from logging are?

**7. Please define why the total elimination of goshawk nesting habitat in the Nest area, and a postfledging area in the Canyon area that is almost completely devoid of older age classes, does not represent a significant impact on goshawk productivity in this area.**

It appears that past logging has significantly affected the ability of this landscape to provide habitat for nesting goshawks. If the current conditions are not considered a significant impact, please clarify this by defining what is required before a significant impact on goshawk productivity in a project area is identified?

**8. Please define what the firewood policy will be on any and all roads in this analysis area, and how this will affect the snag standard.**

You did not address firewood harvest. What is the current level, what is the impact on snags, and how will this continue?

**9. You did not define why the almost complete elimination of forest interior habitat will affect wildlife.**

You have no analysis of forest interior habitat. There is very little there now, and much of this will be removed with your logging. Please define how this will affect goshawks, brown creepers, and golden-crowned kinglet viability. What monitoring data do you have to address the management of interior habitat and its impact on wildlife.

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**10. You did not define the conservation strategies that are in place for management of the home ranges of goshawks, as well as habitat for the brown creeper, golden-crowned kinglet, and the mountain lion.**

Since these are MIS and sensitive species for the Forest, we would like to know what specific plans are in place to ensure that viable populations of these species will be maintained. Please define what their habitat needs are, what measures will be implemented to meet these needs, and how you know these measures will be effective.

**11. You did not provide any information on wildlife surveys in the project areas.**

We would like to know which areas are currently occupied by sensitive species, such as the brown creeper and golden-crowned kinglet. These areas should be protected from any disturbance. If you have not identified these areas, how will these species be protected?

**12. Please use standard validated methods to evaluate roading impacts on wildlife, in addition to your own methods.**

We would like to have you include an analysis of road impacts on wildlife using Region 1's validated methods developed by Dr. Jack Lyon. You are required by NEPA to use the best science, and to address alternate methodologies if they would be a reasonable means of evaluating environmental impacts.

**13. You did not address the cost of creating 2 snags per acre, or define the size of the trees to be killed.**

Please include a cost of the mitigation for snags that will be incurred by killing trees. This is a taxpayer cost of your current timber management program, and it should be clearly disclosed as a management cost.

**14. Please define how one large green tree per acre over 20 inches will maintain the required snag levels.**

What Forest monitoring data do you have on the snag recruitment impact of your logging program? It seems like a real stretch to maintain any large snags if you only have one large green tree per acre.

**15. Please address the cumulative impact of timber harvest on cavity-nesting wildlife when historical, unmanaged forest conditions are compared to your current management regime.**

The public should have the opportunity to understand what the cost of your timber management program is on cavity-nesting wildlife. Please provide a comparison of what viability of cavity-nesting wildlife would be with the no action versus any of the action alternatives.

**16. Please provide a map of the old growth habitat that will be provided, as well as a complete description of the stand characteristics of each designated stand.**

You did not provide any inventory data on selected old growth stands. We would like to know what the qualities of these stands are to show why they have been selected for old growth management. What are their current old growth characteristics?

**17. Please define why the selected old growth stands in each project area will maintain viable populations of wildlife, including the goshawk.**

To date, the agency has failed to provide any rationale as to why 5% old growth habitat was selected as a management criteria for viability of associated wildlife. Please discuss why old growth is needed, and why the selected old growth in the project area will meet wildlife needs.

**18. Please define what the landscape strategy for old growth is within the cumulative effects area, including corridors and replacement old growth.**

How will old growth wildlife move between selected stands? Where will replacement old growth be provided? If these attributes are not provided, how effective will be the small, isolated stands you have decided to select for the old growth requirement?

**19. You did not define what your conservation strategy will be for pine marten.**

Please define what the management strategy is for pine marten, including acres to be managed, and a map to show where these areas are. Also, where will connecting corridors be provided?

**20. Please address how the size of treatment units will affect goshawk management.**

The experts interviewed for the Forest Plan Amendment indicated that no treatment units should be over 60 acres in size, in order to avoid large areas of open forest habitat. You did not address this identified problem in your EA. We would like to know the cumulative size of open forest habitat, including nonforested areas, and how this may be impacting goshawks.

Regards,



Sara Jane Johnson, NEC  
PO Box 125  
Willow Creek, MT 59760

Letter #2



Working to Protect Native Species and Their Habitats

P.O. Box 1512, Laramie, WY 82073 (307) 742-7978 fax: 742-7989

MR	TAMM
NEPA STAFF	SALE/KOHA
PERMITS	SOALEN
W/BOL	SILV
BURNS	STRECH
ENG TECH	TR FOR
ORNA STAFF	LAMR STAFF
R/OON	LAWRS
RTJEL	HOV
SPERM	NEC
HEALTHC	BAW
FIRE TECH	RECHT
FIRE TECH	QAC

CUSTER/BLACK MOUNTAIN FHD  
MAY 22 2002

May 20, 2002

Michael Lloyd  
District Ranger  
Hell Canyon Ranger District  
330 Mt. Rushmore Rd.  
Custer, SD 57730

Re: Canyon/Nest Draft Environmental Assessment Comments

Dear Mr. Lloyd:

Biodiversity Associates, Jeremy Nichols, and Brian Brademeyer submit these comments on the Draft Canyon/Nest Environmental Assessment ("Canyon/Nest Draft EA") and proposed Canyon/Nest project.

It is clear that past USFS management of the Black Hills National Forest ("BHNF") has done nothing but degrade the ecological health of the region. The current condition of the BHNF ecosystem provides obvious evidence of these effects:

- An estimated 2% of the ponderosa pine forest on the BHNF is now in true late successional condition, leaving species dependent on this specialized habitat imperiled and faced with extirpation. Even experts interviewed in the 2001 Expert Interview Summary criticized the USFS's claim that 5% of the BHNF is in true late successional condition, realizing full well that the BHNF is capable of supporting much more late successional habitat and that the forests of the BHNF have been artificially restrained from achieving late successional condition.
- Several species of wildlife are currently faced with extirpation and extinction on the BHNF. The black bear, a fairly common carnivore throughout the western United States due to its general habitat preferences, is now described as "extirpated" on the BHNF. The USFS has indicated it has no intentions of restoring viable populations of this species nor of actually verifying on the ground whether this allegation is true. Other species like the northern goshawk, northern flying squirrel, black backed woodpecker, Lewis' woodpecker, American dipper, Atlantis fritillary butterfly, and others face similar fates. The USFS continues to assert logging and other activities do not adversely affect these species' viability, yet has provided no population information that would support this determination. For many species, the USFS has even failed to gather necessary habitat information, the least the agency could do to possibly justify any effects determination to species viability.

These are just a few examples of the results of past and current forest management. The results are not due to a lack of scientific data, nor to a lack of knowledge of proper methods of ecosystem management. The specific laws, rules, and regulations guiding the management of native species have been in effect since 1982 – giving the USFS 20 years to gather adequate information to ensure the agency is providing for a diversity of plant and animal communities and is providing habitat that maintains viable and well

distributed populations of native species of wildlife. Rather, the ecological destruction of the BHNF has occurred because the USFS has made a priority of managing the Forest for commodity production, placing short-term economic benefits ahead of ecological health and species diversity – values that Congress intended the USFS to fully protect. Accordingly, recent administrative and legal challenges have uncovered this negligent forest management. Not only is this contrary to overwhelming scientific evidence and public sentiment but, as evidenced by recent administrative challenges and subsequent rulings, also contrary to existing laws and regulations. These challenges and rulings include:

- The appeal of the 1997 Revised BHNF Forest Plan and the Chief’s appeal ruling and interim direction. This decision found significant inadequacies within the 1997 Revised Forest Plan, instructed the USFS to fix these inadequacies, and gave interim direction for forest management. Among other inadequacies, the Chief found the USFS was not meeting its legal mandate to maintain viable and well distributed populations of native and desired non-native vertebrate species of wildlife.
- The lawsuit over the Veteran/Boulder timber sale which came about after significant concerns were raised over USFS management priorities on the Black Hills, especially concerning roadless areas and old growth habitat. The lawsuit subsequently led to a settlement agreement that gave direction for future Forest Plan amendments, increased protection to wildlife within many timber sale areas, and gave interim protection to the Beaver Park Roadless Area, an ecologically valuable roadless area that represents the few remnants of nearly untouched forest on the BHNF.
- The lawsuit over logging in the Norbeck Wildlife Preserve and the recent 10th Circuit Court of Appeals ruling which reversed proposed timber harvest in the preserve. The court ruled that the USFS could not prove that game animals and birds could be protected by the proposed sale under the Norbeck Organic Act. Although this decision was over timber harvest in the Norbeck Wildlife Preserve, it reflects a broader mind set of the USFS on the Black Hills, which seeks to prioritize and justify timber harvest any way possible. The USFS, in its attempt to protect wildlife in the Norbeck Preserve, could easily have implemented less destructive management techniques that were not commodity oriented. Instead, the agency’s true priorities came out all too clear, leaving many to believe the same is happening throughout the Black Hills.

Supposedly the BHNF is managed for “multiple uses” and in fact there are many organizations and individuals that push for so-called “multiple use” on the BHNF. It is hard to believe though, that a forest managed so heavily and intensively for its timber commodities could possibly be considered a “multiple use” forest in light of the fact that this management practice has been undertaken at the expense of so many “plant and animal communities” – Congressionally recognized values that contribute to multiple use objectives. The Canyon/Nest DEA promises nothing different and accordingly, we cannot support any of the action alternatives due to the continued habitat degradation that will result from any of the proposed actions. We request the USFS abandon the proposed Canyon/Nest project and instead focus upon meeting requirements to manage for native species and their habitat on the BHNF, like getting the Phase II Amendment completed.

***The Forest Service must Delay the Proposed Canyon/Nest Project Until the Phase II Amendment is Completed***

If the USFS elects to proceed with the Canyon/Nest project, we request the Forest Service delay the proposed project until the Phase II Amendment process is completed. We believe the Phase II amendment will significantly change current management practices in order to ensure the 1997 Revised

BHNF Forest Plan is legally and ecologically adequate according to the Chief's appeal ruling and the Settlement Agreement. Currently, the 1997 Revised forest plan is legally inadequate and, despite the implementation of the Phase I Amendment, still fails to provide adequate management direction that ensures viable and well distributed populations of native wildlife species, protections for management indicator species, protection of research natural areas, and other resource protections in accordance with the National Forest Management Act. The proposed Canyon/Nest project is therefore not tiered to an adequate programmatic environmental impact statement ("EIS") in accordance with the NEPA and must be delayed until Phase II is completed.

Additionally, the proposed Canyon/Nest project may limit the choice of reasonable alternatives and future management direction for the BHNF by adversely impacting imperiled species of wildlife such as the northern goshawk and other species and their habitat, adversely impacting management indicator species and their habitat, and degrading other natural values such as watershed health and riparian areas. The proposed Canyon/Nest project and associated environmental analysis must be delayed in the interim if a reasonable choice of alternatives are to be available for future management direction and if the BHNF is to be in accordance with NEPA during the amendment process (see 40 CFR § 1502.2(f)).

**The Forest Service must Complete an Environmental Impact Statement for the Proposed Canyon/Nest Project**

The Canyon/Nest Draft EA discloses on page 3-41 that, "Both action alternatives reduce habitat for the brown creeper, Alternative C is less detrimental than Alternative B." Habitat capability for the brown creeper, a management indicator species ("MIS"), in the Canyon area is disclosed as dropping from .459 to .401 under Alternative B and .415 under Alternative C. This translates to, at the least, a 10% reduction in habitat capability for the brown creeper in the Canyon area. Habitat capability for the brown creeper in the Nest area is disclosed as dropping from .330 to .322 under Alternative B and .325 under Alternative C. This translates to, at the least, a 1.5% reduction in habitat capability for the brown creeper in the Nest area. Unfortunately, the USFS provides no context for these reductions, specifically population trend data for the brown creeper which the USFS is required to obtain in accordance with 36 CFR § 219.19(a)(6). Since the USFS has failed to assess the significance of this decrease and indeed has no context within which to assess the significance anyway, the impacts to the brown creeper are highly uncertain and controversial and an EIS must be completed. If the USFS does not believe the impacts to the brown creeper are uncertain and/or controversial, please fully explain the reasoning for this conclusion. If the USFS believes it is not required by 36 CFR § 219.19(a)(6) to gather population trend data for the brown creeper, an MIS, please fully explain why.

The Canyon/Nest Draft EA discloses on page 3-45 that, "Regional population trend of the northern goshawk is downward since 1980 (BBS data). Local population trend is unknown....local habitat trend is downward due to recent large wildfires in the Southern Black Hills." The EA continues to claim, "Goshawks using these territories may be able to find territories outside the burn," and that the, "effects of the fires on population trend are uncertain." Despite the obvious lack of information required to actually assess the status of the northern goshawk on the BHNF in order to ensure the proposed Canyon/Nest project does not jeopardize the viability of the northern goshawk, the USFS concludes there exist no viability concerns. How can the USFS possibly assess the significance of the effects of the proposed Canyon/Nest project to the northern goshawk and its habitat if there is so little information? Since the effects of the proposed Canyon/Nest project to the northern goshawk and its habitat, in the context of the viability of the goshawk on the BHNF and the distribution and abundance of suitable habitat, are admittedly uncertain and highly controversial (i.e., the USFS doesn't really know), an EIS must be completed. If the USFS does not believe the effects of the proposed Canyon/Nest project to

goshawk viability are not uncertain, please fully explain the reasoning for this conclusion. If the USFS believes the proposed Canyon/Nest project will not further limit goshawk habitat on the BHNF, please fully explain the reasoning for this conclusion.

The Canyon/Nest Draft EA discloses on page 3-50 that habitat capability for the black-backed woodpecker in the Canyon area will decrease from .879 to .703 under Alternative B and .743 under Alternative C. This translates to, at the least, a 9% reduction in habitat capability for the black-backed woodpecker in the Canyon area. For the Nest area, habitat capability will decrease from .289 to .266 under Alternative B and .275 under Alternative C. This translates to, at the least, a 5% reduction in habitat capability for the black-backed woodpecker in the Nest area. The EA also states, "There is no local or regional population trend available." Despite this lack of population information that would provide a context for the decreases in black-backed woodpecker habitat and allow the USFS to assess the significance of the proposed Canyon/Nest project in relation to species viability, the USFS somehow can determine the proposed Canyon/Nest project will not jeopardize the viability of the black-backed woodpecker. How is this possible? Obviously, the USFS has no way to even measure the significance of black-backed woodpecker habitat declines. The effects of the proposed Canyon/Nest project are therefore highly uncertain and high controversial and an EIS must be completed. If the USFS does not believe the effects of the proposed Canyon/Nest project to the black-backed woodpecker are not highly uncertain, please fully explain the reasoning for this conclusion.

The Canyon/Nest Draft EA discloses on page 3-30 that there are currently no stands of ponderosa pine in structural stage 5 ("SS 5"), or late succession, in the Canyon or Nest areas. These stands are invaluable to many species of wildlife such as the northern goshawk, brown creeper, black-backed woodpecker, northern three-toed woodpecker, and golden-crowned kinglet. Despite this lack of ecologically essential habitat within the Canyon/Nest project area, the USFS is proposing to log stands of ponderosa pine that will grow into SS 5, specifically stands in SS 4C. The Canyon/Nest Draft EA discloses that, under Alternative B and C, ponderosa pine stands in SS 4C will be reduced by several hundred acres. Unfortunately, there is no assessment as to whether or not this reduction in potential late successional habitat is significant or not. Regardless of Forest Plan direction, how will this reduction in potential late successional habitat affect species of wildlife dependent on late successional habitat on the BHNF? Since the USFS has failed to complete this assessment and given the decreases in habitat for the brown creeper, northern goshawk, black-backed woodpecker, and the northern three-toed woodpecker, the effects of the proposed Canyon/Nest project are highly uncertain and highly controversial. An EIS must be completed in order to fully analyze the effects of the proposed Canyon/Nest project to late successional habitat and potential late successional habitat.

#### *Deficiencies in Canyon/Nest Draft EA*

The USFS must also correct several deficiencies within the Canyon/Nest Draft EA in an EIS before proceeding with the proposed Canyon/Nest project. An EIS is required to correct the following deficiencies:

Water – With regards to the effects of the proposed Canyon/Nest project to waters in the project area, the USFS merely states that, "Implementing BMPs would protect water quality," and that, "Site-specific mitigation measures that relate directly to these BMPs would be implemented to minimize on-site erosion and instream water quality and aquatic habitat impacts." This is an inadequate analysis and completely fails to discuss the effects of specific activities to waters in the Canyon/Nest project area. For example, what are the effects of road construction and reconstruction to waters? What are the effects of paving a 100 foot section of FSR 110 along Castle Creek to Castle Creek? What are the effects of yarding and

skid trail construction to waters? What are the effects of all vegetative treatments to waters? Furthermore, the USFS has continually failed to assure BMPs implemented during timber sales on the BfNf are effective. There is no information or analysis presented in the Canyon/Nest Draft EA that supports the use of BMPs as effective mitigation measures. Without such information and analysis, the USFS is improperly relying on inadequate measures to protect waters in the Canyon/Nest project area. The USFS has also failed to disclose what “minimize” means and whether or not the impacts will still be significant or not. A mere listing of mitigation measures does not mean that the effects of the proposed Canyon/Nest project to waters will not be significant. Unless the USFS presents a quantifiable estimate of the effects of the proposed Canyon/Nest project to waters in the project area, there is no basis for the determination that the effects will not be significant. Additionally, unless the USFS provides a context (i.e., a baseline to compare the effects to) for the effects of the proposed Canyon/Nest project to waters, the agency cannot support any effects assessment.

With regards to the effects of the proposed Canyon/Nest project to the Castle Creek watershed, the USFS has failed to present any analysis of any effects to this watershed. While the USFS notes that Castle Creek has the beneficial use of coldwater permanent fish life propagation waters, the USFS fails to analyze how the proposed Canyon/Nest project may affect the ability of Castle Creek to support its beneficial uses. For example, how will road construction affect the ability of Castle Creek to support its beneficial uses (see above questions as well, substituting “beneficial uses of Castle Creek” for “waters”) This question and others are not answered in the Canyon/Nest Draft EA. Again, the USFS improperly relies on unsupported BMPs and a listing of mitigation measures as an appropriate analysis of the potentially significant effects of the proposed Canyon/Nest project to the beneficial uses of Castle Creek.

The USFS also relies primarily on a “Watershed Sensitivity Class” to analyze the potential effects of the proposed Canyon/Nest project to waters in the project area. This “Watershed Sensitivity Class” is ill-defined and the USFS has provided no clear relationship between the “Watershed Sensitivity Class” and the effects of the proposed Canyon/Nest project – including all proposed treatments – to waters.

Soils – The USFS states on page 3-11 of the Canyon/Nest Draft EA for the Canyon area that:

“In Alternative B 1129 acres proposed for treatment are located within severe erosion areas and 501 acres of treatment units are on slopes greater than 30 percent. Localized areas of rilling and gulying will likely occur in treatment units on slopes greater than 30 percent and in severe erosion areas, but the extent of the rilling and gulying would be reduced by the implementation of the BMPs...”

Notwithstanding the failure to provide any information and analysis supporting the effectiveness of BMPs, this analysis provides no insight whatsoever into the effects of the proposed Canyon/Nest project to soil erosion. What does “likely occur”? What does “rilling and gulying” mean? What does “localized areas of rilling and gulying” mean? Are these areas large? How much will rilling and gulying be reduced by BMPs? How much gulying and rilling will occur? How much rilling and gulying naturally occurs? What is the basis for determining the significance of the effects of rilling and gulying? The USFS fails to present any substantive information and analysis that could possibly allow the agency and the public to understand and determine the significance of the effects of the proposed Canyon/Nest project to soil erosion.

The USFS continues to state on page 3-14 of the Canyon/Nest Draft EA for the Canyon area that, “Sediment delivery to stream channels will occur....Sediment delivered to channels will not adversely impact aquatic habitat nor impair the beneficial uses of water.” What information and analysis prompted this conclusion? The USFS has provided no estimate of the amount of sediment that may be delivered to

a stream. Without this estimate, how can the agency possibly assess the significance or conclude sediment delivery will not adversely impact aquatic habitat? Additionally, what levels of sediment delivery are considered significant? What levels of sediment delivery are considered significant for the Canyon/Nest project area? The USFS states on page 3-60 of the Canyon/Nest Draft EA that, "...80 percent of water quality degradation results from erosion," indicating any erosion has the potential to degrade water quality.

When analyzing the cumulative impacts to soils in the Canyon/Nest project area, the USFS omitted any discussion of the effects of past actions. What specific projects have occurred in or near the project area in the past that may have affected soils in the project area? How have these specific projects affected soils in the project area? Cumulative effects are defined at 40 CFR § 1508.7.

Habitat Conditions – When analyzing the cumulative impacts to habitat conditions in the Canyon/Nest project area on page 3-32 of the Canyon/Nest Draft EA, the USFS omitted any discussion of the effects of past and present actions. What specific projects have occurred and are occurring in or near the project area in the past that may have affected habitat conditions in the project area? How have these specific projects affected habitat conditions in the project area? Without such disclosure, the USFS cannot possibly conclude that the effects of the proposed Canyon/Nest project to habitat conditions are not significant. Cumulative effects are defined at 40 CFR § 1508.7.

Snails – The USFS has identified five snail sites within the Canyon/Nest project area using Frest's reports. Were these colonies identified in both the 1993 and 200 report, just the 1993, or just the 2000? In Frest's 2000 report, he noted many snail colonies have been extirpated. Were any snail colonies extirpated in the Canyon/Nest project area?

The USFS discloses on page 3-34 of the Canyon/Nest EA that, "At some [snail] sites the distribution of dead snail shells indicated that the colonies may have been larger at one time," indicating that snail colonies in the Canyon/Nest in the project area have been affected by past actions (i.e., cumulative effects). Yet the USFS claims there will be no cumulative effects. How is this possible? The USFS also claims a buffer will protect known colonies, yet the USFS has not disclosed whether this buffer encompasses the area where live snails currently live or the area historically occupied by snails (as identified by snail shells). The USFS claims colonies will be avoided, but without a definition of "colonies", the USFS has provided no basis for its proposed buffer. Without a definition of a "colony", how does the USFS intend to protect snail species of concern?

Furthermore, there is no analysis as to whether the proposed buffer is even adequate. If a snail colony is on a slope of greater than 30% or on severe erosion areas, a snail colony may be affected by rilling and gullyng and possibly transport of sediment caused by the proposed Canyon/Nest project. Without a site-specific analysis of a snail colony, how can the USFS determine an appropriate buffer to protect snail colonies and meet Phase I Amendment Direction?

Management Indicator Species – As discussed earlier, the USFS has failed to present any population trend data for the brown creeper. This data is not only required by 36 CFR § 219.19(a)(6), but is required to provide a context for the habitat declines that would result from the proposed Canyon/Nest project. Additionally, the EA discloses the reduction in pine and spruce structural stages yet entirely fails to analyze the effects of specific actions that may not affect structural stage, but that affect brown creeper habitat. For example, how will thinning, overstory removal, road construction and reconstruction, and individual tree select treatments affect the brown creeper? These activities may not reduce the overall structural integrity of stands of trees, but may take place in brown creeper habitat and therefore affect the brown creeper.

The USFS also fails to assess the significance of the declines in brown creeper habitat in the Canyon/Nest Draft EA. The USFS fails to assess the significance of the effects of the proposed Canyon/Nest project to broods of brown creeper.

When analyzing the cumulative impacts to the brown creeper in the Canyon/Nest project area on page 3-32 of the Canyon/Nest Draft EA, the USFS omitted any discussion of the effects of past and present actions. What specific projects have occurred and are occurring in or near the project area in the past that may have affected the brown creeper in the project area? How have these specific projects affected the brown creeper in the project area? Without such disclosure, the USFS cannot possibly conclude that the effects of the proposed Canyon/Nest project to the brown creeper are not significant. Cumulative effects are defined at 40 CFR § 1508.7.

Sensitive Species – The USFS states on page 3-42 of the Canyon/Nest Draft EA that the most recent “field visits” occurred in January and February of 2001 and 2002. What does “field visits” mean? Was the USFS surveying for specific sensitive species? If so, which species? The USFS is required by the Black Hills supplement to the Forest Service Manual at FSM 2672.103 to assume the presence of sensitive species where adequate population data does not exist and where such data would be difficult to obtain. Given this requirement, why did the USFS not include the fringed-tailed myotis, Townsend’s big-eared bat, pygmy nuthatch, and the Lewis’ woodpecker in the list of sensitive species that could be expected to occur in the Canyon/Nest project area? The USFS does not have adequate population data for these species and it does not appear the USFS attempted to obtain such data. The fringed-tailed myotis, Townsend’s big-eared at, and pygmy nuthatch are also an MIS on the BHNF. The USFS must assume their presence and analyze the effects of the proposed Canyon/Nest project to these species and their habitat.

The Canyon/Nest Draft EA discloses that there are no known goshawk nests in the Nest area and no suitable nesting habitat in the Nest area. Are there any goshawk territories that overlap into the Nest area? What criteria was used to determine there is no suitable goshawk nesting habitat in the Nest area? Additionally, the USFS currently has no adequate population data for the northern goshawk and the last time surveys for the goshawk occurred in July of 1998. The USFS is therefore required to assume the presence of the goshawk in the Nest area in order to comply with FSM direction and to fully analyze the effects of the proposed Canyon/Nest project to the northern goshawk. The viability determination made for the northern goshawk on page 3-46 of the Canyon/Nest Draft EA is also wholly unsupported. The USFS has not provided any forest-wide goshawk population data to provide a context for the viability determination. This is especially glaring since the goshawk is an MIS. It is impossible to tell if goshawk populations are currently viable and its is highly uncertain whether the proposed Canyon/Nest project will actually maintain viable populations of the northern goshawk without population information. Additionally, when analyzing the cumulative effects to the northern goshawk, the USFS failed to discuss any past or present actions and their effects to the northern goshawk.

The Canyon/Nest Draft EA discloses no population information for the black-backed woodpecker that would provide a context for the viability determination. This is especially glaring since the black-backed woodpecker is an MIS. The Draft EA discloses that habitat for the black-backed woodpecker will decline, but there is no assessment of the significance of this decline nor any attempt to correlate this decline to the current status of black-backed woodpecker populations. How can the USFS possibly conclude the proposed Canyon/Nest project will maintain black-backed woodpecker viability without such discussion? The USFS also failed to discuss any past or present actions that may cumulatively affect the black-backed woodpecker. Additionally, how much illegal cutting of snags is taking place on the BHNF? Is this affecting the ability of the USFS to meet snag retention requirements? Is the USFS

adjusting management practices to ensure illegal snag cutting does not adversely impact snag dependent species of wildlife?

The Canyon/Nest Draft EA discloses no population information for the northern-three toed woodpecker that would provide a context for the viability determination. This is especially glaring since the northern three-toed woodpecker is an MIS. The Draft EA discloses that habitat for the northern-three toed woodpecker will decline, but there is no assessment of the significance of this decline nor any attempt to correlate this decline to the current status of northern three-toed woodpecker populations. How did the USFS conclude that habitat capability will not be “significantly” reduced? What does “significantly” mean in quantitative terms? How can the USFS possibly conclude the proposed Canyon/Nest project will maintain northern three-toed woodpecker viability without such discussion? The USFS also failed to discuss any past or present actions that may cumulatively affect the northern three-toed woodpecker. Additionally, the USFS contends that both action alternatives would provide the greatest benefits to the northern three-toed woodpecker in the short term by providing snags immediately. However, the USFS discusses the possibility of wildfires occurring in the Canyon/Nest project area, which would also create snags and does not discuss how many snags will be created by the No Action Alternative. What are the chances of a wildfire occurring in the project area? How many snags may be created by wildfire? How many snags would be created under the No Action Alternative?

The USFS states that no sensitive plant surveys have been completed in the Canyon/Nest project area since 1994 – eight years ago. Despite the fact that no recent surveys have been done, the USFS has concluded that only the northern arnica may be present in the Canyon/Nest project area. How can the USFS adequately determine which sensitive plant species may be affected by the proposed Canyon/Nest project without up-to-date surveys? Given the lack of adequate information, the USFS must assume the presence of all sensitive plant species and protect their habitat accordingly. The USFS also failed to discuss any past or present actions that may cumulatively affect sensitive plants in the Canyon/Nest project area.

Fisheries – The Canyon/Nest Draft EA states on page 3-65 that the proposed project will not affect fisheries. Given that the proposed Canyon/Nest project will deliver sediment to stream channels, how is this effects determination possible? If sediment will be delivered to streams, then there will be affects to fisheries. Additionally, the fact that treatments are proposed on slopes greater than 30% and severe erosion areas, the chance of sediment being transported to streams seems highly likely. The USFS also failed to discuss any past or present actions that may cumulatively affect fisheries in the Canyon/Nest project area.

Other Native Species – We request the USFS fully analyze and assess the effects of the proposed Canyon/Nest project to the northern flying squirrel, Atlantis fritillary butterfly (*Speyeria hesperis pahasapa*), sharp-shinned hawk, American kestrel, western wood-pewee, and ruffed grouse, and their habitats. We are very concerned that the northern flying squirrel and its habitat is declining on the BHNF and that the Forest Service has failed to provide any analysis or information that supports the viability determination made in the 1997 Revised Forest Plan EIS. There is a significant viability concern for this species and the USFS must ensure the proposed Canyon/Nest project does not adversely affect this species and its habitat. The Atlantis fritillary is a distinct subspecies endemic to the BHNF. This butterfly has been sighted along Castle Creek in the BHNF. There are concerns that this unique and rare butterfly species is threatened by activities occurring on the BHNF, such as the proposed Canyon/Nest project. We are also very concerned that populations of sharp-shinned hawk, American kestrel, and western wood-pewee and their habitats are also declining on the BHNF. In a monitoring report completed by the Rocky Mountain Bird Observatory in December 2001, it was noted that sharp-shinned hawks, American kestrels, and western wood-pewee were rarely observed, yet both species were

historically very common on the BHNF. The Forest Service must ensure the proposed Canyon/Nest project does not adversely affect these species. There have also been concerns expressed over the status of the ruffed grouse on the BHNF by South Dakota Department of Game, Fish, and Parks personnel.

The deficiencies within the Canyon/Nest Draft EA must be corrected in an EIS in order to fully analyze and assess the potentially significant effects, to disclose the unavoidable adverse effects, to analyze a range of reasonable alternatives, and to disclose the irreversible and irretrievable commitments of resources that will result if the proposed Canyon/Nest project is implemented. If the USFS feels that an EIS is not necessary, the agency must fully justify this conclusion with analysis and information that supports any assertion that the effects of the proposed Canyon/Nest project are insignificant or are not uncertain or highly controversial. Analysis and information must present a threshold of significance to which the effects of the proposed Canyon/Nest project can be compared to and a context for the USFS's assessment can be established.

#### CMAI Exemptions

16 USC § 1604(m)(2) states that CMAI exemptions shall be granted with after consideration has been given to, but not limited to, recreation, wildlife habitat, and range. Accordingly, before the USFS proceeds with the proposed Canyon/Nest project and the proposed CMAI exemptions, we request the USFS give full consideration to the effects of this CMAI exemption to wildlife habitat for every native species on the BHNF, native fish habitat, every individual native fish and wildlife species, the Atlantis fritillary butterfly, all snail species of concern, and all other sensitive species and MIS. By giving full consideration, the USFS must fully analyze and assess the specific effects of CMAI exemptions in an EIS. If the USFS finds the CMAI exemption may jeopardize the agency's ability to provide for a diversity of plant and animal communities and to maintain viable populations of native vertebrate species of wildlife – which all contribute to multiple use objectives – the USFS must not allow the CMAI exemptions. However, given the disclosed habitat declines for several native species that would result from the proposed Canyon/Nest project, given the already limited abundance and distribution of late successional habitat on the BHNF, and given the lack of required information to support any viability determination and effects determination to several MIS, we request the USFS not grant any CMAI exemptions. If the USFS chooses to proceed with the proposed CMAI exemptions, we also request the agency describe exactly how multiple use objectives will be better attained in light of the projected (and arguably significant) habitat declines for several native species.

#### Travel Management

The Canyon/Nest Draft EA states on page 3-97 that, “Road development needed to adequately serve and protect the resources of the area is not completed. The proposed transportation system would fully meet existing and future transportation needs.” What specific needs must be met by the proposed transportation system? How will the proposed transportation system meet these specific needs? How do road developments serve and protect resources? As it is, the USFS has provided no basis for determining the proposed transportation plan is necessary and must be implemented to adequately serve and protect the resources of the Canyon/Nest project area (Note: We'd also like to know how the USFS “serves” resources).

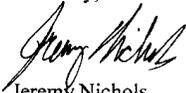
Furthermore, what will the effects of reclassifying roads as Forest System Roads be? Will traffic increase on these roads? What will the effects of increase traffic be? Will off-road vehicle use increase as a result of reclassifying roads as Forest System Roads? What will the effects of increased off-road vehicle use be? Will illegal firewood cutting increase as a result of reclassifying roads as Forest System Roads? How many user-created routes exist within the Canyon/Nest project area? How many roads that

will be reclassified as Forest System Roads were user-created? The USFS also failed to discuss any past or present actions that may cumulatively affect travel management in the Canyon/Nest project area. For example, what previous travel management analyses and projects has the USFS completed and what are the effects of these past actions? Has the USFS received any past reports of resource damage being caused from any existing roads? Has the USFS received any past reports of resource damage being caused by the creation of routes by Forest users? Has the USFS received any past reports of resource damage being caused from off-road vehicle use in the Canyon/Nest project area? The USFS has provided insufficient information to support the agency's claim that the proposed transportation plan is needed and will not significantly affect the Canyon/Nest project area.

Finally, what will the resulting open-road density be in both the Canyon and Nest areas under all action alternatives? How does the USFS assess the significance of open road densities, which are known to directly and indirectly affect deer and elk?

While the USFS could choose to abandon the proposed Canyon/Nest project in favor of ecological restoration within the Canyon/Nest project area, we are not getting our hopes up. The agency has shown time and time again that providing commercial timber is an overriding priority in forest management on the BHNF, regardless of ecological concerns, species viability concerns, and regardless of the public's concerns. We are not trying to push the agency to do anything illegal or irrational, we are merely asking the USFS to comply with laws and regulations and to manage the BHNF to protect the ecosystems therein using the best available scientific information. We feel this request to be more than reasonable and indeed, it has been recognized by Congress, the judicial branch of this government, the executive branch of this government, and by the citizens of this country to be so. We hope the agency chooses a different path with regards to the proposed Canyon/Nest project and sets a new and necessary standard of ecosystem management on the BHNF by pursuing a No Action Alternative within the Canyon/Nest project area.

Sincerely,



Jeremy Nichols  
Biodiversity Associates  
PO Box 1512  
Laramie, WY 82073  
(307)742-7978

for

Brian Brademeyer  
PO Box 762  
Rapid City, SD 57709

Letter #3

## Black Hills Forest Resource Association

2040 West Main Street, Suite 315, Rapid City, South Dakota 57702-2447, (605) 341-0875

May 30, 2002

Michael D. Lloyd  
BHNF Hell Canyon Ranger District  
330 Mt. Rushmore Road  
Custer, SD 57730

Dear Mr. Lloyd,

In response to the District's solicitation for comment on the Draft Canyon/Nest Environmental Assessment, the Black Hills Forest Resource Association submits the items to follow for your consideration. As always, we are appreciative of this opportunity to provide input on project analyses and draft documents, and of the constructive relationship we maintain with your District and its staff.

### Design Features Common to All Action Alternatives

A number of encouraging elements present themselves among the common design features to all action alternatives. We support the employment of reasonable measures to mitigate soil erosion and sediment discharge into streams, including the installation of proper drainage structures on forest system and temporary roads, stream course protection, rapid revegetation of disturbed soils and prescribed burn areas using approved non-aggressive native seed mixtures, and responsible administration of yarding and tractor harvest systems, among other such methods. We are also encouraged to find the Forest placing high emphasis on silvicultural and fuels prescriptions designed to reduce the risk of catastrophic wildland and urban interface fire. Noxious weeds have and continue to be a serious concern for the health of the Black Hills, and we support the implementation of chemical, mechanical, and biological containment and control measures in keeping with an overall multiple-use mandate for the Forest. We are also supportive of the use of KV funding to accomplish a varying post-sale management projects, particularly with regard to POL thinnings and situations where desired road improvements are outside the level of maintenance needed to remove included timber.



Several concerning common design features also present themselves in Canyon/Nest's proposed action, however. First, we would like to point out that, in the wildlife biologist's report (p3-45), the Jasper, Elk Mountain, and Roger's Shack fires were used as justification for portraying a downward trend in goshawk habitat on the forest due to habitat loss. In following with this logic, it seems inappropriate to apply a 20" diameter limit for Canyon/Nest's proposed timber sales, along with prescribing the creation of 2 snags per acre on commercially treated sites, and leaving 10 replacement green trees in overstory removal units, all in the name of ensuring sufficient snag-related habitat and forage. If the analysis of green tree retention was truly conducted at a landscape level, as the project file implies, it should have considered the massive amount of snag "recruitment" caused by our recent fire events, and furthermore, the heavy mountain pine beetle activity that continues to "recruit" snags across the Black Hills landscape.

A renewable resource

Furthermore, these sort of green tree retention standards fly in the face of the very silvicultural premise upon which treatments like overstory removals and the preceding intermediate cuts are based. The purpose of the various stages in a shelterwood silvicultural system is to progressively cultivate a healthy and vigorous crop of regeneration, culminating in the removal of competition from the regenerated stand so as to facilitate accelerated growth rates. An added ecological component of the final stage in this system is to create a diverse mix of structural stages across the landscape, enhancing wildlife habitat and curtailing the propagation of crown fire. Retaining significant numbers of large-diameter trees simply does not accomplish these objectives and is an arbitrary and unacceptable way of conducting silvicultural business, completely unsubstantiated by proven science.

We are additionally concerned with the amount of unclassified road decommissioning proposed for all action alternatives. We understand that the Roads Analysis Procedure allows the Forest only limited options for the way in which unclassified roads can be dealt with once the analysis is complete. However, we have and will continue to maintain that access for future management activities and fire suppression, especially in MA 5.1, must weigh most heavily on the recommendations made after the RAP is complete.

#### Design Features of the Preferred Alternative

In general, we are encouraged by the contribution to ASQ accomplishment afforded by Canyon/Nest's Preferred Alternative. One aspect of the Preferred Alternative we have consistently mentioned in other project comments, and are encouraged to see in Canyon/Nest, are relatively large cutting units and a fair proportion of acreage treated relative to the entire project area. We feel these design items are of critical importance for both the tangible accomplishment of silvicultural and vegetative management objectives across the landscape and for the efficiency with which purchasers are able to implement these objectives. We are, for the most part, supportive of the prescribed silvicultural treatments; they achieve the important goals of thinning overstocked stands, maintaining forest health, reducing catastrophic fire risk, and creating a range of structural stages across the landscape. Please note that we do not feel the non-preferred alternative adequately addresses any of these issues.

We understand the need for the proposed project-specific Forest Plan Amendment to Guideline 5.1-3201 and support its inclusion in the Preferred Alternative. The project area is not classified as important winter range for elk, and the management objective accomplishment enabled by the proposed amendment would seem a decidedly more prudent course of action to pursue in this resource context than strict adherence to HABCAP-dictated compliance with G 3201.

Of concern among the Preferred Alternative design features, however, is the emphasis on enhancing hardwood communities. We understand and appreciate that these vegetation types contribute to diversifying habitat and afford important natural barriers to the propagation of crown fire. However, we cite Forest Plan Objective 201:

“During the planning period conserve existing hardwood communities and restore historic hardwood communities by 10 percent over 1995 conditions on sites capable of supporting these communities.” [emphasis added]

We would like the project analysis to reflect the change in hardwood communities which has thus far occurred during the planning period, as we believe this Objective has been more than satisfied by silvicultural treatments prescribed and implemented over this period of time. We would also point out that recent fire events, especially in areas of the Jasper fire, have observed significant hardwood coppice regeneration; we recommend that the project analysis disclose and account for this trend. We further suggest that the project analysis address the capability of the sites proposed for aspen enhancement, pine encroachment, and other such hardwood enhancement prescriptions in order to ensure that pine sites are not unduly converted to hardwoods.

With regard to other prescribed treatments, several items come to our attention as areas of concern. First; the Forest should ensure in its consideration of the proposed patch clearcuts that individual cuts are of reasonably operable size and spacing. The implementation of this sort of prescription becomes difficult and costly when individual cuts are very small and very widely spaced. Second, and similarly; we have consistently found pine meadow encroachment treatments to be difficult to implement in an economically efficient manner. We feel the administration and appraisal of these treatments warrants special consideration and would like the Forest’s assurances to this effect. Lastly; while the objectives for prescribed burning treatments are clear and agreeable, we would like the Project Analysis to reflect the Forest’s intent to take all possible measures to minimize residual stand damage.

With regard to the application of Phase I direction to Canyon/Nest, specifically for marten and goshawk, we are concerned with both the content of the analysis and the resultant recommendations in the Preferred Alternative:

Marten: We were foremost troubled to find that the Forest, despite monitoring evidence suggesting that marten are not present and do not use the area, even after having very recently been introduced within the Project Area by SD GFP, deleted significant proposed treatment units from the Nest portion of the Project Area. Further troubling, was the Forest’s apparent incorporation of research which has neither been finalized nor peer-reviewed (Fescke, in press) in making the determination to exclude these areas from treatment. We feel the project analysis clearly indicates that the “(prevention) of decrease in patch size of current or high-potential marten habitat” and abstention of thinning in “important connectivity habitat areas” (G 3215) is unnecessary because the area has not been sufficiently demonstrated as current, high-potential, or important connectivity habitat in the first place. Clearly, the original Project Analysis designated these areas because there were desired silvicultural objectives to meet. We fail to see that sufficient justification has been presented in the new EA pursuant to Phase I’s requirements to warrant the deletion of these units. We would further point out that the wildlife biologist’s assessment of the affected environment came to the

determination that marten would be unimpacted because they do not inhabit the project area (p. 3-48). The subsequent arrival at the conclusion that treatment of the units in question would represent an adverse impact on animals that are not present is completely incongruous with this determination.

Goshawk: We have, and will continue to maintain that FSM Supplement 2672.10-2001-1 regarding the “presumed presence” of goshawks was a completely inappropriate circumvention of the publicly vetted amendment process for forest planning. The public was expected to somehow have assumed that “non-significant changes to the 1997 Revised LRMP” in the form of “short-term” interim Phase I Amendment direction were inevitably to include directing the Forest to “presume” the presence of goshawks in all cases and adjust their management prescriptions accordingly. We therefore believe that the proposed PFA and suitable nest habitat designations, with the exception of the lone identifiably active nest, in addition to the seasonal restrictions on operability related to goshawk fledging, are arbitrary and capricious measures, unsubstantiated by science or reason.

#### General Suggestions

The No Action Alternative is described in the Affected Environment portion of the EA as having no effect on noxious weeds. We feel this is completely inaccurate; wind, rain and wildlife contribute far more to noxious weed propagation than any “ground-disturbing activity” the Action Alternatives propose. Long have we said that comparing “action” alternatives against a stand-and-stare management scenario lends itself neither to developing a well-explored range of management options, nor to accurately assessing the impacts associated with various action/inaction. For example, none of the described KV Opportunities, vegetative, silvicultural, or habitat management objectives would be accomplished under a no-action alternative. While the project analysis acknowledges some of these items, it does not include any measure of the opportunity cost associated with doing nothing. For consideration in this EA and in future documents, we believe an analysis of similar rigor is necessary for a more objective comparison of alternatives.

For this and other project decisions which were withdrawn as a result of the Veteran/Boulder lawsuit and reanalyzed to meet the requirements of the Phase I Amendment, it is helpful to include a brief summary of the changes occurring between the original (withdrawn) project decision and the newly formed Preferred Alternative.

For resource professionals, the reasoning behind the proposed Project-specific Forest Plan Amendment for elk winter range habitat effectiveness was relatively easy to discern. For the general public, however, a more concise, plain-language explanation of the purpose and need for this component of the Preferred Alternative is probably in order. The most logical places to include such an explanation might be a brief reference in the abstract, and the addition of more detail in the proposed action summary.

Among the KV Opportunities are various monitoring projects. These are essential components of bettering multiple-use forest management and of assessing the extent to

which the project accomplished its objectives. We think an important item conspicuously absent from the proposed monitoring is the assessment of the extent to which wildlife habitat is actually improved by snag creation/retention, not just the effectiveness of the creation/retention itself. Additionally, we would like to see the Forest monitor the tangible improvement in habitat effectiveness and use for elk, marten, and goshawk resultant from the amendments to the original Project Decision pursuant to Phase I direction.

We once again thank you for the opportunity to provide input on this analysis and proposed action, and for your serious consideration of these concerns. Please feel free to contact me with any questions you might have.

Sincerely,

A handwritten signature in black ink, appearing to read 'A. Everett', with a stylized flourish at the end.

Aaron Everett  
Forest Programs Manager

Letter #4

**DEPARTMENT OF GAME, FISH AND PARKS**

Regional Office  
3305 West South Street  
Rapid City, South Dakota 57702-8160

May 30, 2002

VIA Fax and hand delivery

Mr. Michael D. Lloyd  
Hell Canyon Ranger District  
330 Mt. Rushmore Road  
Custer, SD 57730

Re: Draft/Revised Canyon/Nest EA

Dear Mike:

First of all I want to congratulate the ID/Enterprise Team for the exceptionally great job in incorporating Phase I standards and previous public comments into this Revised Draft EA. There was hardly any guesswork on my part as to intent, mitigation, etc. This Phase I deal is certainly uncharted territory and I appreciate the work that went into this EA.

**Roads:**

We support reduction of road densities due to loss of habitat and forage as well as increased habitat fragmentation and altered wildlife behavior and movements (as we have already commented re: Jasper Roads Analysis and refer you to our three letters (to date) for supportive documentation). The roads analyses have been completed but we would support an alternative that would reduce road densities to more closely approximate 1 mi/sq mi or less. We support area closures.

**Riparian Areas and Mechanical Treatments:**

On page 2-7, Yarding Item #4, we have always recommended (and so does DENR) that equipment and activities stay at least 100 feet (not only 25') from springs, riparian areas and wet meadows unless there is some specific vegetation treatment that requires decreasing distance (such as removing conifers from hardwoods along a stream). The Best Management Practices (BMP) for Streamside Management Zones (SMZ) recommend a minimum of a 50 foot buffer on each side of a stream and the width should extend beyond 50 feet to include wetlands, etc. From where did this minimal, ineffective 25 foot buffer come? If you plan to conduct mechanical activities closer than 100 feet, we would like to know mitigative measures.

We would like to notify the ID Team that the Black Hills Forest Resource Association received a grant to audit the South Dakota Best Management Practices along

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Streamside Management Zones in 2001. The results of that audit have been published. You may want to contact Aaron Everett, Forest Programs Manager for BHFRA for a copy of that audit to ensure no BMP changes for SMZ's have been suggested or adopted (Aaron Everett, BHRFA, 2040 West Main Street, Suite 315, Rapid City, SD 57702).

**Aspen and Hardwood Treatments:**

There are numerous references to aspen treatments in the form of "cleansing", "regeneration" and/or "releasing", etc. There are also numerous references to "leaving no commercial and non-commercial conifers" in an aspen clone and then contradictory language about the guideline to leave "no more than 10 conifers/acre for wildlife trees". We objected to this practice in the name of wildlife, as it does not serve the wildlife that most need aspen stands. All it does is perpetuate conifers within hardwoods, ensure that hardwoods will more easily carry fire and increase competition for sunlight and water. Rumble found that leaving conifers in aspen stands DOES NOT increase bird diversity. (Rumble et al., 2002 or in press. Do Pine Trees In Aspen Stands Increase Bird Diversity? Unknown where it will be published. Contact RMRS in Rapid City for a published copy).

Rumble, Dr. Dale Bartos and other researchers have found that the old ecological theory of "diversity in tree species means diversity in wildlife species" is not necessarily true in western states that have lost 60-90% of historic aspen stands. Those wildlife species that prefer or depend upon hardwoods do not gain anything by having scattered conifers in the stands. Those species that benefit from conifers will already be preferred by the heavy dominance of conifers across the landscape. What little bit of wildlife diversity you think you gain by mixed stands is totally lost by the fact that the aspen will be converted to conifer and will probably more easily carry fire. It is not a net benefit. We do not support leaving conifers in hardwood stands in the Black Hills. Most of our clones are so small and fragmented; they cannot compete with conifers and additional impacts by herbivores. Please no longer conduct this archaic practice of leaving conifers in hardwoods.

Page 2-4, under Aspen Regeneration (AR), the prescription mentions "clearcutting" the stand to regenerate aspen. Dr. Dale Bartos has visited the Black Hills three times in the past 2 years and has evaluated several aspen treatments on federal and state lands. He does not promote "clearcutting" entire clones because aspen regeneration is an art, science and lots of "luck". Some clearcut treatments in the Black Hills have worked wonderfully; others have not. Some treatments included protection, others have not. The end results are mixed but usually very disappointing.

Disease and herbivory can eliminated a majority of regeneration in some treatments. For unsuccessful clearcut treatments, there are no parent trees to again treat for a response. In other cases, we found that the treatment worked but follow-up protection was not conducted or was not effective. Or, sometimes the trees did not regenerate for whatever multitude of reasons and the entire clone was lost. In Utah, Dr. Bartos

witnessed the loss of a 200-acre treatment when the clearcut and follow-up treatment/protection failed. The clone and genetics were completely lost.

With the small percentage of remaining aspen in the Black Hills (we have lost between 60-80% of historic stands), Dr. Bartos recommends selective cutting of a few or a small percentage of mature trees followed by immediate treatments such as prescribed burning, slashing and/or fencing. That way, if something fails, you haven't lost the clone. Jim Allen, Hell Canyon Silviculturalist, accompanied Dr. Bartos on one of his visits and I highly recommend you consult Jim on treatments. Also, do not conduct prescribed burning after the sprouts have erupted or you will burn-off all regeneration efforts. Burning needs to be done prior to sprouting to decrease competition with heavy sod-forming grasses such as *Poa* spp. and smooth brome.

Bartos also recommends a buffer of two tree lengths or up to 120 feet beyond the identified edge of an aspen clone in order to allow clone expansion without encountering competition from conifers.

When piling and scattering slash to protect new shoots, we recommend that the 18" slash restriction be waived for hardwood treatments. The taller the slash, the more it will impede livestock and ungulates. Again, Jim Allen will know some of the suggested treatments such as hinging mature trees at dbh and allowing the cut tops to serve as impediments to herbivores. We do not encourage firewood gathering of aspen (live, dead, down or otherwise) because the down aspen may be part of successful regeneration and removal will only allow easier access by herbivores.

I will provide aspen treatment publications upon request but refer you directly to Dr. Dale Bartos of the RMRS in Ogden, Utah, and Dr. Mark Rumble of RMRS in Rapid City.

**Patch Cuts:**

While pleased that you will have some patch cuts, we recommend acreages much larger than 1-2 acres. These small patch cuts will not remain on the landscape for long (probably less than the projected 15 years). Since the proposed alternative will alter the Habitat Effectiveness model for winter elk thermal cover, we recommend increasing the patch cut sizes to offer more forage for summer animals which will help better condition them for winter. Increased patch sizes will also better meet the minimal (and too low) grass/forb structural stage goal of 5%.

**Structural Stages:**

In 1999, SS 4C ponderosa pine for both areas totaled 1650 acres. In this EA, it totals 1330 acres. In 1999, SS 4C was 619 acres in Nest and 1031 acres in Canyon. Now those figures are 362 in Nest and 968 in Canyon. What happened to the remaining 320 acres? Are project areas that differently delineated in 2002?

As stated in 1999, we again support deferring harvest of SS 4C ponderosa pine (Tables 3-17 through 3-22 for all Alternatives) as it only makes up 19% (1330 ac/7078 ac) of existing conditions.

Alternative B plans to remove 63% of SS 4C (removal of 830 ac /1330 ac). That only leaves 500 acres or 37% remaining on the landscape. This is one of the most important late successional habitats for some wildlife species as the EA indicates.

Alternative C removes 21% (284 ac/1330 ac) of SS 4C which the balance of 1046 acres or 79% remains on the landscape.

Too often we have found that a majority of the largest SS pine are removed and the remaining are designated as old growth. Wildlife prefers the early and late structural stages and we again recommend deferring harvest of 4C areas. Because of that, we prefer Alternative C for treatment of SS 4C to better meet the goals and objectives of a balance of structural stages across the landscape.

**Habitat Effectiveness Model:**

While Standard 5.1-3201 for elk winter habitat effectiveness will not be met in Nest Project Area with Alternative B, you have not shown how are the two values (34 vs. 20) statistically and significantly different? And, what does that significance mean as far as on-the-ground, actual habitat impacts? We strongly suggest you look at that and be prepared to defend your decision either way. It would behoove your team to consult other Forests and big game experts familiar with this HE model to help determine the significance of a 34 value vs. 20.

Your EA pointed out that the model does not show impacts to deer on a year-round basis and that elk summer HE is still within acceptable values. And, the project area may not be critical winter range for elk but we encourage you to contact Dr. Mark Rumble to find out what he learned from studying seasonal movements of radio-collared elk.

Also, how does minimal removal of SS 4C in Alternative C affect the HE model for winter elk? I am not familiar with all the variables for this model. Until I better understand the model, we reserve opinion of accepting a project-specific Plan Amendment. That is not to say we would not, in this one time, cautiously accept a deviation in model values, but we need to better understand what variables determine the model output.

Our position on this potential impact is that if there were a significant project-specific Plan Amendment, what sort of precedence does that action establish for other projects? Granted, the MA is 5.1, not 5.4, never the less, it is precedence setting that is more disturbing at this point and potential inappropriate use of project-specific Plan Amendments in the future.

Phase II will hopefully more closely analyze the HE model and its validity. We ask that your ID team conduct a more thorough literature search on big game winter thermal cover requirements and consult other HE model users to help answer:

1. How significantly different are the two values? (34 vs. 20).
2. Is SS 4C a variable in the HE model and if so, how does that particular variable change the model predictions between Alternative B and C?

**Previous GFP Comments:**

While most of our August 30, 1999 comments were addressed in the original final EA and this revised EA, we again ask that you address some of our original 1999 concerns.

1. Recommend varying heat intensities of prescribed fire to enhance habitat conditions. Prescribed fires are frequently too cold and mostly conducted in the spring-this practice does not accomplish wildlife goals for the considerable cost.
2. Minimum grass seed in native mixes: prefer more shrub and forb seeding. Grass too quickly out competes forbs and shrubs.
3. Disappointed once again that you did not consider any uneven-aged treatment of ponderosa pine and wonder how the Phase I Plan Amendments for balance of structural stages across a landscape will be achieved with only even-aged management? Only through individual tree selection?

**Conclusion:**

We could concur with Alternative B if it includes the above modifications and with a strong qualifier that the Team explains in greater detail the HE model and variables so we can better evaluate the two action alternatives. Please have a team member give me a call.

Thank you for the opportunity to comment on the proposed Draft EA. Please forward a copy of the final.

Sincerely,



Shelly Deisch  
Wildlife Biologist

cc: John Kirk, Pierre

Letter #5



**POPE & TALBOT, INC.**

May 30, 2002

Michael Lloyd  
District Ranger  
USFS-Hell Canyon District  
330 Mt. Rushmore Rd.  
Custer, SD 57730

Re: Canyon/Nest Draft EA

Dear Mr. Lloyd,

Thank you for the opportunity to comment on the Draft Canyon/Nest Environmental Assessment. These comments are submitted on behalf of Pope & Talbot, Inc.

Concerning management of the transportation system, Alternatives B and C propose to "decommission" a substantial mileage of temporary and unclassified roads. The E.A. states on page 3-100 that "All temporary road construction and unclassified roads would be decommissioned."

It is our opinion that all temporary roads used during the course of this project be added to the transportation system and not be decommissioned. Roads that are useful today will likely be useful during the next entry. These roads should be stabilized following use, and if necessary to mitigate impacts on soils and wildlife, closed to public traffic. Scheduled maintenance should be deferred until the time of the next entry, unless needed earlier to prevent erosion.

Unclassified roads likewise should be added to the system if they prove useful during any phase of this project. Whether used during this project or not, unclassified roads should be stabilized following use, and, if necessary to mitigate impacts on soils and wildlife, closed to public traffic. Again, scheduled maintenance should be deferred until the time of the next entry, unless needed earlier to prevent erosion.

Experience has shown us that needed roads are often dropped from the system, only to be re-opened as a temporary road (following the attendant surveys) twenty years later during the next entry. It makes more sense to leave them on the system.

Experience has also shown us that the presence of roads is extremely valuable during wildfire suppression. Roads that are to be closed to the public should be closed in such a way as to remain available for administrative use.

We are also concerned that under preferred Alternative B, 32.8% of Canyon and 41.5% of Nest will still be at medium to high susceptibility to mountain pine beetle infestation

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following treatment. We are especially concerned that the project proposes to treat only 68.6% of the high risk stands on Canyon, and 27.2% of the high risk stands on Nest. These are stands with average basal area in excess of 150 sq ft/acre. Considering the current extent of beetle activity across the forest, we urge that you re-weigh the risks of leaving such a large area in such an unhealthy condition against the potential benefits. A dead stand will quickly lose its usefulness as thermal and hiding cover.

The requirement that temporary roads, landings, and skid trails be ripped (page 2-5) appears to be presented in order to mitigate sedimentation. We fail to see in the text, however, any explanation of how additional soil disturbance can help to prevent sedimentation. Before this requirement is incorporated into a timber sale contract, we would ask to see the locally applicable research backing up this mitigation, and we would ask that the Forest Service demonstrate this procedure on an adjacent sale under contract, so that purchasers can get an idea of what is expected and the FS can get an idea of the additional cost to be factored into the appraisal.

Thank you for your consideration of these comments.

Sincerely,



David Brenneisen  
Assistant Resource Manager

Letter #6



P.O. Box 9496 • Rapid City, SD 57709 • 605-341-0875 FAX 605-341-8651

May 30, 2002

Michael D. Lloyd  
Hell Canyon Ranger District  
330 Mt. Rushmore Road  
Custer, SD 57730

Dear Mr. Lloyd,

This letter is in response to the District's request for comment on the Canyon/Nest Draft Environmental Assessment and proposed action. The Black Hills Regional Multiple Use Coalition and its nearly 20,000 members take great interest in the preservation of multiple-use management on the Black Hills NF. We therefore feel we must express our grave concerns with the Area Closure and KV-funded spring protection and enhancement proposed in the Canyon/Nest EA.

Several of our members have indicated that they highly value the recreational opportunities Canyon/Nest's project area offers, and do not wish to be prevented from continuing to pursue these endeavors. Additionally, while the predicted improvement in range condition resultant from silvicultural and prescribed fire treatments are important and encouraging proposals, several grazing permittees in the Crows Nest Upper Beaver, Baseline, Spring Creek, and Cold Creek allotments are members of our Coalition, and have expressed concern that their ability to gain access for fence maintenance, feeding, watering, and salting may be impeded by the proposed Closure. Overall, we find it intolerable that the Forest Service, in its analysis, acknowledged the importance of the project area for grazing and recreation interests, only to then omit the potential impacts of the proposed action on these principally important multiple-uses.

Our specific issues of concern are as follows:

1. The Forest Service appears to have failed in disclosing, in sufficient detail, the impact of the proposed Area Closure upon the human environment; specifically, recreational and grazing access. Nowhere in the Range and Noxious Weeds, Travel Management, or Recreation sections of the project analysis' Affected Environment chapter is presented a substantive discussion indicating that the Forest Service has made a rigorous analysis of current road system use. We assume that the Roads Analysis Procedure performed on the project area would have lent some insight to what roads were highly important to recreationists and permittees, and cannot imagine why a more clearly stated set of impacts to these groups was not presented in the EA. We are forced to draw the conclusion, given similar past experiences, that this lack of disclosed analysis indicates that the Forest Service's proposed action will indeed carry considerable adverse consequences for

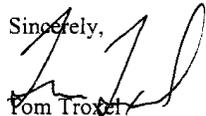
recreationists and permittees. Your Final Environmental Analysis should include a thorough discussion and disclosure of these topics.

2. The Forest Service has failed to present a reasonable range of alternatives, including options for achieving stated resource management objectives and meeting Forest Plan direction which do not include mass-Area Closure. We firstly dispute the legitimacy of the HABCAP model's deference to open road density as the apparent end-all, be-all of rating elk habitat effectiveness. We understand this measure to have been a critical motivation for the ID Team in suggesting the Area Closure, and find this argument to be without substance. Forage is clearly the most important habitat component for elk in the project area, as it affords principally summer range. Logic and science would suggest that cover and "disturbance" resultant from vehicular traffic are of secondary consideration.

That said; there certainly exist alternative measures effective in both the limitation of wildlife "disturbance" and the eradication of noxious weed species which could be implemented in conjunction with the concept of multiple-use, instead of those necessitating the implicit exclusion of it. We would invite the Forest Service to, at minimum, discuss alternatives to Area Closure in their analysis. To augment this discussion, the BHRMUC would certainly be willing to sit down with the Forest Service and provide input as to how the preceding resource management objectives can be simultaneously accomplished.

We appreciate your attention to these matters, and look forward to further correspondence from you.

Sincerely,

  
Tom Troxell  
Executive Director

Letter #7

Nancy Hilding  
President  
Prairie Hills Audubon Society  
of Western South Dakota  
P.O. Box 792  
Rapid City, S.D. 57709  
605-787-6466  
May 30, 2002

Michael Lloyd  
District Ranger  
Hell Canyon Ranger District  
330 Mt. Rushmore Rd.  
Custer, SD 57730

Re: Canyon/Nest Draft Environmental Assessment Comments

Dear Mr. Lloyd.

I can't find a copy of this draft environmental assessment in my files and I have not read it. Will you send me a copy?

GOSHAWKS/LATE SUCCESSION

Based on a phone conversation with Biodiversity Associates I had today, I believe that there are no structural stage 5 or 6 ponderosa pine stands remaining in the two areas planned for Canyon/Nest timber sale. I also understand there is only one goshawk territory identified in the Canyon project area and no goshawk territories and nests identified in the Nest project area. How recent and reliable are the surveys that determined there were no goshawk nests in the Nest area? Should you not be conservative, in case you have not identified all potential/past goshawk nest sites and provide for potential goshawk nesting and fledging habitat in Nest project area also?

As I understand it, there are currently 968 acres of structural stage 4 C in the Canyon area and 362 acres of 4C in the Nest area. These will be reduced to 364 acres and 136 acres respectively after the proposed harvest. Neither area provides Structural Stage 5 or 6 stands near goshawk nests and therefore structural stage 4 must be relied on to meet all late successional needs. According to the Forest Plan's revised guideline 3144, about 20% of the 420 acres of a goshawk fledgling habitat need to be in structural stages 5 and 20% in structural stage 6 and 20% in structural stages 4. 82 acres is 20 % of 420 acres.

These timber sales don't leave much in the way of reserve late successional stands, in case of future unplanned stand killing events.

Prairie Hills Audubon remains deeply concerned about the future of late successional habitat and goshawks in this forest.

## TIERING

We are concerned that Forest direction under the 1997 Black Hills National Forest Land and Resource Management Plan (1997 Plan) and the Phase I Amendment remains inadequate to protect species at risk on this forest. During the Phase I Amendment process, the expert's recommendations led to the creation of Alternative 3, but in May 2001, the Forest chose to ignore those recommendations and chose Alternative 2 instead. Alternative 2 poses a greater risk for wildlife species and allegedly it was chosen in order to minimize risk to the timber industry.

The Phase 1 Amendment Biological Assessment and Biological Evaluation concluded that due to lack of data it is not certain if there is a viable population of goshawks. It is our understanding that in 1997 the Forest could only find 15 nesting pairs of goshawks, that in 2000 it could only find 11 nesting pairs and that in 2001 it could only find 9 nesting pairs. There is an apparent downward trend in goshawks.

It is our understanding that while there are 144 historic nest sites forestwide, not all of these nests can still be found or still occur in areas which still have habitat that can support goshawk nests. It is our understanding that the Forest Service believes there may be about an estimated 70 goshawk territories on the Forest.

In fiscal year 1992, 50,000 acres of potential nesting habitat were inventoried for goshawks by the Forest Service and 14 active nests were identified. In 1994 Goshawk nests surveys were completed on approximately 23,000 acres and 38 historic nest were checked and 11 active nests were located and 4 territories had birds but no nests were found. It is our understanding that in the year 1997 only 44 territories were monitored (and 15 nesting pairs found), in 1999 12 territories were monitored (7 nesting [pairs found] and in 2000 only 42 territories were monitored (11 nesting pairs found). It is our understanding that in 2001, forest service wildlife staff were instructed to monitor for nests that have the potential to be active and that in the year 2001 only 46 territories were monitored (9 nesting pairs found). The forest service needs to clarify why a maximum of about 42-46 out of an estimated 70 territories are being monitored. Is this because about 34-36 territories have no known viable goshawk nests or is it that the wildlife biologists repeatedly don't bother to monitor all potentially active nests? What ever the reason, as stated above, with more territories monitored, they could only find 9 nesting pairs in 2001.

Based on figures in the Land and Resource Management Plan DEIS (1994) we calculated that prior to the DEIS (1994), 26.5% of the forest's acres were harvested per decade and that the DEIS figures indicated that under the new plan 27.5% percent of the forest would be harvested per decade. On page 19 of the Biological Assessment and Biological Evaluation for the Phase I Amendment it states "Forest management projects are expected to occur on three percent of the Forest annually, or about 15 percent of the Forest over the next 5 years. Not all of this is in forested habitats. Approximately 11 percent of the Forested acres will be treated in the next 5 years." This shows that in May 2001 they project that 22% of the forest acres will be harvested in a decade. The FEIS on the plan indicted only 2% of the forest remained in old growth. The inventoried roadless areas and the wilderness add up to about 2.1% of the forest.

The Black Hills National Forest has a very aggressive timber program with huge potential to extirpate goshawks and given that huge risk, inadequate goshawk monitoring and inadequate goshawk protection is not acceptable. After years of putting timber first, after years of excessive cutting and road building, after years of inadequate protection of old growth, after years of inadequate monitoring, the only data the Forest can provide shows a trend of declining numbers of goshawk nesting pairs. We find the choice of Alternative 2 over Alternative 3 for the Phase I Amendments irresponsible.

The Forest Service can't control windthrow, fire, or beetles and the "cure" for beetles is to cut down beetle killed trees and open up denser stands by cutting trees. All of these natural and man made events could erode the 2% remaining in old growth and the late successional trees near nesting and fledgling habitat around existing or potential goshawk nest sites.

The Canyon/Nest project is tiered to the Phase I Amendment and the Forest Plan. The continuation of timbers sales such as the Canyon/Nest Project under the current inadequate, amended Plan can compromise the continued viability and distribution of species of wildlife and their habitat. As stated above only 9 goshawk pairs can be found and only 42-46 territories are recently monitored forestwide.

Given the extreme amount of land impacted by the Forests timber program and the potential for natural disturbance events, this forest can't afford to cut more old growth. It can't afford to cut the large amount of 4C stands and leave little in the way of "reserve/potential" late successional stands as proposed in the Canyon/Nest EA.

#### RECREATION

I can't find a copy of this draft EA in my files to check, but in the past the Forest Service hasn't normally listed bird watching as a recreational use of the project area in other EAs that I have read. Please be sure to include bird or wildlife watching as a recreational use.

#### STORM WATER PERMIT

Will the Forest Service be applying for coverage under the General Permit for Storm Water Discharges Associated with Construction Activities, due the acres of soil disturbance due to road building?

Nancy Hilding



President  
Prairie Hills Audubon Society  
of Western South Dakota

Letter #8

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OFFICE OF FEDERAL LAND POLICY

307 777 3524

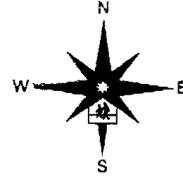
P. 02/03



JIM GERINGER  
GOVERNOR

State of Wyoming  
**Office of Federal Land Policy**  
Art Reese, Director

May 28, 2002



Black Hills National Forest Service  
Attn: Mr. John Twiss  
Forest Service Building  
RR 2, Box 200-Hwy. 385 North  
Custer, SD 57730-9530

**Re: Canyon-Nest Vegetative Treatment Environmental Assessment**  
**State Identification Number: 2002-081**

Dear Mr. Twiss:

The Office of Federal Land Policy has reviewed the referenced environmental assessment on behalf of the State of Wyoming. This Office also distributed the referenced document to affected state agencies for their review, in accordance with State Clearinghouse procedures. Attached are comments from the State Historic Preservation Office. While the State defers to its agencies' technical expertise in developing the State's position, the responsibility to articulate balanced official, unified State policies and positions lies with the Governor or the Office of Federal Land Policy.

At this time this office has no major concerns or comments. We ask however, that the attached comments receive your favorable consideration.

Please continue to provide this office with either two hard copies or electronic copy (submit to [OFLP@state.wy.us](mailto:OFLP@state.wy.us)) of continued information for review and distribution to interested agencies. Thank you for the opportunity to comment.

Sincerely,

Tracy J. Williams  
Planning Consultant

Encl s (1)

cc: State Historic Preservation Office

Herschler Building, 1 West ♦ 122 West 25<sup>th</sup> Street ♦ Cheyenne, Wyoming 82002-0060  
Phone (307) 777-3736 ♦ Fax (307) 777-3524  
[OFLP@state.wy.us](mailto:OFLP@state.wy.us)

Letter #9

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OFFICE OF FEDERAL LAND POLICY

307 777 3524

P.03/03

# WYOMING

DEPARTMENT OF STATE PARKS & CULTURAL RESOURCES  
STATE HISTORIC PRESERVATION OFFICE

Barrett Building  
2301 Central Ave.  
Cheyenne, WY 82002  
  
(307) 777-7697  
FAX (307) 777-6421

May 17, 2002

Mr. Art Reese  
Office of Federal Land Policy  
Herschler Building, 1 West  
Cheyenne, WY 82002-0600

re: Canyon-Nest Vegetative Treatment Environmental Assessment OFLP Project #2002-081 (SHPO File # 0502SPP029)

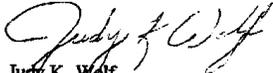
Dear Mr. Reese:

Sheila Powley of our staff has received information concerning the aforementioned. Thank you for allowing us the opportunity to comment.

Management of cultural resources on USDA FS projects is conducted in accordance with Section 106 of the National Historic Preservation Act and Advisory Council regulations 36 CFR Part 800. These regulations call for survey, evaluation and protection of significant historic and archeological sites prior to any disturbance. Provided the Forest Service follows the procedures established in the regulations, we have no objections to the project. Specific comments on the project's effect on cultural resource sites will be provided to the Forest Service when we review the cultural resource documentation called for in 36 CFR Part 800.

Please refer to SHPO project control number 0502SPP029 on any future correspondence dealing with this project. If you have any questions contact Sheila Powley at 307-777-7498 or me, at 307-777-6311.

Sincerely,



Judy K. Wolf  
Review and Compliance Program Manager

Jim Geringer, Governor



John T. Keck, Director

TOTAL P.03

Letter #10



Working to Protect Native Species and Their Habitats

P.O. Box 1512, Laramie, WY 82073 (307) 742-7978 fax: 742-7989

May 28, 2002

Michael Lloyd  
 District Ranger  
 Hell Canyon Ranger District  
 330 Mt. Rushmore Rd.  
 Custer, SD 57730

Re: Canyon/Nest Draft Environmental Assessment Comments

Dear Mr. Lloyd:

Biodiversity Associates, Jeremy Nichols, and Brian Brademeyer mistakenly identified the Atlantis fritillary butterfly in our previously submitted comments on the Canyon/Nest Environmental Assessment ("Canyon/Nest Draft EA") and proposed Canyon/Nest project. This butterfly species' correct scientific name is *Speyeria atlantis pahasapa*. We incorrectly identified this rare butterfly in our May 20, 2002 comments. We hope this clarification dispels any questions your office may have had concerning the Atlantis fritillary.

Sincerely,

Jeremy Nichols  
 Biodiversity Associates  
 PO Box 1512  
 Laramie, WY 82073  
 (307)742-7978

For

Brian Brademeyer  
 PO Box 762  
 Rapid City, SD 57709

USTER/ELK MTN RD

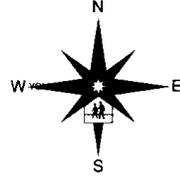
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NEPA STAFF	SALE ADM
PRESALE	SCALER
W BIOD	SILV
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ENG TECH	TM FOR
ORA STAFF	LAWR STAFF
R CON	LANDS
R TECH	ANCH
FIRE/AC	REC
HELTACK	STAFF
FIRE TECH	BMA
FIRE TECH	RECEPT
FIRE TECH	CAC

Letter #11



State of Wyoming  
**Office of Federal Land Policy**  
Art Reese, Director



May 28, 2002

Black Hills National Forest Service  
Attn: Mr. John Twiss  
Forest Service Building  
RR 2, Box 200-Hwy. 385 North  
Custer, SD 57730-9530

**Re: Canyon-Nest Vegetative Treatment Environmental Assessment  
State Identification Number: 2002-081**

Dear Mr. Twiss:

Please add the attached comments from the Office of State Lands and Investments to the cover letter that I faxed/mailed to you earlier this morning. Thank you.

Sincerely,

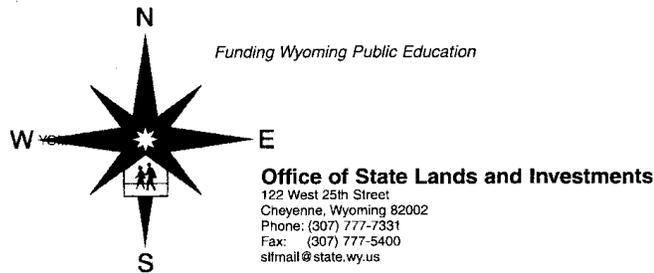
A handwritten signature in cursive script that reads "Tracy J. Williams".

Tracy J. Williams  
Planning Consultant

Encl s (1)

cc: Office of State Lands and Investments

Herschler Building, 1 West ♦ 122 West 25<sup>th</sup> Street ♦ Cheyenne, Wyoming 82002-0060  
Phone (307) 777-3736 ♦ Fax (307) 777-3524  
OFLP@state.wy.us



Jim Geringer  
Governor

Ron Arnold  
Director

May 24, 2002

Mr. Art Reese, Director  
Office of Federal Land Policy  
Herschler Building, 1W  
122 West 25<sup>th</sup> Street  
Cheyenne, WY 82002

Re: OFLP Project Number 2002-081  
Canyon/Nest Vegetative Treatment  
Environmental Assessment

Dear Mr. Reese:

The Office of State Lands and Investments has reviewed the referenced environmental assessment. Our comments regarding the proposed action are specific to this agency's statutory mission within State government which is to provide timely, accurate and cost effective service to the Board of Land Commissioners, the State Loan and Investment Board, policymakers and the citizens of Wyoming to facilitate wise and reasonably analytical decision making that will maximize the State's assets and resources in accordance with mandated authorities. In that regard, these comments are meant to, in association with all other agency comments, assist in defining the Official State Position. These comments defer to and are subordinate to the Official State Position.

At this time, our office has no objection to the proposed action.

We appreciate this opportunity to comment and if we may be of further assistance, please let us know.

Sincerely,

Ron Arnold  
Director

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*These comments are reflective of a specific agency mission only. These comments defer to and are subordinate to the Official State Position.*



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## APPENDIX D – Summary of Activities by Stand Number

Abbreviations Used in this Appendix:

Loc – Location (Compartment)

Site – Stand Number

SS – Structural Stage

Log Sys – Yarding System Required: T = Tractor, C = Cable, T/C = Tractor & Cable

Silv Rx – Silvicultural Prescription (Refer to Section 2.4.1 of EA for descriptions)

DEFER – No Treatment

DEFER-OG – No Treatment

DEFER-M – No Treatment

PCT – Pre-Commercial Thin

CC – Patch Clearcut

PC – Prep Cut Shelterwood

SC – Seed Cut Shelterwood

OR – Overstory Removal

DEFER/CC – Combination of DEFER and CC

OR/CC – Combination of OR and CC

OR/SC – Combination of OR and SC

OR/PC – Combination of OR and PC

MR – Meadow Restoration

SEL – Single Tree Select

PE – Pine Encroachment

PSCC – Pine and Spruce Clearcut

AR – Aspen Restoration

PSCC/AR – Combination of PSCC and AR

POL – POL Thinning

Cover Type

TPP – Ponderosa Pine

TWS – White Spruce/Mixed Conifer

TAA – Aspen

GRA – Grass (Meadow)

Fuels Rx – Fuels Prescriptions

Ntm – No Treatment

Ls – Lop and scatter to height of 18 inches or less

Mp – Machine Pile

Wty – Whole-Tree Yarding

Jp,bc – Jackpot or broadcast burn dependant on level needed

Ls-Ntm – Lop and scatter with no additional treatment

Vol Est – Volume Estimate (MBF)

## Canyon Portion of the Project Area

Loc	Site	Acres	Exist Cover Type	Exist SS	Log Sys	Silv Rx B	SS B	Cover Type B	Fuels Rx B	Vol Est B	Silv Rx C	SS C	Cover Type C	Fuels Rx C	Vol Est C
040304	0091	18.37	TPP	4C	T	PCT	4B	TPP	L&S	0.0	PCT	4B	TPP	L&S	0.0
040304	0092	23.48	TPP	4C	T	PCT	4B	TPP	L&S	0.0	PCT	4B	TPP	L&S	0.0
040304	0094	73.82	TPP	3B	T	PCT	3B	TPP	L&S	0.0	PCT	3B	TPP	L&S	0.0
040304	0095	27.19	TPP	3C	T	PCT	4B	TPP	L&S	0.0	PCT	4B	TPP	L&S	0.0
040304	0096	54.12	TPP	3C	T	PCT	4B	TPP	L&S	0.0	PCT	4B	TPP	L&S	0.0
040304	0098	17.48	TPP	4B	T	OR	3B	TPP	L&S	69.9	OR	3B	TPP	L&S	69.9
040903	0103	45.10	TPP	4B	T	OR	3B	TPP	L&S	135.3	OR	3B	TPP	L&S	135.3
040903	0105	85.06	TPP	4B	T	OR/SC	3B	TPP	L&S	170.1	OR/SC	3B	TPP	L&S	170.1
040903	0106	47.66	TPP	4A	T	OR	3B	TPP	L&S	95.3	OR	3B	TPP	L&S	95.3
040903	0108	41.45	TPP	4C	T	OR	3B	TPP	L&S	124.3	OR	3B	TPP	L&S	124.3
040903	0109	41.75	TPP	4B	T	OR	3B	TPP	L&S	125.3	OR	3B	TPP	L&S	125.3
040903	0110	35.66	TPP	4A	T	OR	3B	TPP	L&S	71.3	OR	3B	TPP	L&S	71.3
040903	0111	18.07	TPP	4B	T	OR	3B	TPP	L&S	54.2	OR	3B	TPP	L&S	54.2
040903	0112	33.51	TPP	4A	T	SC	4A	TPP	WTY, JP-BC	100.5	SC	4A	TPP	WTY, JP-BC	100.5
040903	0113	11.76	TPP	4B	T	OR	3B	TPP	L&S	23.5	OR	3B	TPP	L&S	23.5
040903	0114	13.41	TPP	4B	T	PC	4A	TPP	WTY, JP-BC	40.2	PC	4A	TPP	WTY, JP-BC	40.2
040903	0115	63.42	TPP	4B	T	DEFER/CC	4B	TPP	WTY, JP-BC	20.0	DEFER/CC	4B	TPP	WTY, JP-BC	20.0
040903	0117	68.66	TPP	4B	T	OR	3B	TPP	L&S	137.3	OR	3B	TPP	L&S	137.3
040903	0118	6.57	GRA		T	PE		GRA	L&S - MP	3.3	PE		GRA	L&S - MP	3.3
040903	0119	33.96	TPP	4A	T	OR	3A	TPP	L&S	169.8	OR	3A	TPP	L&S	169.8
040903	0120	15.53	GRA		T	PE		GRA	L&S - MP	31.1	PE		GRA	L&S - MP	31.1
040903	0121	19.42	TPP	3B	T	OR	3B	TPP	L&S	38.8	OR	3B	TPP	L&S	38.8
040903	0122	57.61	TWS	4B	T	CC	4B	TWS	WTY, JP-BC	115.2	CC	4B	TWS	WTY, JP-BC	115.2
040903	0125	96.37	TPP	4B	T	CC	4B	TPP	WTY, JP-BC	96.4	CC	4B	TPP	WTY, JP-BC	96.4
040903	0126	39.81	TPP	4C	T	OR/PC	4B	TPP	L&S	119.4	OR/PC	4B	TPP	L&S	119.4
040903	0127	23.07	TPP	4C	T	OR	3B	TPP	L&S	92.3	OR	3B	TPP	L&S	92.3
040903	0130	67.74	TPP	4B	T	OR	3B	TPP	L&S	135.5	OR	3B	TPP	L&S	135.5
040903	0133	169.23	TPP	4A	T	SC/CC	4A	TPP	WTY, JP-BC	507.7	SC/CC	4A	TPP	WTY, JP-BC	507.7
040903	0137	23.15	TPP	4B	T	OR	3B	TPP	L&S	46.3	OR	3B	TPP	L&S	46.3
040903	0141	30.24	TPP	4C	T/C	OR	3B	TPP	L&S	90.7	OR	3B	TPP	L&S	90.7
040903	0142	34.49	TPP	4B	T	PC	4B	TPP	WTY, JP-BC	138.0	PC	4B	TPP	WTY, JP-BC	138.0
040903	0143	90.93	TPP	4B	C	SC	4A	TPP	WTY, JP-BC	181.9	DEFER	4B	TPP		0.0
040903	0144	42.00	TWS	4C	T/C	CC	4C	TWS	WTY, JP-BC	84.0	CC	4C	TWS	WTY, JP-BC	84.0

Loc	Site	Acres	Exist Cover Type	Exist SS	Log Sys	Silv Rx B	SS B	Cover Type B	Fuels Rx B	Vol Est B	Silv Rx C	SS C	Cover Type C	Fuels Rx C	Vol Est C
040903	0145	5.99	GRA		T	PE		GRA	L&S - MP	3.0	PE		GRA	L&S - MP	3.0
040903	0147	22.16	TPP	4C	C	OR	3B	TPP	L&S	110.8	DEFER	4C	TPP		0.0
040903	0148	27.96	TPP	4C	C	OR	3B	TPP	L&S	195.7	DEFER	4C	TPP		0.0
040903	0149	8.87	TPP	4C	C	OR	3B	TPP	L&S	62.1	DEFER	4C	TPP		0.0
040903	0150	16.98	TPP	4C	C	OR	3B	TPP	L&S	84.9	DEFER	4C	TPP		0.0
040903	0151	10.85	TPP	4B	C	OR	3B	TPP	L&S	43.4	OR	3B	TPP	L&S	43.4
040903	0153	19.13	TPP	2	T	PCT	2	TPP	L&S	0.0	PCT	2	TPP	L&S	0.0
040903	0155	54.69	TPP	4A	T	DEFER/CC	4A	TPP	WTY, JP-BC	18.0	DEFER/CC	4A	TPP	WTY, JP-BC	18.0
040903	0156	26.83	TPP	3C	C	OR	3B	TPP	L&S	80.5	OR	3B	TPP	L&S	80.5
040903	0157	20.96	TPP	4C	C	OR	4A	TPP	L&S	125.8	DEFER	4C	TPP		0.0
040903	0161	18.86	TPP	4C	C	OR	3B	TPP	L&S	56.6	DEFER	4C	TPP		0.0
040903	0162	24.82	TPP	4C	T/C	OR	3B	TPP	L&S	74.5	DEFER	4C	TPP		0.0
040903	0163	17.62	TPP	4C	T	OR	3B	TPP	L&S	88.1	DEFER	4C	TPP		0.0
040903	0164	41.96	TPP	4C	C	OR	3B	TPP	L&S	125.9	DEFER	4C	TPP		0.0
040903	0165	45.14	TPP	4B	T/C	SC	4A	TPP	WTY, JP-BC	135.4	DEFER	4B	TPP		0.0
040903	0172	13.79	TPP	4A	T	MR		GRA	L&S - MP	0.0	MR		GRA	L&S - MP	0.0
040903	0175	67.28	TPP	4A	T	DEFER/CC	4A	TPP	WTY, JP-BC	9.0	DEFER/CC	4A	TPP	WTY, JP-BC	9.0
040903	0180	18.07	TPP	4C	C	PCT	3B	TPP	L&S	0.0	PCT	3B	TPP	L&S	0.0
040903	0185	16.26	TPP	4C	C	PCT	3B	TPP	L&S	0.0	PCT	4C	TPP	L&S	0.0
040903	0186	23.01	TPP	4B	C	PCT	3B	TPP	L&S	0.0	PCT	3B	TPP	L&S	0.0
040903	0187	45.17	TPP	4B	T/C	CC	4B	TPP	WTY, JP-BC	90.3	CC	4B	TPP	WTY, JP-BC	90.3
040903	0191	44.41	TPP	4B	T/C	PC	4A	TPP	WTY, JP-BC	133.2	DEFER	4B	TPP		0.0
040903	0192	31.93	TPP	4C	C	PC	4A	TPP	WTY, JP-BC	95.8	DEFER	4C	TPP		0.0
040903	0194	15.16	TPP	4B	C	OR	3B	TPP	L&S	60.6	OR	3B	TPP	L&S	60.6
040903	0195	89.42	TPP	4B	T	OR	3B	TPP	L&S	178.8	OR	3B	TPP	L&S	178.8
040903	0197	112.11	TPP	4A	T	OR	3B	TPP	L&S	448.4	OR	3B	TPP	L&S	448.4
040903	0217	35.77	TPP	4C	T	OR/CC	3B	TPP	WTY, JP-BC	71.5	OR/CC	3B	TPP	WTY, JP-BC	71.5
040903	0220	23.15	TPP	4B	T	PC	4A	TPP	WTY, JP-BC	69.4	PC	4A	TPP	WTY, JP-BC	69.4
040903	0223	7.55	TPP	4B	T	PC	4A	TPP	WTY, JP-BC	15.1	PC	4A	TPP	WTY, JP-BC	15.1
040903	0224	19.74	TPP	4C	T	OR	3B	TPP	L&S	39.5	DEFER	4C	TPP		0.0
040903	0225	19.57	TPP	4C	T	OR	3B	TPP	L&S	58.7	DEFER	4C	TPP		0.0
040903	0226	12.04	TPP	4C	T	PCT	4B	TPP	L&S	0.0	PCT	4B	TPP	L&S	0.0
040903	0227	18.17	GRA		T	PE		GRA	L&S - MP	18.2	PE		GRA	L&S - MP	18.2
040903	0229	32.27	TPP	4C	T	OR	3B	TPP	L&S	64.5	DEFER	4C	TPP		0.0
040903	0232	76.34	TPP	4B	T	PCT	4B	TPP	L&S	0.0	PCT	4B	TPP	L&S	0.0
040903	0233	43.84	TPP	4C	T	PCT	4C	TPP	L&S	0.0	PCT	4C	TPP	L&S	0.0

Canyon/Nest Final EA

Loc	Site	Acres	Exist Cover Type	Exist SS	Log Sys	Silv Rx B	SS B	Cover Type B	Fuels Rx B	Vol Est B	Silv Rx C	SS C	Cover Type C	Fuels Rx C	Vol Est C
040903	0234	3.37	GRA		T	PE		GRA	L&S - MP	1.7	PE		GRA	L&S - MP	1.7
040903	0238	17.98	TPP	4C	C	PCT	4B	TPP	L&S	0.0	PCT	4B	TPP	L&S	0.0
040903	0239	10.63	TPP	4A	T	SC	4A	TPP	WTY, JP-BC	42.5	SC	4A	TPP	WTY, JP-BC	42.5
040903	0240	30.51	TWS	4B	T/C	PCT	4B	TWS	L&S	0.0	PCT	4B	TWS	L&S	0.0

Nest Portion of the Project Area

Loc	Site	Acres	Exist Cover Type	Exist SS	Silv Rx B	SS B	Cover Type B	Fuels Rx B	Vol Est B	Silv Rx C	SS C	Cover Type C	Fuels Rx C	Vol Est C
040401	0101	55.13	TWS	4A	CC	4A	TWS	WTY, JP-BC	110.0	CC	4A	TWS	WTY, JP-BC	110.0
040401	0102	31.15	TAA	4A	AR	2	TAA	No Treat	0.0	AR	2	TAA	No Treat	0.0
040401	0103	19.19	TAA	4A	PSCC/AR	2	TAA	No Treat	10.0	PSCC/AR	2	TAA	No Treat	10.0
040401	0104	18.66	TWS	4A	SEL	4A	TWS	L&S	38.0	SEL	4A	TWS	L&S	38.0
040401	0106	63.48	GRA		PE		GRA	L&S - MP	32.0	PE		GRA	L&S - MP	32.0
040401	0107	23.70	TPP	4A	OR/SC	3A	TPP	L&S	72.0	OR/SC	3A	TPP	L&S	72.0
040401	0109	34.95	TAA	4A	PSCC	4A	TAA	L&S - MP	140.0	PSCC	4A	TAA	L&S - MP	140.0
040401	0111	6.73	TAA	4A	CC	4A	TAA	WTY, JP-BC	21.0	CC	4A	TAA	WTY, JP-BC	21.0
040401	0112	24.50	TPP	4B	PC	4A	TPP	WTY, JP-BC	72.0	PC	4A	TPP	WTY, JP-BC	72.0
040401	0113	2.92	TPP	4A	PCT	3A	TPP	L&S	3.0	PCT	3A	TPP	L&S	3.0
040401	0116	14.32	TPP	4A	CC	4A	TPP	WTY, JP-BC	28.0	CC	4A	TPP	WTY, JP-BC	28.0
040401	0118	27.59	TAA	3B	PSCC/AR	2	TAA	No Treat	28.0	PSCC/AR	2	TAA	No Treat	28.0
040401	0125	56.34	TPP	4B	OR	3B	TPP	L&S	168.0	OR	3B	TPP	L&S	168.0
040401	0133	59.08	TPP	4B	PC	4A	TPP	WTY, JP-BC	118.0	DEFER	4B	TPP		0.0
040401	0135	55.56	TWS	4A	SEL	4A	TWS	L&S	112.0	SEL	4A	TWS	L&S	112.0
040401	0136	7.60	GRA		PE		GRA	L&S - MP	8.0	PE		GRA	L&S - MP	8.0
040401	0147	5.66	TWS	4B	SEL	4A	TWS	L&S	18.0	SEL	4A	TWS	L&S	18.0
040402	0101	15.37	TAA	3A	PSCC	3A	TAA	L&S - MP	15.0	PSCC	3A	TAA	L&S - MP	15.0
040402	0103	20.89	TAA	3B	PSCC/AR	2	TAA	No Treat	0.0	PSCC/AR	2	TAA	No Treat	0.0
040402	0104	26.50	TAA	4A	PSCC/AR	2	TAA	No Treat	52.0	PSCC/AR	2	TAA	No Treat	52.0
040402	0106	11.23	GRA		PE		GRA	L&S - MP	0.0	PE		GRA	L&S - MP	0.0
040402	0107	23.86	GRA		PE		GRA	L&S - MP	0.0	PE		GRA	L&S - MP	0.0
040402	0108	55.21	GRA		PE		GRA	L&S - MP	0.0	PE		GRA	L&S - MP	0.0
040402	0111	60.19	TAA	4A	SEL	4A	TAA	L&S	60.0	SEL	4A	TAA	L&S	60.0

Loc	Site	Acres	Exist Cover Type	Exist SS	Silv Rx B	SS B	Cover Type B	Fuels Rx B	Vol Est B	Silv Rx C	SS C	Cover Type C	Fuels Rx C	Vol Est C
040402	0112	54.58	TAA	4A	PSCC/AR	2	TAA	No Treat	0.0	PSCC/AR	2	TAA	No Treat	0.0
040402	0113	39.08	TPP	4B	PC	4A	TPP	WTY, JP-BC	165.0	PC	4A	TPP	WTY, JP-BC	165.0
040402	0114	10.00	GRA		PE		GRA	L&S - MP	0.0	PE		GRA	L&S - MP	0.0
040402	0118	56.09	TAA	4A	PSCC/AR	2	TAA	No Treat	56.0	PSCC/AR	2	TAA	No Treat	56.0
040402	0120	13.08	TAA	3A	PSCC/AR	2	TAA	No Treat	26.0	PSCC/AR	2	TAA	No Treat	26.0
040402	0122	82.28	TWS	4A	SEL	4A	TWS	L&S	164.0	DEFER-M	4A	TWS		0.0
040402	0124	32.79	TAA	4A	PSCC/AR	2	TAA	No Treat	66.0	PSCC/AR	2	TAA	No Treat	66.0
040402	0125	14.56	TWS	4A	CC	4A	TWS	WTY, JP-BC	30.0	CC	4A	TWS	WTY, JP-BC	30.0
040402	0126	40.98	TWS	4A	CC	4A	TWS	WTY, JP-BC	82.0	CC	4A	TWS	WTY, JP-BC	82.0
040402	0128	18.46	GRA		PE		GRA	L&S - MP	9.0	PE		GRA	L&S - MP	9.0
040402	0130	17.90	TAA	2	PSCC	2	TAA	L&S - MP	9.0	PSCC	2	TAA	L&S - MP	9.0
040402	0137	3.47	TPP	4A	SEL	4A	TPP	L&S	6.0	DEFER-M	4A	TPP		0.0
040402	0138	5.30	GRA		PE		GRA	L&S - MP	5.0	PE		GRA	L&S - MP	5.0
040403	0101	3.73	GRA		PE		GRA	L&S - MP	2.0	PE		GRA	L&S - MP	2.0
040403	0102	10.92	GRA		PE		GRA	L&S - MP	5.0	DEFER-M		GRA		0.0
040403	0103	21.81	TWS	3B	CC	3B	TWS	WTY, JP-BC	22.0	DEFER-M	3B	TWS		0.0
040403	0105	28.88	TWS	4A	CC	4A	TWS	WTY, JP-BC	58.0	DEFER-M	4A	TWS		0.0
040403	0107	18.69	GRA		PE		GRA	L&S - MP	9.0	PE		GRA	L&S - MP	9.0
040403	0108	21.77	TWS	4A	CC	4A	TWS	WTY, JP-BC	44.0	DEFER-M	4A	TWS		0.0
040403	0109	14.15	TPP	4B	PC	4A	TPP	WTY, JP-BC	28.0	DEFER-M	4A	TPP		0.0
040403	0110	29.07	TPP	4B	PC	4A	TPP	WTY, JP-BC	87.0	DEFER-M	4A	TPP		0.0
040403	0111	24.33	TPP	4B	PC	4A	TPP	WTY, JP-BC	72.0	DEFER-M	4A	TPP		0.0
040403	0112	32.65	TPP	4B	PC	4A	TPP	WTY, JP-BC	99.0	DEFER-M	4B	TPP		0.0
040403	0113	3.74	TAA	4B	PSCC	3B	TAA	L&S - MP	4.0	PSCC	3B	TAA	L&S - MP	4.0
040403	0114	22.82	TPP	4B	SC	4A	TPP	WTY, JP-BC	115.0	DEFER-M	4A	TPP		0.0
040403	0115	18.79	TWS	4A	CC	4A	TWS	WTY, JP-BC	38.0	DEFER-M	4A	TWS		0.0
040403	0116	31.43	TWS	4A	CC	4A	TWS	WTY, JP-BC	62.0	DEFER-M	4A	TWS		0.0
040403	0120	39.37	TAA	4A	PSCC	3A	TAA	L&S - MP	39.0	PSCC	3A	TAA	L&S - MP	39.0
040403	0121	11.38	GRA		PE		GRA	L&S - MP	5.0	PE		GRA	L&S - MP	5.0
040403	0122	57.22	TAA	3A	PSCC/AR	2	TAA	No Treat	29.0	PSCC/AR	2	TAA	No Treat	29.0
040403	0123	9.20	TWS	4B	SEL	4A	TWS	L&S	20.0	SEL	4A	TWS	L&S	20.0
040403	0124	30.22	TAA	3A	PSCC/AR	4A	TAA	No Treat	30.0	PSCC/AR	4A	TAA	No Treat	30.0
040403	0125	69.82	TWS	4A	CC	4A	TWS	WTY, JP-BC	140.0	CC	4A	TWS	WTY, JP-BC	140.0
040403	0126	47.19	TWS	4A	CC	4A	TWS	WTY, JP-BC	94.0	DEFER-M	4A	TWS		0.0
040403	0127	67.63	TWS	3A	SEL	3A	TWS	L&S	67.0	DEFER-M	3A	TWS		0.0
040403	0128	81.72	TWS	4A	CC	4A	TWS	WTY, JP-BC	154.0	CC	4A	TWS	WTY, JP-BC	154.0

Canyon/Nest Final EA

Loc	Site	Acres	Exist Cover Type	Exist SS	Silv Rx B	SS B	Cover Type B	Fuels Rx B	Vol Est B	Silv Rx C	SS C	Cover Type C	Fuels Rx C	Vol Est C
040403	0129	34.39	TWS	4A	CC	4A	TWS	WTY, JP-BC	68.0	CC	4A	TWS	WTY, JP-BC	68.0
040403	0130	26.78	GRA		PE		GRA	L&S - MP	14.0	PE		GRA	L&S - MP	14.0
040403	0131	33.19	TWS	4A	CC	4A	TWS	WTY, JP-BC	66.0	DEFER-M	4A	TWS		0.0
040403	0132	31.33	TPP	4B	PC	4A	TPP	WTY, JP-BC	93.0	DEFER-M	4A	TPP		0.0
040403	0134	46.89	TPP	4B	PC	4A	TPP	WTY, JP-BC	141.0	DEFER-M	4A	TPP		0.0
040403	0135	75.91	TWS	4A	OR/SC	4A	TWS	L&S	540.0	DEFER-M	4A	TWS		0.0
040403	0136	4.06	GRA		PE		GRA	L&S - MP	2.0	PE		GRA	L&S - MP	2.0
040403	0137	61.49	TPP	4C	PC	4B	TPP	WTY, JP-BC	244.0	DEFER-M	4C	TPP		0.0
040403	0138	88.47	TWS	4A	CC	4A	TWS	WTY, JP-BC	176.0	DEFER-M	4A	TWS		0.0
040403	0141	2.97	GRA		PE		GRA	L&S - MP	0.0	PE		GRA	L&S - MP	0.0
040403	0143	20.23	TPP	4B	PC	4A	TPP	WTY, JP-BC	60.0	DEFER-M	4A	TPP		0.0
040405	0103	33.00	TPP	4A	OR	3A	TPP	L&S	99.0	OR	3A	TPP	L&S	99.0
040405	0109	35.97	GRA		PE		GRA	L&S - MP	18.0	PE		GRA	L&S - MP	18.0
040405	0122	18.59	TWS	4A	SEL	4A	TWS	L&S	19.0	SEL	4A	TWS	L&S	19.0
040405	0125	49.05	TWS	4A	CC	4A	TWS	WTY, JP-BC	98.0	CC	4A	TWS	WTY, JP-BC	98.0
040405	0127	126.93	TWS	4A	CC	4A	TWS	WTY, JP-BC	254.0	CC	4A	TWS	WTY, JP-BC	254.0
040405	0128	25.71	TWS	4A	CC	4A	TWS	WTY, JP-BC	52.0	CC	4A	TWS	WTY, JP-BC	52.0
040405	0130	22.15	GRA		PE		GRA	L&S - MP	11.0	PE		GRA	L&S - MP	11.0
040405	0131	29.10	TWS	4A	CC	4A	TWS	WTY, JP-BC	58.0	CC	4A	TWS	WTY, JP-BC	58.0
040405	0133	82.01	TWS	4A	SEL	4A	TWS	L&S	164.0	SEL	4A	TWS	L&S	164.0
040405	0135	9.61	GRA		PE		GRA	L&S - MP	5.0	PE		GRA	L&S - MP	5.0
040405	0136	20.72	TPP	4A	CC	4A	TPP	WTY, JP-BC	42.0	CC	4A	TPP	WTY, JP-BC	42.0
040405	0139	7.81	TPP	3B	POL	3B	TPP	L&S	0.0	POL	3B	TPP	L&S	0.0
040405	0142	7.39	TAA	2	PSCC	2	TAA	L&S - MP	4.0	PSCC	2	TAA	L&S - MP	4.0
040405	0146	29.83	TWS	4A	CC	4A	TWS	WTY, JP-BC	60.0	CC	4A	TWS	WTY, JP-BC	60.0
040405	0147	1.20	TAA	2	PSCC	2	TAA	L&S - MP	0.0	PSCC	2	TAA	L&S - MP	0.0



