

**Moccasin Basin
Pre-decisional Environmental Assessment**

May 2002

Shoshone National Forest
Wind River Ranger District

Fremont County, WY

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Lead Agency: USDA Forest Service

Responsible Official: Burns Davison, District Ranger
Shoshone National Forest
Washakie/Wind River Ranger Districts
333 East Main Street
Lander, WY
Phone: 307.332.5460

For Further Information or to Submit Comments: Ellen Jungck, Zone Silviculturist
Shoshone National Forest
Wind River Ranger District
PO Box 186; 1403 W. Ramshorn
Dubois, WY 82513
Phone: 307.455.2466

This document is available on the Internet:
<http://www.fs.fed.us/r2/shoshone/forestmgt/nepa/projectinfo.htm>

Abstract. This Environmental Assessment (EA) is a public document that will provide evidence and analysis for determining whether or not to prepare an Environmental Impact Statement or a Finding of No Significant Impact. The proposed action is to salvage 10 acres of fire-killed timber and sanitize 30 acres of timber along the Moccasin Basin Road. University of Montana may use the salvaged area for research after harvest. There are two alternatives: Alternative 1 (no action), Alternative 2 (proposed action). The proposal is located approximately 22 miles northwest of Dubois, WY, in Fremont County.

Notice to Comment: This EA will be available for a 30-day public comment period, beginning May 8, 2002 and ending June 7, 2002. All written comments must be postmarked no later than June 7, 2002.

Written comments may be submitted to Ellen Jungck at the address listed above. Reviewers should provide the Forest Service with their comments during the review period of the EA. We ask that comments be specific to the issues and actions identified in this EA.

Comments received in response to this solicitation, including names and addresses of those who comment, will be considered part of the public record on this proposed action, and will be available for public inspection. Comments submitted anonymously will be accepted and considered; however, those who submit only anonymous comments will not have standing to appeal the subsequent decision under 36 CFR Part 215. Additionally, pursuant to 7 CFR 1.27 (d), any person may request the agency to withhold a submission from the public record by showing how the Freedom of Information Act (FOIA) permits such confidentiality. Persons requesting such confidentiality should be aware that, under FOIA, confidentiality may be granted in only very limited circumstances, such as to protect trade secrets. The Forest Service will inform the requester of the agency's decision regarding the request for confidentiality, and where the request is denied, the agency will return the submission and notify the requester that the comments may be resubmitted with or without name and address within 10 days.

INTERDISCIPLINARY TEAM (IDT)

ID Team Member	Occupation	Team Role
Warren Cozby	Archaeologist	Cultural Resources
Burns Davison	District Ranger	Decision Maker
Mike Gagen	Assistant Fire Management Officer	Fire/Fuels
Jeff Hogenson	Forester	Forest Health/Diversity
Liz Oswald	Hydrologist	Hydrology
Ellen Jungck	Forester	IDT Leader
Mark King	NEPA coordinator	NEPA consultation
Brad Russell	Range Conservationist	Range Resources
Vicki Gullang	Forestry Technician	Recreation Resources
Kent Houston	Soil Scientist, Ecologist	Soil Resources, Sensitive Plants
Vaughn Hintze	Landscape Architect	Visual Resources
Lynette Otto and Mark Hirschberger	Wildlife Biologists	Wildlife Resources

Table of Contents

Chapter 1	<i>Purpose of and Need for Action</i>	1-1
1.1	Introduction and Project Location	1-1
1.2	Tiering	1-1
1.3	Purpose of and Need for Action (40 CFR 1502.13)	1-2
1.3.1	Purpose of Action	1-2
1.3.2	Need for Action	1-3
1.4	Public Involvement and Issues	1-5
1.4.1	Public Involvement	1-5
1.4.2	Identification of Issues	1-6
1.5	Proposed Action (40 CFR 1508.23)	1-8
1.6	Decision to be Made	1-9
Chapter 2	<i>Alternatives Including the Proposed Action</i>	2-1
2.1	Alternatives Considered but Eliminated from Detailed Study	2-1
2.2	Alternatives Analyzed in Detail	2-1
2.2.1	Alternative 1 – No Action	2-1
2.2.2	Alternative 2 – Proposed Action	2-2
2.3	Mitigation	2-3
2.3.1	Cultural Resource Protection	2-3
2.3.2	Wildlife Habitat Protection	2-3
2.3.3	Silviculture and Timber Harvest	2-3
2.3.4	Recreation Resource Protection	2-3
2.3.5	Soil, Water, and Aquatic Resource Protection	2-4
2.3.6	Noxious Weeds	2-4
2.4	Monitoring	2-4
2.4.1	Silviculture and Timber Harvest	2-4
2.4.2	Noxious Weeds	2-4
Chapter 3	<i>Affected Environment and Environmental Consequences</i>	3-1
3.1	Introduction	3-1
3.1.1	Past and Current Actions Occurring in the Analysis Area	3-1
3.1.2	Reasonable Foreseeable Future Actions	3-3
3.2	Environmental Effects	3-3
3.2.1	Wildlife, Sensitive Plants	3-3
3.2.2	Forest Vegetation	3-6
3.2.3	Fire and Fuels	3-8
3.2.4	Recreation and Visual Resources	3-8
3.2.5	Soil, Water, and Aquatic Resources	3-9
3.2.6	Noxious Weeds	3-11
3.2.7	Social and Economic Environment	3-11

3.2.8 Environmental Justice 3-12

Appendix A – Figures

Appendix B – Scoping Comment Summary

Appendix C – Biological Assessment/Biological Evaluation

Appendix D - Economic Analysis

Chapter 1 Purpose of and Need for Action

1.1 Introduction and Project Location

An environmental assessment (EA) is not a decision document. It is a document disclosing the environmental consequences of implementing a proposed action and alternatives to that action. A decision is documented in a decision notice signed by the responsible official. A decision would be prepared and distributed, along with publication of a legal notice, after 30 days of public review and comment on the EA.

This EA describes the environmental effects of a proposal, as well as alternatives to it, to salvage and sanitize¹ mixed conifer timber on the Wind River Ranger District of the Shoshone National Forest (Forest). University of Montana (UM) researchers may plant whitebark pine (*Pinus albicaulis*) in the salvaged area (after harvest is complete) to study regeneration success of seedlings following fire. If the UM does not select the salvaged area as a planting/study site, natural regeneration establishment would be monitored. If necessary, fill in or full planting to Englemann spruce (*Picea englemannii*) and lodgepole pine (*Pinus contorta*) would be performed to ensure regeneration of the salvaged area.

The proposal is located approximately 22 miles northwest of Dubois, WY, along the Moccasin Basin Road (FSR 537, *see* Appendix A, figure 1). The legal description of the proposed treatment is:

- Sections 2 and 3, T.43N., R.110W., 6th P.M., Fremont County, WY.

Subwatersheds of the Wind River watershed were selected for analysis in this EA. The analysis area is bounded by Sublette Peak and Barbers Point on the north and Pilot Knob on the southwest (*see* figure 2 in Appendix A). It is approximately 1,801 acres in size. All of the analysis area acreage is on National Forest System lands.

Approximately 10 acres are proposed for salvage. Up to 30 additional acres surrounding the salvage area may be sanitized. This is approximately 2% of the analysis area.

1.2 Tiering

This EA is tiered to the Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) for the Forest Land and Resource Management Plan (Forest Plan; USDA Forest Service, 1986) as amended by the Allowable Sale Quantity (ASQ) ROD (USDA

¹ Salvage is the removal of dead trees or trees damaged or dying because of injurious agents other than competition. Sanitation is the removal of trees to improve stand health by stopping or reducing the actual or anticipated spread of insects and disease.

Forest Service, 1994) and the Oil and Gas Leasing ROD (USDA Forest Service, 1995). All references are available at any of the Forest offices in Cody, Dubois, and Lander.

This EA is also tiered to the Moccasin Basin EA file (project file). The project file includes planning records and analyses related to this EA.

A roads analysis was not completed for the Moccasin Basin area, as only existing roads will be used.

Tiering is done in accordance with CEQ regulations (40 CFR 1502.20 and 1508.28), which allows the responsible official to focus on site-specific issues that are within the scope of a broader plan, program or analysis that is already approved. In this case, the Forest Plan (as amended) allocates lands to vegetation management, and prescribes standards and guidelines that apply. All alternatives, including the proposed action, are to be framed in the context of the Forest Plan management area direction. Standards and guidelines form the basis for how projects are to be implemented to meet the management emphasis for an area, and to mitigate associated impacts. Meeting the primary goal drives alternatives, while application of existing standards and guidelines generally ensures that secondary goals and other resource needs are met.

1.3 Purpose of and Need for Action (40 CFR 1502.13)

1.3.1 Purpose of Action

The purpose for this proposal is to improve the overall health and productivity of this portion of the Forest by reducing the incidence of spruce beetles (*Dendroctonus rufipennis*) and to minimize their spread to adjacent areas of the Forest. It is also being done to acquire further scientific knowledge of whitebark pine ecosystems, and to provide wood products for timber industry.

Forest Plan Goals (Desired Future Condition). The purpose of the proposed action is derived from the following Forest Plan goals. Goals are numbered sequentially for this proposal; they do not refer to Forest Plan goal numbers:

- **Goal 1** - Reduce damage by insect, disease, and other forest pests to acceptable levels through integrated management of vegetation (Forest Plan III-10).
- **Goal 2** – Implement an integrated pest management program to prevent and control insect infestations and disease (Forest Plan III-8).
- **Goal 3** - Improve tree age class and species diversity to benefit forest health, recreation experiences, visual quality, and wildlife habitat (Forest Plan III-8).
- **Goal 4** - Manage the timber resources on lands suitable for timber management to provide saw timber, round wood, and firewood to meet resource management objectives (Forest Plan III-8).

- **Goal 5** - Manage vegetation types outside of wilderness to provide multiple benefits commensurate with land capability and resource demand (Forest Plan III-6).
- **Goal 6** - Improve the health and vigor of vegetation types outside wilderness and selected types in wilderness where necessary (Forest Plan III-6).
- **Goal 7** – Maintain or improve habitat for threatened and endangered species including participation in recovery efforts for listed species (Forest Plan III-8).
- **Goal 8** - Reduce the accumulation of natural fuels (Forest Plan III-8).

Forest Plan Management Area Direction (Desired Future Condition).

Management areas provide further guidance for management activities within the Forest. The analysis area contains the following four management areas (*see* Appendix A, figure 3).

- 2B – Rural and Roded Natural Recreation
- 3A – Semi-primitive Non-motorized Recreation
- 7E – Wood Fiber Production
- 9A – Riparian Area Management

All the areas proposed for treatment fall within Management Area 7E. Table 1-1 summarizes the management emphasis for this area.

Table 1-1. *Forest Plan management area and summary that apply specifically to the proposed action*

Management Area	Emphasis Summary
7E (Forest Plan III-173)	<p>Management emphasis is on wood-fiber production and utilization of large roundwood of a size and quality suitable for sawtimber. The harvest method by forest cover type is clear-cutting in aspen and lodgepole pine; shelterwood in Englemann spruce-subalpine fir, lodgepole pine, and mixed conifers, and selection in all-age stands of Englemann spruce-subalpine fir.</p> <p>The area generally will have a mosaic of fully stocked stands that follow natural patterns and avoid straight lines and geometric shapes. Management activities are not evident or remain visually subordinate along forest arterial and collector roads and primary trails. In other portions of the area, management activities may dominate in foreground and middleground, but harmonize and blend with the natural setting.</p> <p>Roded natural recreation opportunities are provided along forest arterial and collector roads. Semi-primitive motorized recreation opportunities are provided on those local roads and trails that remain open. Semi-primitive non-motorized opportunities are provided on those that are closed.</p>

1.3.2 Need for Action

Existing Condition. The need for this proposal is evident by the current condition of the trees killed in the Moccasin Basin Fire of October 1999. Spruce beetles are present in these trees. Spruce beetles can attack and breed in live or recently dead or blown down spruce trees. Generally, they complete their two-year life cycle within the host or brood trees, with adults emerging from May through July the second year. Adults then attack new susceptible host trees. Trees within the Moccasin Basin Fire area were attacked the summer of 2000. Beetle flight is expected the summer of 2002.

Fifty-four percent of the forested stands within the analysis area are classified as spruce-fir (*Picea engelmannii/Abies lasiocarpa*). Eighty-five percent of these stands are in the mature size class (9.0 inches DBH –diameter at breast height). Large diameter Englemann spruce in spruce-fir stands within the analysis area would be susceptible to spruce beetle attack as the new generation of beetles, searching for new brood habitat, emerge from the 10 acres of fire-killed timber. Consequently, spruce beetles could become more widespread after the 2002 flight.

Forest Health Management Aerial Detection Surveys conducted on the Forest for the last few years are summarized in Table 1-2. As seen from this table, a spruce beetle epidemic currently exists on the Forest. It is concentrated in the Washakie Wilderness. The area of heaviest mortality is from Eagle Creek on the north moving southward through Glacier Basin and Wapiti Ridge, extending as far south as Shoshone Pass (on the northern boundary of the Wind River District). As indicated in Table 1-2, spruce beetle has the potential to increase rapidly. This epidemic could spread into the northwestern portion of the Wind River District if weather conditions do not change to cause a die-off in the spruce beetle population. The epidemic could be exacerbated by an additional spruce beetle center at Moccasin Basin, if left untreated. In combination, this has and could lead to excessive mortality and increased fuel loading, and increases the risk of larger wildfires than what would occur under a natural regime.²

Since the majority of the epidemic currently exists within designated wilderness, there is no opportunity to slow or curb the outbreak. The Moccasin Basin infestation, if not treated, may exacerbate the current spruce beetle epidemic, should it move further south onto the Wind River District.

Table 1-2 shows that white pine blister rust (*Cronartium ribicola*) and mountain pine beetle (*Dendroctonus ponderosae*) in both whitebark and limber pine have also increased dramatically on the Forest over the last few years. A mountain pine beetle epidemic has been building and moving onto the Forest from adjacent forested areas to the northwest. Other agents, including pine engraver beetles (genus *Ips*) and needlecast diseases are also affecting these two species. The heaviest mortality (from all these agents) was detected between Wapiti Ridge and Marston Pass, similar in location to where the spruce beetle epidemic is occurring.

Ninety-six percent of the stands classified as whitebark pine on the Forest are mature, while 100% within the analysis area are mature. Lack of disturbance across most of the Forest has not allowed young whitebark stands to become established where they can compete well. Existing mature whitebark is being outcompeted by more shade-tolerant conifers in some

² Spruce-fir cover types normally have an average fire-recurrence interval of 100-300 years and generally burn with high severity. Fire suppression which has occurred over the past 100 years generally has not changed the overall fire regime in these types, but over time leads to increased fuel loadings and to potentially higher intensity fires covering a larger area than what would have historically occurred. This is particularly true where insect infestations cause large areas of mortality to greatly increase already high fuel loadings.

areas, including Englemann spruce and subalpine fir (*Abies lasiocarpa*). Resistance to insect and disease declines as competition increases.

Whitebark pine is an essential component to grizzly bear habitat. However, whitebark pine has been lost over much of its native range in the United States to white pine blister rust, particularly in Montana and Idaho. It exists in Wyoming, and based on Table 1-2, has been increasing on the Shoshone.

Scientific knowledge of whitebark pine is limited. Current research is focusing on developing rust-resistant trees and on management activities to propagate existing whitebark stands. Acquiring knowledge of establishing successful whitebark regeneration is important to establishing rust-resistant trees in the future, particularly in areas where blister rust has killed the majority of existing whitebark pine stands.

Table 1-2. *Insect and disease conditions on the Forest as determined from aerial detection surveys for the past three years. All numbers in this table are estimates. Spruce beetle is affecting Englemann spruce. Mountain pine beetle and white pine blister rust are affecting both whitebark and limber pines. Data for the latter two species includes a complex of damaging agents.*

Damaging Agent	1999		2000		2001	
	Trees Killed	Acres Affected	Trees Killed	Acres Affected	Trees Killed	Acres Affected
Spruce Beetle	15,011	5,523	138,745	17,874	238,695	61,361
Mountain pine beetle	634	387	3,617	2,068	69,247	30,529
White pine blister rust	No Data	6,260	No Data	3,027	No Data	27,638

Opportunities. The desired condition for the area relates to the above listed goals and management area direction. Opportunities exist to improve forest health and productivity through vegetation management and to provide opportunities for research. These opportunities include:

- Treating Englemann spruce to reduce insect infestation and improve structural diversity (Goals 1-3, 6)
- Treating Englemann spruce to reduce fuel buildup and reduce wildfire risk (Goal 8)
- Establishing vegetation for research purposes (Goals 3, 7)
- Treating vegetation to provide wood products to local communities (Goals 4-5)

1.4 Public Involvement and Issues

1.4.1 Public Involvement

Public involvement in this project began in July 2001 when the Moccasin Basin project was listed in the Forest's Quarterly Schedule of Proposed Actions (SOPA). The project has appeared in each issue of the SOPA since July 2001, with status updates as the project reached the stages described below.

Scoping was conducted in November and December 2001. The scoping letter stated the proposed action as salvaging approximately 10 acres of fire-killed timber and sanitizing additional live trees surrounding fire-killed timber, particularly those with evidence of spruce beetle attack or those susceptible to spruce beetle attack. By this mailing, scoping comments were solicited from the public, other agencies (federal, state and local), and potentially affected parties. All letters received from scoping are located in the project file. All letters received were evaluated. Appendix B contains a summary of all scoping comments, how they were categorized, and how comments were responded to. Additional information on issues generated from scoping is described below.

A legal notice of distribution of this pre-decisional EA has been published in the *Dubois Frontier* on May 8, 2002. Through this distribution and notification, the public was informed of the opportunity to comment.

1.4.2 Identification of Issues

Significant Issues. The IDT identified issues relating to the proposed action based on input from Forest Service resource specialists, other agencies, organizations, landowners, and members of the general public. Pertinent comments from these sources were used to develop the issues to be studied in detail. These issues were considered significant in terms of the National Environmental Policy Act (NEPA). Significant issues are those that are used in the formulation of alternatives, prescribing mitigation measures, or analyzing environmental effects. Issues are significant because of the extent of their geographic distribution, the duration of their effects, or the intensity of interest or resource conflict. The significant issues are summarized below. They are also addressed through alternatives (Chapter 2), through mitigation measures (Chapter 2), through the analysis process and/or disclosure of effects (i.e. Chapter 3, Appendix C, project file), or through comment disposition (Appendix B).

1. **Regeneration.** Comments included reforesting the salvaged area to 100% Englemann spruce or to 100% whitebark pine. Both options are being considered in the same action alternative due to the uncertainty surrounding UM's selection of research sites, timing of harvest, and timing of planting seedlings. Timing of harvest could be delayed due to appeals or litigation. UM will need to plant seedlings by the end of September 2002. If fire-killed trees are not removed by then, excessive damage to seedlings may occur by harvesting after planting. The Forest currently has both spruce and lodgepole seed at Forest Service nurseries. Should the salvaged area not regenerate naturally and timing not allow UM to plant whitebark, seed collection need not be done. Time and costs would be saved to reforest the site with existing seed inventories.

Other concerns were raised regarding protection of natural or planted regeneration from cattle. These concerns are addressed in Chapter 3.

2. **Slash Disposal.** The scoping statement originally proposed piling and burning for slash disposal. Most comments received were in favor of lopping and scattering slash

- or broadcast burning rather than piling and burning. The proposed action has been modified to incorporate lopping and scattering slash. For a discussion of broadcast burning, *see* section 2.1. Additional information may be found in Chapter 3.
3. **Wildlife.** Concerns were raised as to what effects the project would have on game. Other concerns were raised into documenting the effects to proposed, threatened, and endangered species. These concerns are addressed in Chapter 3 and in Appendix C. Concerns were also raised regarding project design and maintenance of lynx habitat. These items have been incorporated into the proposed action.
 4. **Spruce Beetle.** Comments were raised about status and trends of spruce beetles on the Forest and the effects to spruce beetle populations. These comments are addressed in Chapters 1 and 3.
 5. **Contracts and Timing.** Concerns were raised that the timing of the project may conflict with other uses in the area, including outfitter/guide operations and winter recreation. Other concerns were raised to protect forest resources and to incorporate the use of appropriate grizzly bear regulations during the life of the operations. Concerns were raised that no conflicts with elk calving periods and hunting seasons should occur. Lastly, concerns were raised that timing of proposed harvest should occur to allow completion of the research project. These concerns are addressed throughout Chapter 1, through mitigation (*see* section 2.3), through effects analysis (*see* Chapter 3), or through comment disposition (*see* Appendix B).
 6. **Soils/Water Quality.** Concerns were raised to protect soils, prevent sedimentation, and to protect water quality in the Wind River, which provides a fishery of statewide significance. These concerns are addressed in Chapter 3 and through mitigation outlined in Chapter 2.

Other Issues. Other issues and concerns raised by the public were considered by the IDT. These issues are not used in the environmental analysis, generally because they are outside of the scope of the proposed action, they are already decided by law, regulation, Forest Plan or other higher decision, or are general statements of opinion. These comments are summarized below. More detailed disposition can be found in Appendix B.

1. **Cultural Resource Protection (decided by law).** Concerns were raised regarding cultural resource surveys and protection of cultural resource sites. A cultural resource survey of the proposed salvage area was completed in the fall of 2001. No cultural resources were found. The Wyoming State Historical Preservation Office (SHPO) has reviewed the report and clearance was received in March 2002. Cultural resource surveys of the proposed sanitation area will be completed in the spring of 2002. SHPO will review this report and provide appropriate feedback. All known cultural resource sites would be avoided during timber sale design. If cultural resource sites are discovered after the sale is sold, the contract contains specific clauses to allow sales to be modified or cancelled, which would protect those sites (*see* section 2.3.1).

2. **Wildlife –Compliance with the Endangered Species Act (decided by law).** Concerns were raised over compliance with section 7 of Endangered Species Act. A Biological Assessment/Biological Evaluation (BABE) was completed for the project, is summarized in Chapter 3, and can be found Appendix C.
3. **Continuation of Research and Research Strategies (outside scope).** A few commenters suggested that the Forest continue the whitebark pine research in Moccasin Basin with or without UM involvement, and that the Forest develop a strategy for whitebark pine research and restoration and implement that strategy in conjunction with all proposed sales in whitebark pine areas. These comments were considered to be outside the scope of this project for the following reasons:
 - Where UM elects to conduct their research is not a decision of the Forest. UM has other areas on and off the Forest, however, that would potentially be used as research sites, including, but not limited to, the Clover Mist and Dinwoody fires. The Forest is making every effort, however, to allow UM's research to occur within Moccasin Basin.
 - Due to limited time and personnel and timing of the Forest receiving whitebark seedlings for planting (spring/early summer), the Forest would not be able to complete the research project.
 - The Forest is involved with whitebark pine research and restoration in cooperation with the Greater Yellowstone Coordinating Committee (GYCC), Regions 1 and 4 of the Forest Service, the Rocky Mountain Research Station, and State and Private Forestry. This project includes selection of and cone collection from rust resistant whitebark trees for a genetic tree improvement (plus tree) program. In addition, the GYCC's whitebark pine subcommittee (of which the Shoshone is a member) is in the process of developing monitoring plans for out planted whitebark, which will provide beneficial information for the plus tree program. While the research is not specifically tied to sales in whitebark pine areas on the Forest, the research is tied to restoring whitebark throughout its native range in the United States.
4. **Support and Products (outside scope or opinion).** Many commenters were in support of the project, both for the salvage and sanitation and for research opportunities. Other commenters suggested that the sale be designed as a multi-product sale and that products be sold to local contractors. The sale will be designed as a multi-product sale. While the Forest Service sells its timber sales at competitive bid to the highest bidder, a certain percentage of sales sold are Small Business Set Aside sales, meaning small operators would have the opportunity to bid.

1.5 Proposed Action (40 CFR 1508.23)

Proposed activities are summarized below. All actions would be implemented within Forest Plan standards and guidelines, including specific mitigation measures. Specific Forest Plan Goals or standards and guidelines are referenced after each activity. Details can be found in Chapter 2.

Direct actions associated with the proposed action include:

- Salvaging approximately 10 acres of fire-killed mixed conifer timber (Goals 1-6, 8)
- Sanitizing approximately 30 acres of live timber surrounding fire-killed timber, particularly those showing evidence of spruce beetle attack or those susceptible to spruce beetle attack. These would be trees stressed from partial burning, or weakened, suppressed, or over mature trees (Goals 1-6, 8).
- UM researchers may plant whitebark pine in the salvaged area (after harvest is complete) to study regeneration success of seedlings following fire (Goals 3, 7).
- If the UM does not select the salvaged area as a planting/study site, natural regeneration establishment would be monitored. If necessary, fill in or full planting to Englemann spruce and lodgepole pine would be performed to ensure regeneration of the salvaged area (Goals 3 –5).

Indirect actions associated with the proposed action include:

- The use of existing roads for haul (Forest Plan III-88, ASQ ROD p. 5-6)
- Lopping and scattering slash in both sanitized and salvaged areas (Forest Plan III-96-97)
- Hauling spruce cull logs to landings and burning to prevent spruce beetle spread (*see* section 3.3.2)

Alternatives to the proposal must also meet the underlying purpose for which the proposal is being made. The proposal and alternatives to it facilitate the management direction specified for this part of the Forest.

1.6 Decision to be Made

The decision to be made is whether to implement the proposed action, or to select an alternative to the proposed action. The decision could be a mix of activities that are evaluated in all alternatives. The decision is to include any mitigation measures that might be needed in accordance with the impacts that are disclosed in the assessment, including but not limited to those that are presented in the alternatives. If the environmental analysis indicates to the decision maker that impacts associated with the alternatives would be significant, then she or he will not make a finding (FONSI, 40 CFR 1508.13) that allows the action to proceed without performing an environmental impact statement.

Chapter 2 Alternatives Including the Proposed Action

2.1 Alternatives Considered but Eliminated from Detailed Study

Some commenters suggested the use of broadcast burning instead of piling and burning. Broadcast burning was not considered as a separate alternative for the following reasons.

- Broadcast burning in spruce timber types would be harmful to the stand. Spruce is easily killed by fire. It is very susceptible to fire because it has thin bark that provides little insulation for the cambium³, a moderate amount of resin in the bark which ignites readily, shallow roots which are susceptible to soil heating, low-growing branches, and moderately flammable foliage. Not only do crown fires kill Engelmann spruce, the spruce is also very susceptible to surface fires that burn slowly and girdle the thin-barked bole or char the shallow roots. A broadcast burn could easily kill the remaining live spruce (FEIS Database-Fire Effects). Fire killed or stressed spruce would be susceptible to new spruce beetle infestations.
- Leaving slash on the site would provide microsite conditions for better regeneration success of any naturally occurring regeneration.
- Timing of both burning and planting operations (should whitebark be planted) may not coincide. Broadcast burning would need to be completed when weather cools or after snowfall and subsequent snow melt to allow sufficient control lines to be established. Seedlings from UM would need to be planted by the end of September. Both burning and planting times would coincide, and burn windows may not occur until after seedlings need to be planted.

2.2 Alternatives Analyzed in Detail

Based on the significant issues listed in section 1.3.2, two alternatives have been identified and analyzed in detail. They are described below as to the major defining actions, the issues they respond to, and the mitigation measures that are associated with them. Figure 2 in Appendix A depicts the location of treatment in the proposed action. Table 2-1 provides a tabular summary of all the alternatives. All units (acres, etc.) are approximations.

2.2.1 Alternative 1 – No Action

The Forest Service Handbook (FSH) requires the Forest Service to study the No Action alternative in detail, and to use it as a baseline against which impacts of action alternatives can be measured (FSH 1909.15, 14.1). Under this alternative, none of the specific

³Cambium is the living tissue in trees that carries nutrients and water from the roots to the leaves and sugars from the leaves to the roots.

management activities proposed in this document would occur. Ongoing activities such as recreation, fire suppression, and road maintenance would continue.

This alternative would not address the purpose and need of improving the overall health and productivity of the Forest. No salvage or sanitation would occur.

Opportunities for research would be reduced, and no timber products would be available to industry.

This alternative does not address significant issues of regeneration and slash disposal, as no vegetation management would occur to trigger these actions.

No mitigation measures are necessary, as no activities would occur.

2.2.2 Alternative 2 – Proposed Action

Ongoing activities would still occur as described in Alternative 1. This alternative represents the Forest's proposal to meet the purpose and need derived from the Forest Plan, incorporating the significant issues of regeneration and slash disposal.

The proposed action is described in section 1.4. Additional detail is described below. The option of using the salvaged area for research by planting whitebark pine or for regenerating to spruce and/or lodgepole is incorporated into this alternative for reasons described in section 1.3.2. The proposed action has been modified to incorporate the significant issue of lopping and scattering slash as opposed to piling and burning. However, any spruce cull logs remaining after harvest would be hauled to the landing and burned. This would eliminate brood areas for spruce beetle and reduce spread of insects into adjacent areas.

Research Information. The UM research proposal includes planting whitebark pine in the salvaged area to study regeneration success following fire. Mycorrhizal establishment on out planted whitebark pine by habitat type may be studied and compared with similar data from western Montana. (Mycorrhiza is a fungus that grows in association with plant roots that facilitates water and nutrient uptake into the plant.)

Access and Logging Systems. Treatments would be conducted using standard ground based and road supported logging systems. Existing roads, including FSR 537, would be used to access harvest areas.

Sale Duration. Harvest activities are not expected to last longer than two months, at a maximum, and realistically should be completed within a few weeks. Associated reforestation activities, if whitebark pine is not planted, could last up to five years after the sale is closed.

Table 2-1. Comparison of alternatives (all units are approximations)

Alternative Features	Alternative 1	Alternative 2
Salvage (acres)	0	10
Sanitation (acres)	0	30
Sale Duration (months)	0	2

2.3 Mitigation

The proposed action and alternatives to it would be implemented using Forest Plan standards and guidelines. The following mitigation measures are implicit in meeting standards, and have been demonstrated to be effective at achieving their purpose. They are to be used for the proposed action. Forest Plan page numbers, standard and guideline reference codes, or references to other portions of the EA are used to associate the mitigation measure with Forest Plan direction.

2.3.1 Cultural Resource Protection

Standard practices used for the protection of cultural or heritage resources would be applied (Forest Plan III-23 - A02).

2.3.2 Wildlife Habitat Protection

Food and garbage storage regulations for grizzly bear use areas would be followed (Forest Plan III-50 - C01; Grizzly Bear Special Order).

2.3.3 Silviculture and Timber Harvest

Fill in or full planting would be scheduled as deemed necessary to achieve desired stocking levels and meet required regeneration requirements (ASQ ROD Appendix A, Page 5 and Forest Plan III-66-68 – E04).

Slash would be lopped and scattered to a depth of 24 inches (*see* section 3.2.2).

Unmerchantable spruce cull logs would be hauled to landings and burned (*see* section 3.2.2).

2.3.4 Recreation Resource Protection

Harvest and haul operations would be restricted to certain days of the week to avoid conflicts with proposed mountain bike rides sponsored by the Triangle C guest ranch (*see* section 3.2.4).

2.3.5 Soil, Water, and Aquatic Resource Protection

Pre-use maintenance would include cleaning of culverts to minimize sedimentation entering into Waters of the U.S. (*see* section 3.2.5).

Best Management Practices for soil and water conservation would be applied (*see* section 3.2.5).

Harvesting would be restricted to periods of low soil moisture or when the ground is frozen to prevent soil compaction and rutting (*see* section 3.2.5, Forest Plan III-86 – KA1, III-219 – KA-1).

Reclaim skid trails and landings by removing berms, covering with slash, installing water bars and seeding if necessary (*see* section 3.2.5).

2.3.6 Noxious Weeds

Canada thistle would be treated prior to project initiation (*see* section 3.2.6 and Forest Plan III-58-D02).

2.4 Monitoring

The following items would be monitored after harvest activities are complete. Forest Plan page numbers and standard and guideline reference codes are used to associate the monitoring activity with Forest Plan direction.

2.4.1 Silviculture and Timber Harvest

Natural or planted regeneration would be monitored one, three, and five years after harvest to determine if stocking levels are met and if any additional reforestation is needed due to lack of natural regeneration establishment or heavy blister rust mortality in whitebark (ASQ ROD Appendix A, Page 5 and Forest Plan III-66-68 – E04, section 3.2.2).

2.4.2 Noxious Weeds

The project area would need to be monitored for three consecutive years and provide for control of new weed infestations (*see* section 3.2.6 and Forest Plan III-58-D02).

Chapter 3 Affected Environment and Environmental Consequences

3.1 Introduction

This section describes the scientific and analytical basis for the comparison of the potential environmental effects of the alternatives. In determining potential environmental consequences of each alternative, the interdisciplinary team considered the following:

- The probable consequences of each alternative on environmental resources
- Achievement of project objectives
- Adherence to Forest Plan standards, guidelines and objectives
- Compliance with federal and state laws and regulations

The Forest Plan FEIS and ASQ FEIS discuss the short and long term effects, irreversible and irretrievable commitment of resources, and adverse environmental effects that cannot be avoided when implementing management practices on the Forest. The project and effects described in this EA are the same as those anticipated by the Forest Plan FEIS and the ASQ FEIS, and therefore the effects are not restated here. This EA is tiered to Chapters 3 and 4 of the Forest Plan FEIS and ASQ FEIS to avoid repetition and to allow this description to focus on the site-specific effects that would result from implementation of the proposed alternatives.

The direct, indirect, and cumulative effects of the proposed action and alternatives to it are summarized in this chapter for each potentially affected resource. The project file contains each specialist's report, which contains detailed analyses of effects on their respective resources.

Direct effects are caused by the action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later in time or farther removed in distance. Cumulative effects are impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable actions regardless of what agency or person undertakes such actions (40 CFR 1508.7).

The magnitude of the potential effect is described either in direct or relative terms. The need for mitigation is justified and displayed relative to the potential effects. A summary of all mitigation is included in Chapter 2.

3.1.1 Past and Current Actions Occurring in the Analysis Area

This section describes the past natural and human events that have occurred and are currently occurring within the analysis area. These events have been taken into consideration for cumulative effects analyses for some resource areas.

Silviculture and Timber Harvest. Table 3-1 shows the amount of silvicultural treatment that has occurred within the analysis area. The Lava Mountain and Pilot Knob Timber Sales were designed to perpetuate spruce-fir stands in an uneven-aged condition. The Moccasin Basin Blow Down Salvage removed spruce and fir trees that were either uprooted or broken off above ground during a high wind event that occurred in 1997. The clear-cut stand has regenerated into a mixed stand of lodgepole pine, Englemann spruce, sub-alpine fir, and whitebark pine. All regeneration harvests have had regeneration surveys and are certified as fully stocked. Many old log decks and dozer piles are present throughout the analysis area as a result of past treatments.

Portions of the analysis area were also harvested during the tie-hack era. No observable slash treatment is present from these harvests.

Table 3-1. Acres of silvicultural treatment by alternative within the analysis area

Treatment	Sale Name	Acreage	Year Completed
Individual Tree Selection	Lava Mountain, Pilot Knob	494	1988
Salvage	Moccasin Basin Blow Down Salvage	12	1998
Clear-cut		48	1963

Fire Occurrence. Prior to 1905, fires from lightning and other sources such as Indians and livestock ranchers burned freely in the Forest. Fires since the 1900s have for the most part been suppressed.

Local records maintained since 1940 provide information on recent fire history. With the exception of the Moccasin Basin Fire in 1999, most of the analysis area has not seen fire for at least 60 years. There have been several fires, both human and lightning caused, surrounding the area, all contained to less than five acres.

The Moccasin Basin Fire was the only large fire to occur within the analysis area since local records were maintained. This fire was the result of a burning slash pile that escaped and was reported on October 12, 1999. It burned a total of 40 acres. The fire was aggressively suppressed, as it was near private property, Highway 87, suitable timber, wildlife and other resources. Extreme fire behavior was observed with active crown fire and spot fires occurring $\frac{3}{4}$ of a mile ahead of the main fire. Had the fire not been suppressed, based on fuel loadings and fire conditions, it is highly possible the entire analysis area could have burned.

Soil and Water Conditions. The analysis area does not contain any known degraded stream segments, nor is it a potential watershed of concern.

The main roads (FSRs 537, 515 and Highway 26), secondary roads, and pioneered spurs in the analysis area traverse active landslide/mass movement areas and have been subjected to slumping, sliding, and debris flows. The Wind River flow often conforms to the margin of the toeslope lobes of debris flows, and occasionally cuts through more recent slumping that is

associated with activities of highway maintenance and spot reconstruction. FSR 537 has many plugged culverts due to the lack of road maintenance and has many crossings that are connected to streams, wetlands, and Waters of the U.S., including the Wind River.

Rehabilitation work after the Moccasin Basin Fire included felling trees, moving slash, and digging water bars across the contours in firelines. This work was adequate to retain post-fire sedimentation the first season after the fire.

Transportation System. The Forest has a road maintenance contract where roads across the Forest are periodically maintained. Roads in the analysis area may fall into this maintenance schedule in the next few years.

3.1.2 Reasonable Foreseeable Future Actions

This section describes the reasonably foreseeable future actions within the analysis area. These actions were considered for cumulative effects analysis for some resource areas.

Togwotee Highway Reconstruction. The Federal Highway Administration and Wyoming Department of Transportation are currently working on an Environmental Impact Statement (EIS) for the reconstruction of the Highway 26/287. Project work is expected to start within the next decade.

3.2 Environmental Effects

3.2.1 Wildlife, Sensitive Plants

Affected environment for Proposed, Threatened, Endangered and Sensitive Species is found in Appendix C. Affected environment and environmental effects for Management Indicator Species (MIS) and game species are discussed under those headings below where not already discussed in Appendix C. The effects discussion below addresses significant issue numbers 3 and 5 and other issue number 2 found in section 1.3.2.

Proposed, Endangered, Threatened, and Sensitive Species (PETS). An in-depth analysis and evaluation process for the determination of effects to proposed, endangered, threatened, and sensitive (PETS) species was completed for this EA; the analysis is documented in a biological assessment/biological evaluation (BA/BE) and can be found in Appendix C. Table 3-2 summarizes the findings of species analyzed in the BA/BE. A finding of “is not likely to jeopardize” was concluded for the gray wolf. A finding of “no effect” was concluded for grizzly bear and Canada lynx.

Table 3-2. Summary of determinations of effects to PETS species relevant to the analysis area, taken from the analysis in the BA/BE

Species Name	Status	Alternative 1 Determination (No Action)	Alternative 2 Determination (Proposed Action)
Canada lynx	Threatened	No effect	No effect
Grizzly bear	Threatened	No effect	No effect
Gray wolf	Experimental	No effect	Not jeopardize continued existence
Dwarf shrew	Sensitive	No impact	No impact
Water vole	Sensitive	No impact	No impact
Marten	Sensitive	No impact	No impact
Fisher	Sensitive	No impact	No impact
Wolverine	Sensitive	No impact	No impact
Northern goshawk	Sensitive	No impact	No impact
Boreal owl	Sensitive	No impact	No impact
Black-backed woodpecker	Sensitive	No impact	Will impact individuals but is not likely to result in a loss of viability in the planning area nor cause a trend to federal listing or a loss of viability rangewide.
Northern three-toed woodpecker	Sensitive	No impact	Will impact individuals but is not likely to result in a loss of viability in the planning area nor cause a trend to federal listing or a loss of viability rangewide.
Olive-sided flycatcher	Sensitive	No impact	No impact
Golden-crowned kinglet	Sensitive	No impact	No impact
Fox sparrow	Sensitive	No impact	No impact
Tiger salamander	Sensitive	No impact	No impact
Boreal toad	Sensitive	No impact	No impact
Northern leopard frog	Sensitive	No impact	No impact
Spotted frog	Sensitive	No impact	No impact
Pink agoseris	Sensitive	No impact	No impact

Management Indicator Species (MIS). MIS chosen for this project are elk, mule deer, moose, grizzly bear, gray wolf, goshawk, and hairy woodpecker. The game species were chosen because they use the area for summer foraging. The grizzly bear, gray wolf, goshawk, and hairy woodpecker were selected because there is potential habitat in the treatment area that will be affected by this project. Bighorn sheep, mountain goat, black-footed ferret, peregrine falcon, blue grouse, ruffed grouse, pine martin, and brewers sparrow were not selected because they don't occur in the area. Bald eagle and beaver were not selected because although they may be in the area, the project will not affect habitat that they use.

The effects of this project on the game species are analyzed in the Other Wildlife section below, and the effects on goshawk are documented in the PETS section above and in the

BABE in Appendix C. Goshawk population trends, according to local field biologists, are stable and the species is common on the Shoshone. As this project doesn't remove any coniferous habitat, a change in that trend is not anticipated. The Shoshone has plans to monitor goshawk populations beginning summer of 2002.

The effects of this project on grizzly bear and wolf are summarized in the PETS section above and analyzed in the BABE in Appendix C. To add population information to that discussion, grizzly bear numbers are continuing to expand and efforts are being made to delist the species. Implementation of this project will not change this trend as habitat and disturbance levels will not be measurably altered. Similarly, wolf populations are also continuing to expand in number and territory. This project is of such small scope and size that it will not affect this trend. The U.S. Fish and Wildlife Service monitors population trends of both these species.

Effects from the proposed treatment on the hairy woodpecker would be very similar to the effects analyzed for the sensitive woodpecker species (summarized in the PETS section above and analyzed in the BABE in Appendix C). Currently the treatment area is providing good habitat for this species and Alternative 1 would retain this habitat. Alternative 2 would remove snags and potential snags. This alternative would most likely decrease habitat suitability slightly. The analysis area, however, has an abundant amount of snags that this species can utilize. Therefore, the resulting habitat change throughout the analysis area is minimal. This species, as well as many others, will be monitored across the Forest Beginning in the summer of 2002.

Other Wildlife. The analysis area provides summer range for moose, elk, and mule deer. These species travel to this area for summer foraging after calving and use the forested areas for hiding cover and shade. Since the area is used primarily as summer range, there should be no conflicts with elk calving periods. Summer range is rarely a limiting factor for game animals. These animals do not heavily use the area proposed for treatment due to its proximity to the Moccasin Basin Road, and more importantly, the highway.

Alternative 1. As no harvesting would occur in this alternative, the spruce beetle would continue to infest the stands adjacent to the burn area. This would increase spruce mortality and decrease cover for game long term. Also, the amount of dead and down wood increases the risk of wildfire that could more drastically decrease cover in the analysis area. Choosing this alternative would add cumulative effects of increasing the wildfire potential that already exists in this area.

Alternative 2. The activities in this alternative would result in minimal impact to the habitat and a very short displacement period. The actual operations would be so short as to displace very temporarily any game using the area. The resulting habitat change from the activity would be hardly measurable for these species as the habitat modification already occurred in the Moccasin Basin Fire. Removing the dead and dying trees would reduce the risk of beetle infestation and subsequent fire which would reduce cover in parts of the analysis area where game are more likely to forage (i.e. areas further away from the road and highway). While

some game may be displaced, this short term impact would be outweighed by the long term benefit of minimizing future beetle kill and wildfire potential. The effects of this project are so minimal, the cumulative effects it adds to the landscape and previous projects are minor.

Neither of these alternatives would impact habitat enough to influence population trends of these species. Wyoming Game and Fish models population estimates and trends for herd units across the Forest and these trends are based mainly on hunter participation and success and winter range capability.

Neotropical Migratory Birds. The analysis area is providing habitat for several species of neotropical migratory birds. The Wyoming Partners In Flight list of priority species was considered when evaluating effects for this project. The only Level One⁴ priority species that uses the habitat in the treatment area is the goshawk, which has already been analyzed as a sensitive species.

Cumulative Effects. Alternative 1 would add to the already existing fuel loading and contribute to increased wildlife potential. Cumulative effects from Alternative 2 are minor since the area treated is small.

3.2.2 Forest Vegetation

The affected environment for forest vegetation is described in Chapter 1. The effects discussion below addresses significant issue numbers 1, 2 and 4 found in section 1.3.2 and other issues found in Appendix B.

Alternative 1. Under this alternative, no sanitation or salvage silvicultural treatments would take place. Firewood gatherers would salvage fire killed and insect killed trees within 100 yards of the uphill side of FSR 537 and to a limited extent to the downhill side. Engelmann spruce, subalpine fir, whitebark pine, and lodgepole pine seedlings would become established within the burn area from local seed sources, creating a seedling sapling stand that increases diversity in the area.

Spruce mortality would increase as beetles fly from the fire-killed spruce seeking new brood habitat in adjacent live spruce. The population of large diameter spruce within the area could support a continuing spruce beetle epidemic for many years. Fuel loading would increase and stand structure would be simplified because of spruce mortality. Subalpine fir may become the dominant overstory species in the spruce-fir stands. Increasing fuel loading over a broad area increases the likelihood of a difficult to control wildfire, which could in turn create large burned areas that are difficult to regenerate due to lack of an adequate seed source.

Alternative 2. Salvaged and sanitized trees would limit spruce beetle expansion by removing brood sources. It would also provide wood products for industry. Unmerchantable spruce logs would be skidded to landings and burned to eliminate an additional brood source

⁴ The level where conservation action is needed.

for spruce beetles. Logging slash remaining on site would provide shade for seedling establishment.

Natural regeneration success would be monitored if UM elects not to use the site for research. In these forest types and habitat types (subalpine fir /grouse whortleberry (*Vaccinium scoparium*)/whitebark pine phase) natural seeding of lodgepole pine, Engelmann spruce, whitebark pine, and subalpine fir occurs from surrounding seed sources. Mineral soil exposed by skidding creates seedbed conditions to favor Engelmann spruce, lodgepole pine, and whitebark pine establishment. The open conditions would favor early growth of lodgepole and whitebark pine with spruce growth catching up in the pole stages. This would increase the natural diversity of the area. Tree regeneration would be the dominant site component after five years. Understory species that can be expected include Ross sedge (*Carex rossii*), grouse whortleberry, and heartleaf arnica (*Arnica cordifolia*).

If the site is not being regenerated naturally and UM has not selected the site for research and whitebark planting, Engelmann spruce and lodgepole pine would be planted. Whitebark pine, however, would probably become established in the area as well. Fire or otherwise created openings are attractive to birds (e.g. Clark's nutcrackers), as a place to cache whitebark pine seeds they have collected. Overlooked caches result in new whitebark regeneration. This would add to the species mix.

If UM selects the site for research and whitebark pine is outplanted, it is likely that any seedlings planted in this study would be no more resistant to white pine blister rust than any naturally occurring whitebark regeneration. Although research has begun in this arena, blister rust-resistant strains of whitebark pine have not yet been identified. Because of the threat of blister rust expansion, it is important to monitor the survival of outplanted whitebark. Should excessive mortality be found in whitebark, additional reforestation efforts to multiple species would be made to ensure that forest cover is maintained in the long term; mixed stands are more resilient to insects and disease.

There are relatively few cattle currently on the allotment where the proposed action occurs and are distributed well throughout the analysis area. Little to no damage should occur to planting or natural regeneration within. Allotment management plans, however, contain provisions for moving cattle should damage occur.

Structural diversity for the analysis area would change by the same amount as in Alternative 1, although planting in this alternative may allow it to occur more quickly.

Cumulative Effects. White pine blister rust can be expected to become more prevalent under either alternative. The rate of spread is dependent on weather (moisture) conditions, and the presence of alternate hosts (gooseberry; *Ribes spp.*). Over time, increases in mortality in whitebark pine from blister rust could occur in the analysis area. The overall result would be the loss of this forest component, and reduction of seed sources. The extent of mortality, however, is difficult to predict.

In either alternative, the Togwotee Highway reconstruction would remove a strip of trees within the clearing limits of the highway, removing a small percentage of forested vegetation within the analysis area. The Togwotee Highway EIS, however, may include provisions to revegetate clearing limits with either herbaceous or forest vegetation, so the overall effect would be minimal.

3.2.3 Fire and Fuels

The affected environment for fire and fuels is described throughout Chapters 1, 2, and 3. The effects discussion below addresses significant issue number 2 found in section 1.3.2.

Alternative 1. The direct effect of the no action alternative would result in increased fuel loading as mortality from spruce beetle continues. Ladder fuels would increase and make the likelihood of a crown fire more probable. In addition, fir may become dominant as described in section 3.2.2. Fires occurring in these types that dominate the analysis area are at the upper limits of control by crews or equipment immediately adjacent to the fire. If the fire were to get into the tree crowns, suppression actions would be greatly affected (Anderson, 1982). The cumulative effects of increased mortality within an already high fuel loading stand would further increase fire intensity and severity, making suppression more difficult, if not impossible, particularly under the drought conditions common the last few years. A large fire in this area could threaten Highway 287, private inholdings such as Brooks Lake lodge and private cabins, timber, wildlife, and other resources.

Alternative 2. The direct effect that the proposed action would have would be to change the fuel loading temporarily by lopping and scattering slash from salvage and sanitation treatments (leaving approximately 13 tons per acre on site). In the short term, this could lead to active fire behavior. In the long term, fire potential would be more limited because of the spacing of the light fuel load, shading from the overstory, and aging of slash. The overall effect of the short term increase in fuel loading is minimal due to the small acreage to be treated within the analysis area.

Cumulative Effects. The proposed action's cumulative impact to fuels and fire risk would primarily be from preventing the spread of spruce beetle infestation throughout the analysis area. Avoiding the excessive mortality common with spruce beetle infestations would result in lower fuel loadings and fire risk than in the no action alternative.

3.2.4 Recreation and Visual Resources

The affected environment and environmental effects are described below. The discussion below addresses significant issue number 5.

Alternative 1. There are no direct effects from this alternative. Indirect effects of no action on the recreation resource in the analysis area include effects to scenery, road use, and firewood cutting. Mortality from continued spread of spruce beetle and the continued

deterioration of trees already killed by the fire would reduce the scenic quality of the area. Increased mortality and death of trees would increase the amount of firewood cutting. This would then impact the recreation use of the road by sightseers, bikers, and hunters.

Alternative 2. The greatest effect from the proposed action would be on the recreational use of the roads for sightseeing, firewood gathering, and hunting. Disruption to these would occur while the harvesting operation is taking place. Logging trucks and other harvest-related operations have the potential to disrupt both motorized and non-motorized traffic on the Moccasin Basin Road. The greatest effect may be to the Triangle C, who may use the road for day use mountain bike rides. By incorporating harvest and haul restrictions into the special provisions of the contract (e.g. no hauling nights and weekends) this effect could be almost entirely mitigated.

The proposed action could also affect the scenic quality and use of the Continental Divide Scenic Trail. FSR 537 is currently the proposed route for the trail. The actual trail route, however, has not been marked on the ground and may actually be moved from FSR 537. Current trail use is low to non-existent. Overall, effects to the trail would be minimal.

While the X and XA snowmobile trails use FSRs 515 and 537, there should be no effect to the trails, as the proposed action should be completed by the beginning of the snowmobile season.

As described above, some short term reduction in visual quality would occur along FSR 537 from the proposed action. This alternative should not affect the Highway 26 viewshed as terrain and foreground forest vegetation block the treatment area from view.

Cumulative Effects. There should be no measurable cumulative effects from either the proposed or no action alternative as described in this EA. The effects to recreation and visual resources from the Togwotee Highway Reconstruction would be discussed in the Togwotee Highway EIS.

3.2.5 Soil, Water, and Aquatic Resources

The affected environment for this resource is included earlier in this chapter as well as below. The effects discussion below addresses significant issue number 6.

Soil. Soil compaction and rutting hazards are moderate to severe and can be avoided by restricting activities to periods of low soil moisture (NRCS 1997). Under Alternative 2 harvest would be at a time of moderate to low soil moisture conditions. The primary soils in the project area have loamy surface textures and are considered well drained. These soils can have problems with compaction, displacement, and puddling. However, when soil conditions are above the plastic limits, or during low soil moisture conditions, or frozen, effects of these properties should be minimal within the sale area.

Skid trails and temporary roads would experience short term detrimental conditions. Following harvest operations removing berms, covering with slash, installing waterbars, and seeding if necessary, would reclaim skid trails and landings.

Soil fertility should be maintained by lopping and scattering slash in Alternative 2. Piling and burning cull logs in landings could cause localized severe soil heating. The area affected would be less than 15% of the project area⁵.

The majority of the project area falls within a moderate soil erosion hazard. Alternative 2 surface erosion amounts would be minimal while forest or grassland cover is reestablished. Water Erosion Prediction Project (WEPP) model (Elliott, 2000) estimated a range of one-half to three tons per acre of surface soil erosion (model data can be found in the project file). To put this data in perspective, one-tenth of an inch of soil lost over an acre is estimated at 16 tons/acre. It is estimated after five years with adequate tree regeneration the surface soil erosion rate would be negligible. Implementation of the Best Management Practices (BMPs; located in the project file) will minimize the potential erosion predicted above.

Soils within the project have a low risk of seedling mortality and should meet the five-year regeneration standards.

Localized small mass movements are possible due to loss of vegetation and subsequent increases in soil moisture.

Water. The proposed action would not affect streambed and bank stability, temperature or oxygen levels in streams, or water purity, due to the proposed action's distance from stream channels, including the Wind River.

The proposed action may change flow regimes from the removal of ground cover during harvesting operations, but the area treated is minimal, so the effect is small. The proposed action may have indirect effects on water quality in wetlands, floodplains, or riparian areas if increased sediment yields were delivered into these areas from ground disturbed during harvesting operations.

Pre-use maintenance for the timber sale would include cleaning of culverts (*see* section 3.1.1). This would disconnect the road from Waters of the U.S., which would prevent sedimentation entering into the Wind River that could harm macro invertebrate populations, fish reproduction, and support of other aquatic life.

BMPs provide adequate control to mitigate the potential effects of the proposed action with proper administration, compliance, and monitoring.

Cumulative Effects. The effect of the proposed action would not add to the cumulative effect of other sources of impact in any measurable way relative to water quality within the

⁵ Regional guidelines for protecting the soil resource (FS 2509.18-92-1) state that no more than 15% of an area will be left in a detrimentally compacted, displaced, puddled, severely burned, and/or eroded condition.

analysis area. re-use maintenance associated with the proposed action, as described above, would actually improve water quality over the no action alternative in the long term.

For the Towgotee Highway reconstruction, a technical review team comprised of Forest hydrologists, soil scientists, and fisheries biologists will oversee the development and implementation of mitigation measures outlined in the EIS to reduce impacts of the reconstruction project on the Wind River through its final design and construction and into the foreseeable future.

3.2.6 Noxious Weeds

A weed risk assessment rating (located in the project file) was used to address potential spread, consequences, and adverse effects of noxious weeds. This project area has a moderate risk rating. Canada thistle is present and needs to be treated prior to project initiation. Spotted knapweed, musk thistle, common tansey, and houndstongue are other weeds of concern. The project area would need to be monitored for three consecutive years and provide for control of new infestations.

3.2.7 Social and Economic Environment

Table 3-3 below summarizes the results of the financial analysis conducted for each alternative. Detailed economics analyses can be found in Appendix D. For Alternative 2, two economic runs were made: the Forest option includes costs and benefits where the Forest will reforest the site. The UM option includes costs and benefits where UM would plant whitebark and conduct research.

The analysis of strictly revenues and costs for both options of Alternative 2 reveals a positive present net value and associated benefit/cost (B/C) ratio greater than 1⁶. From a strictly financial perspective, the UM option has a higher net present value and benefit cost ratio. This is because the Forest Service would incur no planting costs with this option. If UM elects not to conduct whitebark research and if the harvested areas regenerate naturally, then the Forest Service would not incur planting costs. If this were true, then the two options would have the same net present value and benefit/cost ratio (equivalent to the UM option listed in Table 3-3). Contrarily, if blister rust mortality is excessive in UM planted stock and the site has not regenerated to other species naturally, the Forest Service may incur planting costs. In this case the net present value and benefit cost ratio of the UM option would be lower than the FS option listed in Table 3-3, due to the addition of planting and three more years of planting survival surveys.

⁶ Net present value is the discounted benefits minus discounted costs of a project. A value that is greater than zero shows that benefits are greater than costs. A benefit cost ratio is obtained by dividing the anticipated discounted benefits of a project by its anticipated discounted costs to obtain a measure of expected benefits per unit of cost. A B/C ratio greater than 1 indicates a positive return on a project. The higher the ratio, the greater the benefits over cost.

Table 3-3. Financial analysis by alternative. Alternative 2 includes the option of the Forest reforesting the site (FS Option) and the option of UM reforesting the site (UM option).

	Alternative 1	Alternative 2 FS Option	Alternative 2 UM Option
Present Value benefits	\$0	\$20,096	\$20,096
Present Value costs	-\$7,500	\$19,390	\$17,435
Net Present Value	-\$7,500	\$706	\$2,661
Benefit/Cost Ratio	0.00	1.04	1.15

This financial analysis is based strictly on market values (quantitative). Non-market (qualitative) values, such as wildlife habitat, scenic quality, and watershed protection, are difficult to assign values to. The financial analysis displayed in Table 3-3 and effects discussion elsewhere in this chapter must be reviewed concurrently so that a decision can be made taking into consideration both quantitative and qualitative resource values.

The scale of this project is such that there would be no measurable impact on social or economic systems in Fremont County, Wyoming or in a way that would allow some comparison between alternatives.

Social and economic concerns relative to the project are symptomatic of general trends occurring in much of the western United States. Issues revolving around access, private lands and ownership rights, regulation, resource impacts, multiple use, growth and development, economic dependency, county and local jurisdiction, et al, could enter the discussion. However, any resolution of these issues is beyond the scope of the analysis for a single timber sale. Feelings are likely to run high on both sides of any issue locally, concerning this project.

3.2.8 Environmental Justice

Presidential Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” was issued in February 1994. This directed federal agencies to consider as part of the NEPA analysis process, how their proposed actions or projects might affect human health and environmental conditions on minority and/or low-income communities.

Two fundamental questions are posed by the CEQ (Council of Environmental Quality) to help agencies address these and related factors: 1) “Does the potentially affected community include minority and/or low-income populations?” and, 2) “Are the environmental impacts likely to fall disproportionately on minority and/or low-income members of the community and/or tribal resources?”

In answering the first question we used 1990 Census data to examine the minority and low-income populations in Fremont County, the county where the proposed action occurs. The minority populations for Fremont County represent less than 20.2 percent of the total

population for the county. This compares to 5.8% minority populations for the whole of Wyoming. CEQ guidance identifies a minority population as one where either: a) the minority population of the affected area exceeds 50 percent or b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population. For this analysis the affected area is identified as Fremont County and the state of Wyoming is used as the geographic reference for the general population. Fremont County meets the second condition. Further investigation of the census data indicates that Native Americans make up 18.5% of the population of Fremont County. It is assumed that a majority of this population is located on and near the Wind River Reservation. For the purposes of this analysis the Native American population on and near the Wind River Reservation is identified as a minority population.

The percentage of persons below the poverty level for Fremont County is 19.1 percent as compared to 11.9 percent for Wyoming. Based upon the known demographics of the county it is assumed that a large percentage of these persons are located on and near the Wind River Reservation. For this analysis this population is identified as a low-income population.

In considering potential environmental justice concerns, we evaluated the potential effects on the Native American population on and near the Wind River Reservation. Given the small size of this project, the socioeconomic effects are insignificant at the county scale. In addition we do not believe those effects will be disproportionately larger or smaller on the population of concern. In summary, we do not believe there are any environmental justice concerns with this project.

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BMPs for silviculture may be viewed in pdf format at <http://deq.state.wy.us/wqd/watershed/00413-doc.pdf>

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Appendix A - Figures

Vicinity Map Moccasin Basin Salvage/Sanitation

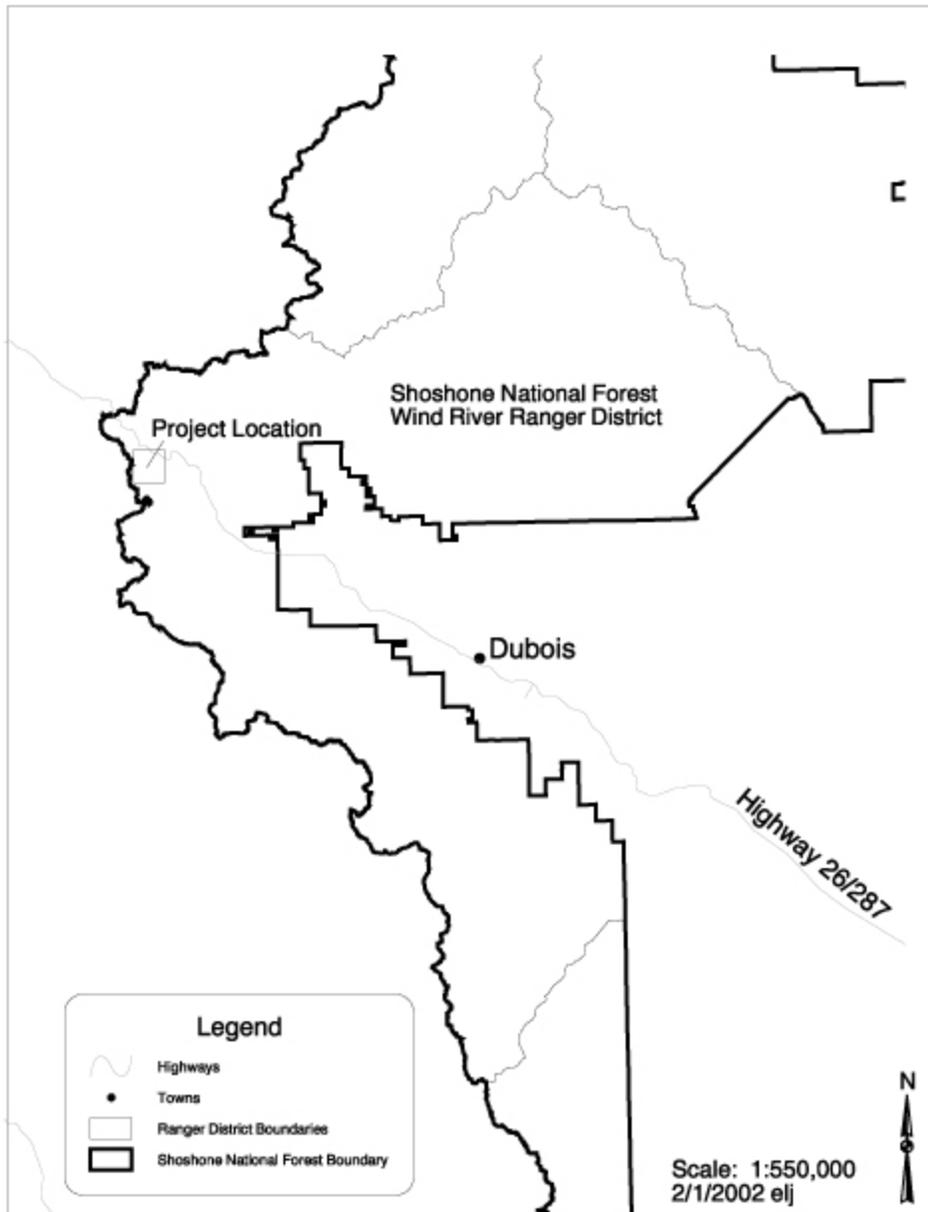


Figure 1. Moccasin Basin vicinity map.

Moccasin Basin Analysis Area and Proposed Salvage

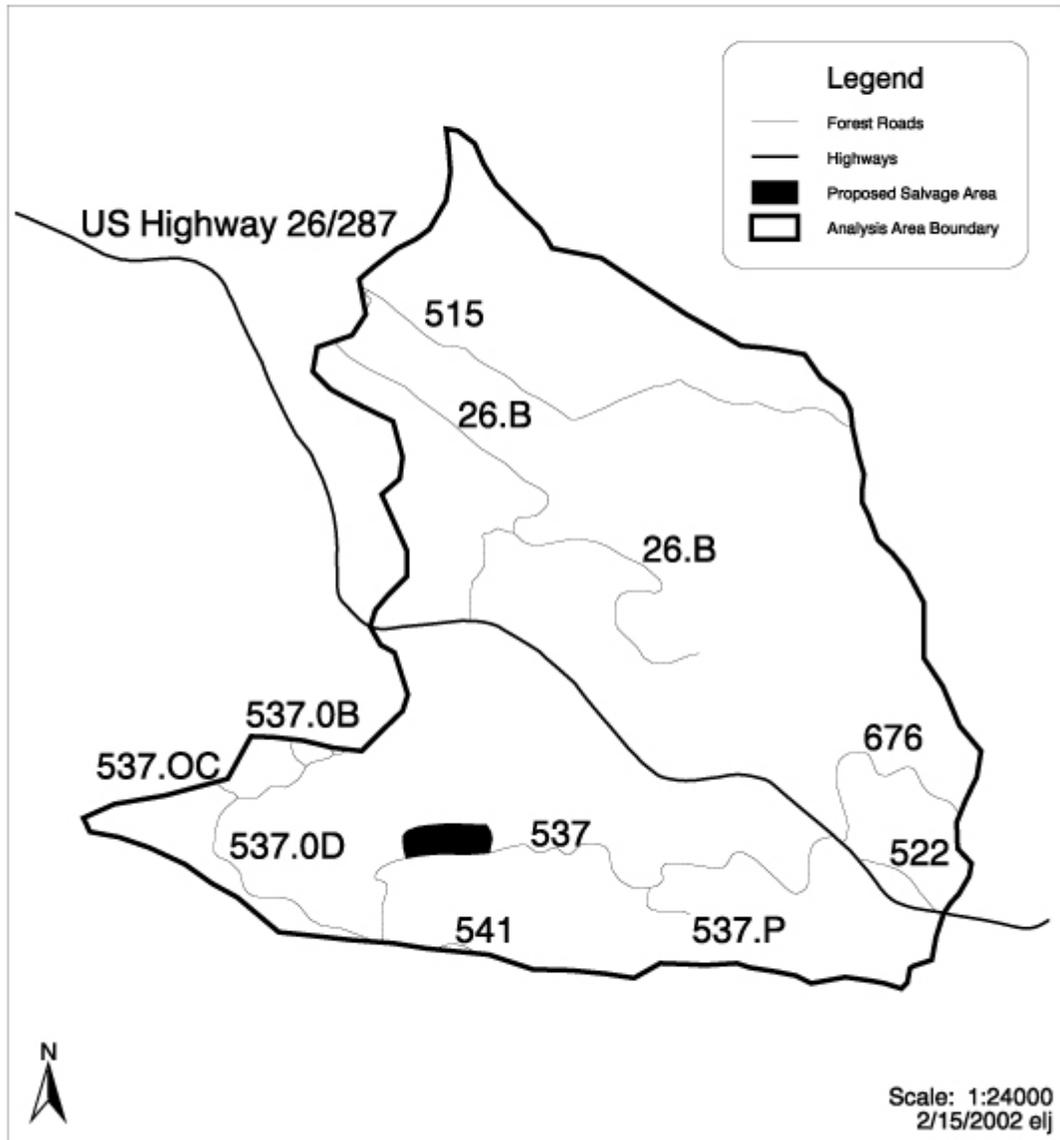


Figure 2. Analysis area for the Moccasin Basin project.
Proposed salvage unit, Forest Service roads, and highways shown.

Moccasin Basin Management Areas

Legend

- Forest Roads
- Highways
- Proposed Salvage Unit
- Management Areas**
 - ▨ 2B
 - ▩ 3A
 - ▧ 7E
- Analysis Area Boundary

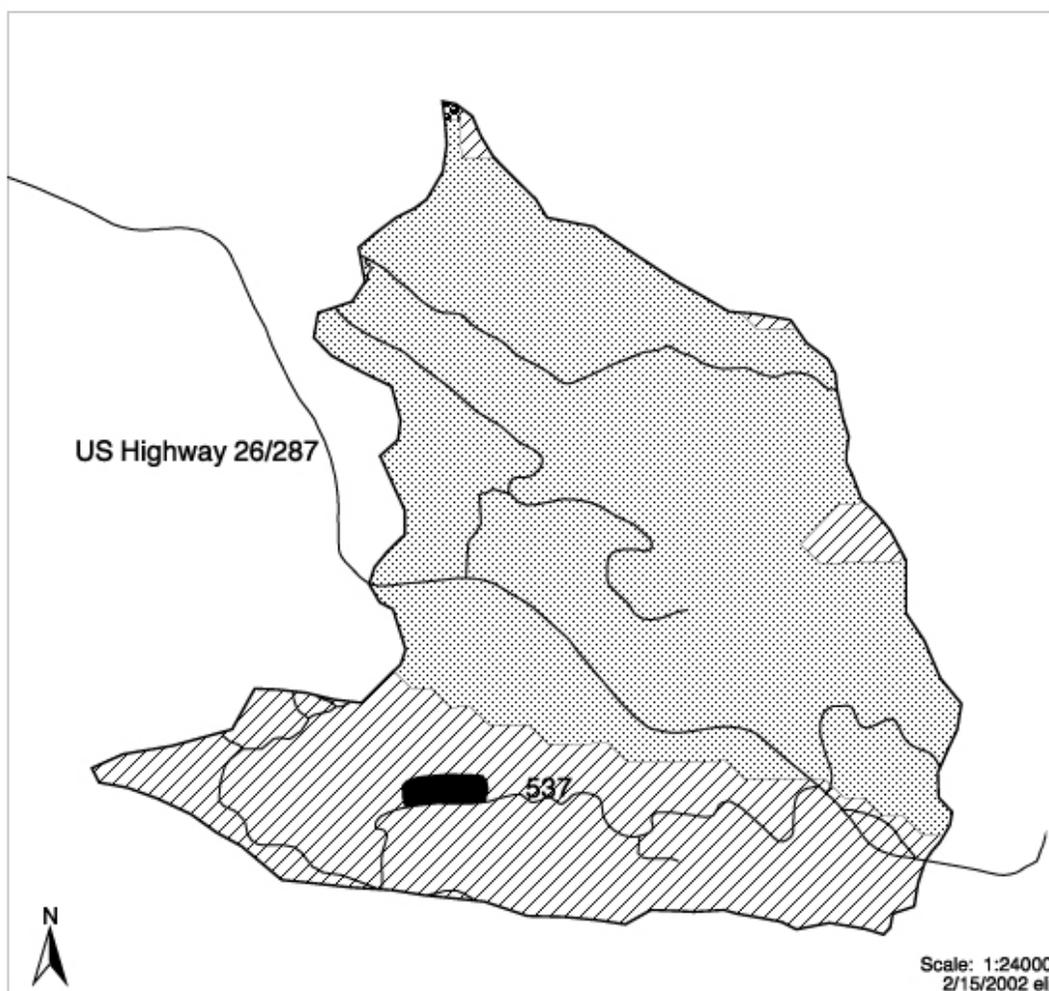


Figure 3. Management Areas in the Moccasin Basin analysis area.

Appendix B Scoping Comment Summary

Moccasin Basin Scoping Comment Summary

Comment Source Codes

Source Code	Description
CCLW	Camas Creek Log Works, LLC
DWA	Dubois Wildlife Association
FCC	Fremont County Commissioners
GYC	Greater Yellowstone Coalition
IDT	Interdisciplinary Team
IND	Individual
SBT	Shoshone-Bannock Tribes
USFWS	U.S. Fish and Wildlife Service
WGF	Wyoming Game and Fish Department
WOC	Wyoming Outdoor Council

Comment Type Codes

Type Code	Type	Description
ALT	Alternative Development	Comments that could provide an alternative to the proposed action.
AP	Analysis Process	These comments will be responded to by discussion in the comment disposition, project file, the EA, or in an appendix to the EA.
MIT	Recommended Mitigation/Monitoring	These comments recommend specific mitigation measures or monitoring.
OC	Opinion Comment	Comments expressing an opinion or are statements and do not require a response.
OS	Outside Scope	Comments where a decision has already been made or is beyond the scope of the proposed action.
PC	Process Comments	Comments are related to the NEPA process, rather than cause/effect statements relating the proposed action to a possible consequence.
RD	Recommend Decision	These comments express a preference for a final decision, or an aspect of the decision. They will not generally be responded to in the analysis, but will be considered by the decision maker.
REG	Regulation	Comment that is already decided through an existing law, regulation, Forest Plan or other higher decision.

Moccasin Basin Comments

Source	No.	Category	Comment	Significant?	Type	Disposition
IND	2-2	Regeneration	I question the viability of the proposed regeneration to whitebark pine. I do not believe the area is suitable for the successful growth and health of whitebark pine. I think it would be much more suitable for 100% spruce regeneration. Because 10 acres is a rather small area, it may not be detrimental to experiment with the proposed idea.	Yes	ALT	See Chapters 1 and 2 of the EA.
DWA	6-3	Regeneration	We do not support replanting the sale area in spruce and lodgepole, as these species provide no direct benefits to grizzly bears. Every effort should be made to replant the area with whitebark pine, even if planting has to be postponed a year or two.	Yes	ALT	See Chapters 1 and 2 of the EA.
IDT	3	Slash	Do not pile and burn. Lop and scatter would provide better microclimates for successful regeneration establishment.	Yes	ALT	See Chapters 1 and 2 of the EA.
CCLW	7-2	Slash	I would prefer the Lop and Scatter method of slash disposal to the pile and burn method.	Yes	ALT	See Chapters 1 and 2 of the EA.
WOC	5-4	Slash	Since the plans are to burn the slash, WOC recommends that it be burned as it falls rather than in slash piles to avoid soil sterilization of the sites.	Yes	ALT	See Chapters 1 and 2 of the EA.
DWA	6-9	Slash	We do not support the proposal to remove slash by piling and burning. We recommend instead the broadcast method.	Yes	ALT	See Chapters 1 and 2 of the EA.
GYC	8-3	Insects	We are interested in the Forest's understanding of how this project will effect the spread of spruce beetle. We are also interested in spruce beetle trends on the Forest, and whether the current population is considered endemic or epidemic, what the Forest's goals are for effecting spruce beetle, and finally, what the Forest considers an acceptable level of spruce beetle infestation.	Yes	AP	See Chapters 1 and 3 of the EA.
SBT	12-4	Wildlife	We are also interested in affects to wild game due to the decrease of possible habitat. Please describe the methods to address wild game needs, including all types of wildlife in the area.	Yes	AP	See Chapter 3 of the EA.
SBT	12-1	Cultural Resources	How will the removal of trees affect cultural resources/archeological properties in the proposed area?	No	AP/REG	See Chapters 1 and 2 of the EA.
USFWS	3-9	Wildlife	Regarding species proposed for listing or listed as an experimental, non-essential population, Federal agencies (other than the Fish and Wildlife Service and National Park Service) must determine whether any of their proposed activities are likely to jeopardize the continued existence of the species. If jeopardy is likely, that agency must confer with the Fish and Wildlife Service.	No	AP/REG	See Chapter 3 and Appendix C of the EA.

Source	No.	Category	Comment	Significant?	Type	Disposition
USFWS	3-10	Wildlife	The analysis of project impacts must assess direct impacts of the project, as well as those impacts that are interrelated to or interdependent with the proposed action. Impacts to listed species on non-Federal lands must be evaluated along with such impacts on Federal lands. Any measures that are ultimately required to avoid or reduce impacts to listed species will apply to Federal as well as non-Federal lands.	No	AP/REG	See Chapter 3 and Appendix C of the EA.
USFWS	3-6	Wildlife	The Service would caution you when making “no-effect” rulings on Canada lynx, specifically if the ruling is based on the fact that there are no recent records of their occurrence in an area. It is difficult to accept these types of “no-effect” rulings for the following reasons: <ul style="list-style-type: none"> Lynx in the southern Rockies are few in number and very difficult to locate, and lack of verification in an area does not preclude them from existing there. The Service is obligated both to protect and recover threatened and endangered species. An action can adversely affect or jeopardize the continued existence of a species through its effects on an existing population and/or on the potential habitat of a species that incrementally reduces the ability to recover or reestablish the species. 	No	AP/REG	See Chapter 3 and Appendix C of the EA.
USFWS	3-4	Wildlife	Under all management jurisdictions, the action agency needs to assess the potential impact of any proposed action on the gray wolf. The Service recommends that Federal Agencies analyze impacts on nonessential populations, along with other populations of fish and wildlife, when complying with the requirements of the National Environmental Policy Act. Any protective measures in addition to those outlined in the final rule [November 22, 1994 regarding nonessential experimental populations] or additional review procedures, are at the discretion of the Federal Action Agency.	No	AP/REG	See Chapter 3 and Appendix C of the EA.
DWA	6-10	Contract	On site contractor logistical support must be carefully planned and controlled to prevent damage to other Forest resources, particularly by all-terrain vehicles and camp trailers.	Yes	MIT	Timber sale contract provisions include protective measures for camp sites.
DWA	6-8	Contract	The terms of the sale must ensure that all skid trails, landings, etc., must be completely reclaimed and obliterated.	Yes	MIT	See Chapter 2 of the EA. Timber sale contract provisions include protective measures for camp sites.

Source	No.	Category	Comment	Significant?	Type	Disposition
SBT	12-3	Contract-Cultural Resources	What plans are incorporated in the project contract to avoid, mitigate or deter from cultural resources? Should inadvertent discovery subsurface; we recommend that a “stop work” procedure be put into effect and contact the appropriate agencies as well as the Shoshone-Bannock Tribes.	Yes	MIT	See Chapters 1 and 2 of the EA.
IDT	2	Contract-Timing	Possible conflicts with day trips planned with Triangle C; concern with keeping the road open.	Yes	MIT	See Chapters 2 and 3 of the EA.
USFWS	3-2	Contract-Wildlife	Although no new roads will be established in the proposed project area it is in grizzly bear habitat, and the safe and proper disposal of waste and storage of food on the work site should be considered in the project planning.	Yes	MIT	See Chapter 2 and Appendix C of the EA
DWA	6-11	Contract-Wildlife	Bear regulations must be in place and strictly enforced.	Yes	MIT	See Chapter 2 and Appendix C of the EA
GYC	8-4	Contract-Wildlife	We ask that since this is an area known to be occupied by grizzly bears, that the Forest require appropriate Food Storage and Firearms restrictions for all contractors working on the project.	Yes	MIT	See Chapter 2 and Appendix C of the EA
WOC	5-5	Regeneration	To assure successful WBP regeneration, livestock grazing and off-road vehicle use of the site should be prohibited.	Yes	MIT	Off-road vehicle use would not be permitted under the white arrow system currently in place on the Forest. See Chapter 3 of the EA.
IDT	1	Soils	Need to prevent skid trails from rilling/gullyng during operations.	Yes	MIT	See Chapter 2 of the EA. Sale contracts contain standard provisions to not operate when soils are wet or saturated to prevent soil damage.

Source	No.	Category	Comment	Significant?	Type	Disposition
WGF	11-1	Soils/Water Quality	<p>This project could impact the Wind River in northwestern Fremont County, Wyoming. This portion of the Wind River is characterized by the Department as a class 2 trout stream and it is managed for basic yield, meaning that it provides a fishery of statewide significance. This fishery is supported by fry and fingerling stocking only (i.e., no catch able sized fish are stocked). As such, the following should be considered to minimize soil erosion and subsequent sedimentation impacts:</p> <ul style="list-style-type: none"> • The environmental document should address construction of water bars, contour falling of trees, strategic location of slash/debris piles and other similar techniques as means of controlling soil erosion. • Where on-site inspections have verified the water repellency of soils in severely burned areas, scarification could improve water infiltration. This treatment should consequently reduce sheet erosion. • Emergence of vegetation following the burn may serve as an attractant to domestic livestock. Because of the greatly increased instability of soils in burned areas, this area should be adequately revegetated to minimize soil erosion and related aquatic impacts before grazing is allowed in the burn area. This should be addressed in the environmental document. 	Yes	MIT	See Chapters 2 and 3 of the EA.
IND	1-1	Timing	State may have concerns if operations are conducted in the wintertime due to conflicts with XA trail.	Yes	MIT	See Chapter 3 of the EA.
DWA	6-5	Timing	The sale should be designed so that there are no conflicts with elk calving or hunting seasons.	Yes	MIT	See Chapters 2 and 3 of the EA.
WOC	5-6	Products	WOC supports multi-product timber sales to include at least post/poles, firewood, saw timber, house logs and value-added wood products.	No	OC	
IND	2-1	Support	I fully support the salvage and sanitation work that is being proposed.	No	OC	
FCC	4-1	Support-Local	The Fremont County Commissioners support implementation of the proposed action to harvest timber in the Moccasin Basin Area. Timber harvesting is important for both forest health and the local economy.	No	OC	
GYC	8-2a	Support-Research	We support attempts to study regeneration of whitebark pine on the site, and are interested in this area being used as a study site.	No	OC	
WOC	5-1	Support-Research	WOC appreciates the fact that the Forest Service plans to use the Moccasin Basin 10-acre salvage sale for whitebark pine (WBP) research.	No	OC	

Source	No.	Category	Comment	Significant?	Type	Disposition
CCLW	7-1	Timing	It is late to set up a “Salvage sale” since there is already an insect infestation, which decreases the marketability of the wood.	No	OC	Due to shortages of personnel, lack of environmental documentation, implementation of the salvage sale could not be started until after insects moved into dead wood.
DWA	6-7	Products	We suggest that a criterion for the sale be that the contract go to the company best able to produce the greatest amount of value-added products, such as house logs.	No	OS	The sale will be sold as a multi-product sale. The Forest Service sells its timber sales at competitive bid to the highest bidder. However, a certain percentage of sales sold from the Forest are Small Business Set Aside sales, meaning smaller operators would be allowed to bid.
WOC	5-2	Research	In the event that University of Montana cannot complete the WBP research, WOC suggests that the Shoshone NF staff complete the research project in order to take advantage of the opportunity available. This would be a small, but perhaps valuable WBP project site that may reveal important new information about WBP regeneration and disease.	No	OS	See Chapter 1 of the EA.
GYC	8-2b	Research	In the event the site will not be used in the research project, we hope that the Shoshone itself will consider completing the project in this area.	No	OS	See Chapter 1 of the EA.
DWA	6-2	Research	We also suggest that the Shoshone National Forest develop a strategy for whitebark pine research and restoration and implement that strategy in conjunction with all proposed sales in whitebark pine areas.	No	OS	See Chapter 1 of the EA.
DWA	6-1	Research	We would like to see the salvage sale designed to further whitebark pine research, with or without University of Montana involvement.	No	OS	See Chapter 1 of the EA.
DWA	6-6	Support-Local	We understand that timber contracts must be let according to well-defined USFS regulations and laws, but we would hope that the sale favor Fremont County contractors, if possible.	No	OS	See disposition for comment 6-7.
GYC	8-1	Specificity	We would appreciate more specificity regarding the additional number of live trees surrounding the burned area that will be harvested. It is unclear whether this amounts to an additional 5 acres of 20 or more. We specifically point to language in the scoping document that leave a very wide open door: “(i.e. trees stressed from partial burning, or weakened, suppressed, or over mature trees).”	No	PC	See Chapters 1 and 2 of the EA.

Source	No.	Category	Comment	Significant?	Type	Disposition
DWA	6-4	Timing	Contractors should be required to start and complete their operations in a timely manner so that planting and research projects may be completed on schedule.	No	PC	See Chapter 1 of the EA.
WOC	5-3	Timing	The proposed schedule of harvest and research should be sure to coincide with WBP seeds being planted to provide seedlings for planting following the sale.	No	PC	See Chapter 1 of the EA.
USFWS	3-5	Wildlife	<p>Factors to consider in creating positive benefits for lynx in advance of landscape level planning include:</p> <ul style="list-style-type: none"> • Logging should be used to help create and maintain frequent patches of early successional lodgepole pine, Douglas-fir, and spruce-fir forest that provide dense thermal cover and food supply for snowshoe hare within one to two feet of the snow pack surface throughout the winter period. Approximating the landscape mosaic inherent under a natural fire regime is expected to benefit lynx. • Clear-cuts should be small, typically as patch cuts. Clear-cuts, or patch-cuts should no exceed 100m, preferably 50 m, in width; should be linear or irregular in nature, rather than circular or square; and should have irregular or scalloped edges. • Seed cuts should retain clusters of trees, in addition to individual trees, to maintain food, nesting, and refugia habitat for small mammal, hare, grouse, and other bird species; and to improve the potential for use in early years by lynx. • Slash should remain on-site to enhance reseedling and to benefit small mammals. • Where a shrub understory exists, logging practices should seek to minimize damage to that structural component. 	Yes	PC	See Chapter 1 and Appendix C of the EA.
SBT	12-2	Cultural Resources	Has a cultural resource study been done in the proposed area?	No	REG	See Chapter 1 of the EA.
USFWS	3-1	Timing-Wildlife	A disturbance-free buffer zone of 1 mile should be maintained around [bald] eagle nests. Activity within 1 mile of an eagle nest may disturb the eagles and result in “take”. If a disturbance-free buffer zone of 1 mile is not practical, then the activity should be conducted outside of the nesting season, which is from Feb 15 – Aug 15.	No	REG	See Appendix C of the EA. No bald eagle nests are found in the analysis area.

Source	No.	Category	Comment	Significant?	Type	Disposition
USFWS	3-3	Wildlife	[Regarding gray wolf and Endangered Species Act]. Two provisions of section 7 apply to federal action outside National Parks or National Wildlife Refuges: (1) section 7(a)(1), which states all Federal agencies shall utilize their authorities to carry out programs for the conservation of listed species; and (2) section 7(a)(4), which requires Federal agencies to confer with the Service on actions that are likely to jeopardize the continued existence of the species.	No	REG	See Chapters 2 and 3 and Appendix C of the EA.

Source	No.	Category	Comment	Significant?	Type	Disposition
USFWS	3-12	Wildlife	<p>For those actions where a biological assessment is necessary, it should be completed within 180 days of receipt of a species list, but can be extended by mutual agreement between the lead agency and the Fish and Wildlife Service. If the assessment is not initiated within 90 days of receipt of a species list, the list of threatened and endangered species should be verified with me prior to initiation of the assessment. The biological assessment may be undertaken as part of the agency's compliance of section 102 of the NEPA and incorporated into the NEPA documents. The Service recommends that biological assessments include:</p> <ul style="list-style-type: none"> • A description of the project; • A description of the specific area potentially affected by the action; • The current status, habitat use, and behavior of threatened and endangered species in the project area; • Discussion of the methods used to determine the information in item 3; • Direct and indirect impacts of the project to threatened and endangered species, including impacts of interrelated and interdependent actions; • An analysis of the effects of the action on listed and proposed species and their habitat including cumulative impacts from Federal, State, or private projects in the area; • Measures that will reduce or eliminate adverse impacts to threatened and endangered species; • The expected status of threatened and endangered species in the future (short and long term) during and after project completion; • Determination of "is likely to adversely affect" or "is not likely to adversely affect" for listed species; • Determination of "is likely to jeopardize" or "is not likely to jeopardize" for proposed species; • Alternatives to the proposed action considered, a summary of how impacts of those alternatives on listed and proposed species would differ from the proposed action, and the reasons for not selecting those alternatives. • Citation of literature and personal contacts used in the assessment. 	No	REG	See Chapter 3 and Appendix C of the EA.

Source	No.	Category	Comment	Significant?	Type	Disposition
USFWS	3-7	Wildlife	Please recognize that consultation on listed species may not remove your obligation to protect the many species of migratory birds, including eagles and other raptors protected under the Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA). Of particular focus is the yellow-billed cuckoo (<i>Coccyzus americanus</i>) (candidate species).	No	REG	See Chapter 3 and Appendix C of the EA.
USFWS	3-11	Wildlife	Section 7(c) of the Act requires that a biological assessment be prepared for any Federal action that is a major construction activity to determine the effects of the proposed action on listed and proposed species. If a biological assessment is not required (i.e. all other actions) the lead Federal agency is responsible for review of proposed activities to determine whether listed species will be affected. We would appreciate the opportunity to review any such determination document. If it is determined that the proposed activities may affect a listed species, you should contact this office to discuss consultation requirements. If it is determined that any Federal agency program or project “is likely to adversely affect” any listed species, formal consultation should be initiated with this office. Alternatively, informal consultation can be continued so we can work together to determine how the project should be modified to reduce impacts to listed species to the “not likely to adversely affect” threshold. If it is concluded that the project “is not likely to adversely affect” listed species, we should be asked to review the assessment and concur with the determination of not likely to adversely affect.	No	REG	This project is not a major federal action, however a biological assessment was prepared for this project. A determination was made through this assessment that this project will have no effect on any T&E species and thus no consultation is required.
USFWS	3-8	Wildlife	Section 7(d) of the Act requires that the Federal agency and permit or license applicant shall not make any irreversible or irretrievable commitment of resources which would preclude the formulation of reasonable and prudent alternatives until consultation on listed species is completed.	No	REG	See Chapter 3 of the EA.

Appendix C Biological Assessment/Biological Evaluation

**Biological Assessment/Biological Evaluation
For
Moccasin Basin Timber Sale**

**Wind River Ranger District of the Shoshone National Forest
Fremont County, Wyoming
2002**

Prepared by Lynette Otto and Kent Houston

April 2002

Introduction. A biological evaluation of the effects of the proposed action, and alternatives to it, on threatened and endangered species is required by Forest Service policy, as found in Forest Service Manual 2670.31. This assessment/evaluation was prepared in accordance with Section 7 of the Endangered Species Act as amended (P.L.97-304), the Interagency Cooperation Regulations (51FR19926), and the Forest Service Manual (2672.42).

This biological evaluation also addresses Region 2 Sensitive Species as called for in Forest Service Manual direction (2671.32).

Project Description. The Wind River District proposes to salvage and sanitize a total of approximately 40 acres of timber burned in the Moccasin Basin fire in 1999 to slow the spread of spruce beetle and improve the health of nearby forest vegetation. This project is located 22 miles northwest of Dubois, along the Moccasin Basin road. The legal description of the area is sections 2 and 3, T.43N., R.110W., 6th P.M. Fremont County, WY.

Proposed Action. This proposal is to treat approximately 40 acres in an analysis area of 1,800 acres. It proposes salvaging 10 acres of dead timber, and sanitizing another 30 acres by removing weakened and beetle infested spruce. The salvage would remove all timber in those 10 acres and resemble a clear-cut when completed. In the 30 acres sanitized, the healthy timber left would be left standing. The University of Montana is considering planting whitebark pine in the salvaged area as part of a regeneration study, but if not, natural regeneration would be monitored and Engelmann spruce and lodgepole pine would be planted. This action would be done using standard ground-based logging systems.

Actions connected with the proposal are:

- Use of existing roads for hauling
- Lopping and scattering slash with both treatments
- Hauling spruce culls to landing and burning to prevent spruce beetle spread
- Duration of activity will be two months

Additional mitigation for this project would be the use of the food and garbage storage regulations while these operations take place.

Alternative 1 – No Action. This alternative would result in continuation of resource conditions and trends. Since there is no action associated with this alternative, other than a decision not to implement the action, there would be no direct effects to threatened, endangered, or sensitive species. The result of not implementing this action would most likely be the spread of the spruce beetle to other spruce stands, weakening them and leaving the adjacent areas more susceptible to wildfire. This could have a negative indirect effect on PETS (proposed, endangered, threatened, or regionally designated sensitive) species in the long run.

Analysis of Effects. All proposed, endangered, threatened, or regionally designated sensitive species known or suspected to occur on the Shoshone National Forest have been considered in this analysis. Effects analysis is completed for any species that occur or could possibly occur within the analysis area. Any species determined unlikely to occur in the analysis area is not carried into further analysis. To determine which species could occur within the analysis area, species occurrence records for the area are checked, and the habitat requirements of the species are compared with the habitat present in the analysis area. Table 1 shows the results of these comparisons.

In this analysis, direct, indirect and cumulative effects from the project are looked at for each alternative, and determinations are made for PETS species. A determination of "no effect," "not likely to adversely affect," or "likely to adversely affect" for federally listed threatened and endangered species; "no effect," "not likely to jeopardize continued existence or adversely modify proposed critical habitat," or "likely to jeopardize continued existence or adversely modify proposed critical habitat" for experimental species or species proposed for federal listing; and "no impact," "beneficial impact," "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 rangewide" or "likely to result in a loss of viability on the planning area, in a trend to federal listing, or a loss of species viability rangewide" for sensitive species, is made for each species, as appropriate. Rationale accompanies these determinations.

If there are recommendations for avoiding, removing, or compensating for any projected adverse effects, they are given.

Table 1. All PETS species known or suspected to occur on the Shoshone National Forest

Species Name	Status	Species Occurrence on Forest	General Habitat Associated	General Habitat Exists in Analysis Area	Species Present in Analysis Area	Method of Determining Species Occurrence in Analysis Area	Species Needs to be Carried Forward in Analysis
Canada lynx (<i>Lynx canadensis</i>)	Threatened	Documented (very rare)	Mature forest	Yes	Possible	Habitat relationship Field survey	Yes
Grizzly bear (<i>Ursus arctos</i>)	Threatened	Documented	Variable	Yes	Documented	Common knowledge Field survey	Yes
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Threatened	Documented	Lakes Rivers	No	Unlikely	Habitat relationship WYNDD	No
Gray wolf (<i>Canis lupus</i>)	Experimental	Documented	Variable	Yes	Likely	Proximity of local pack	Yes
Black-footed ferret (<i>Mustela nigripes</i>)	Endangered	No	Assoc. with prairie dogs	No	Unlikely	Habitat relationship Field survey	No
Peregrine falcon (<i>Falco peregrinus</i>)	Delisted, sensitive	Documented	Cliffs	No	Unlikely	Habitat relationship Field survey	No
Mountain plover (<i>Charadrius montanus</i>)	Proposed	No	Prairie Wetland	No	Unlikely	Habitat relationship Field survey	No
Whooping crane (<i>Grus americana</i>)	Endangered	No	Wetland	No	Unlikely	Habitat relationship Field survey	No
Dwarf shrew	Sensitive	Yes	Subalpine meadows	Yes	Likely	Habitat relationship	Yes
Allen's thirteen-lined ground squirrel	Sensitive	maybe	Grasslands; shrublands	No	Unlikely	Habitat relationship	No
Fringed myotis	Sensitive	Yes	Caves, forested edges	No	Unlikely	Habitat relationship	No
Townsend's big-eared bat	Sensitive	Yes	Caves, forested streamsidess	No	Unlikely	Habitat relationship	No
Water vole	Sensitive	Yes	Subalpine riparian	Yes	Likely	Habitat relationship	Yes
Marten	Sensitive	Yes	Dense coniferous forest	No	Yes	Habitat relationship	Yes
Fisher	Sensitive	Maybe	Mature coniferous forest	Yes	Possible	Habitat relationship	Yes

Species Name	Status	Species Occurrence on Forest	General Habitat Associated	General Habitat Exists in Analysis Area	Species Present in Analysis Area	Method of Determining Species Occurrence in Analysis Area	Species Needs to be Carried Forward in Analysis
Wolverine	Sensitive	Yes	Subalpine coniferous	Yes	Possible	Habitat relationship	Yes
Common loon	Sensitive	Maybe	Lakes and large ponds	No	Unlikely	Habitat relationship	No
Trumpeter swan	Sensitive	Yes	Lakes and large ponds	No	Unlikely	Habitat relationship	No
Ferruginous hawk	Sensitive	Yes	Open prairie	No	Unlikely	Habitat relationship	No
Osprey	Sensitive	Yes	Lakes and rivers	No	Unlikely	Habitat relationship	No
Northern goshawk	Sensitive	Yes	Old growth conifer/mix	Yes	Likely	Habitat relationship	Yes
Greater sandhill crane	Sensitive	Yes	Montane valleys; meadows; willow bottoms	No	Unlikely	Habitat relationship	No
Long-billed curlew	Sensitive	No	Grasslands	No	Unlikely	Habitat relationship	No
Upland sandpiper	Sensitive	No	Grasslands	No	Unlikely	Habitat relationship	No
Black tern	Sensitive	No	Marsh	No	Unlikely	Habitat relationship	No
Boreal owl	Sensitive	Yes	Subalpine spruce/fir	Yes	Likely	Habitat relationship	Yes
Yellow-billed cuckoo	Sensitive	No	Cottonwood riparian	No	Unlikely	Habitat relationship	No
Burrowing owl	Sensitive	No	Grasslands; sagebrush	No	Unlikely	Habitat relationship	No
Lewis' woodpecker	Sensitive	No	Pondersosa pine savannah	No	Unlikely	Habitat relationship	No
Black-backed woodpecker	Sensitive	Yes	Spruce/fir forests	Yes	Likely	Habitat relationship	Yes
Northern three-toed woodpecker	Sensitive	Yes	Spruce/fir forests	Yes	Likely	Habitat relationship	Yes
Olive-sided flycatcher	Sensitive	Yes	Coniferous forests	Yes	Likely	Habitat relationship	Yes
Golden-crowned kinglet	Sensitive	Yes	Coniferous and mixed stands	Yes	Likely	Habitat relationship	Yes
Loggerhead shrike	Sensitive	No	Open shrub/prairie	No	Unlikely	Habitat relationship	No

Species Name	Status	Species Occurrence on Forest	General Habitat Associated	General Habitat Exists in Analysis Area	Species Present in Analysis Area	Method of Determining Species Occurrence in Analysis Area	Species Needs to be Carried Forward in Analysis
Baird's sparrow	Sensitive	No	Shortgrass prairie	No	Unlikely	Habitat relationship	No
Fox sparrow	Sensitive	Yes	Riparian shrublands	Yes	Likely	Habitat relationship	Yes
Tiger salamander	Sensitive	Yes	Ponds	Yes	Possible	Habitat relationship	Yes
Boreal toad	Sensitive	Yes	Forested wetlands	Yes	Possible	Habitat relationship	Yes
Northern leopard frog	Sensitive	Yes	Aquatic habitats	Yes	Possible	Habitat relationship	Yes
Spotted frog	Sensitive	Yes	Glacial ponds	Yes	Possible	Habitat relationship	Yes
Yellowstone cutthroat trout	Sensitive	Yes	Streams	Yes	No pure strains are known to occur	Stream surveys	No

Plants. Table 2 lists the 17 sensitive plant species that occur on the Forest. The Moccasin Basin analysis area only includes potential habitat for one plant, the pink agoseris.

Table 2. Sensitive plant species on the Shoshone National Forest.

Species Name	Vegetation Type	Soil Type	Habitat Present in Analysis Area	Analysis Area Method of Survey	Species Present in Analysis Area	Notes
Pink agoseris (<i>Agoseris lackschweitzii</i>)	Wet Montana/subalpine meadows	Variable	Yes	Literature cited	Possibly	meadows
Round-leaved orchid (<i>Amerorchis rotundifolia</i>)	Coniferous bogs	Calcareous	No	Literature cited	No	Swamp Lake area primary occurrence
Red manzanita (<i>Arctostaphylos rubra</i>)	Coniferous bogs	Calcareous	No	Literature cited	No	Swamp lake area primary occurrence
Upward-lobe moonwort (<i>Botrychium ascendens</i>)	Wet meadows/willow	Alluvium	No	Literature cited	No	Willow riparian
Livid sedge (<i>Carex livida</i>)	Floating mats, bogs, fens	Calcareous	No	Literature cited	No	
Wyoming tansymustard (<i>Descurainia torulosa</i>)	Rocky slopes and ridges	Volcanic	No	Literature cited	No	Endemic to Absaroka Mountain Range
Kirkpatrick's ipomopsis (<i>Ipomopsis spicata</i> spp. <i>robruthii</i>)	Alpine scree	Volcanic	No	Literature cited	No	
Fremont bladderpod (<i>Lesquerella fremontii</i>)	Barren slopes and ridges	Calcareous	No	Literature cited	No	meadows
Hall's fescue (<i>Festuca hallii</i>)	Montane grassland	Calcareous	Yes	Literature cited	No	
Marsh muhly (<i>Muhlenbergia glomerata</i>)	Bogs, floating mats, fens	Calcareous	No	Literature cited	No	Swamp Lake area primary occurrence
Naked-stemmed parrya (<i>Parrya nudicaulis</i>)	Alpine	Calcareous	No	Literature cited	No	
Greenland primrose (<i>Primula egalikensis</i>)	Bogs, fens	Calcareous	No	Literature cited	No	Swamp Lake area primary occurrence
Absaroka goldenweed (<i>Pyrrocomma</i>)	Montane meadows, grasslands	Calcareous	No	Literature cited	No	

Species Name	Vegetation Type	Soil Type	Habitat Present in Analysis Area	Analysis Area Method of Survey	Species Present in Analysis Area	Notes
<i>carthamoides</i> var. <i>subsquarrosa</i>)						
Myrtleleaf willow (<i>Salix myrtilifolia</i> var. <i>myrtilifolia</i>)	Floating mats, bogs, fens	Calcareous	No	Literature cited	No	Swamp Lake area primary occurrence
Rolland bulrush (<i>Scirpus rollandii</i>)	Floating mats, bogs, fens	Calcareous	No	Literature cited	No	Swamp Lake area primary occurrence
Shoshonea <i>Shoshonea pulvinata</i>	Calcareous Soils & Rock outcrops	Calcareous	No	Literature cited	No	
North Fork easter daisy (<i>Townsendia condensate</i> var. <i>anomala</i>)	Rocky slopes and ridges	Volcanic	No	Literature cited	No	Endemic to Absaroka Mountain Range

Threatened and Endangered Species

Critical Habitat or Habitat of Special Designation

The Shoshone National Forest does not provide habitat designated as critical for any listed species. In addition, the analysis area does not contain any specially designated habitats relative to any Forest PETS species.

Gray Wolf

The availability of a stable ungulate prey base is the primary special habitat requirement for this species although smaller animals and carrion are also used as prey.

Concentrations of available prey do occur on the winter range areas off forest or east and northeast of this analysis area, but these areas are located downstream several miles from the treatment area. It is very possible that wolves travel through the analysis area, given the extent that wolves have expanded their range out of Yellowstone Park into the Dubois area.

According to the Federal Register (Vol. 59, No. 244. Establishment of a Nonessential Experimental Population of Gray Wolves in Yellowstone National Park in Wyoming, Idaho, Montana, Central Idaho and Southwestern Montana; Final Rules), "there are no conflicts envisioned with any current or anticipated management actions of the Forest Service." "The national forests are beneficial to the reintroduction effort in that they form a natural buffer to private properties and are typically managed to produce wild animals that wolves could prey upon."

Determination. Wolves would not be affected by this project, as very little habitat modification will occur. Wolves may avoid this area while the salvage and sanitation activities are occurring, but this is only a two-month period. The open road densities would not increase and the big game population numbers in the herd unit would not change. Implementing this project would "not jeopardize the continued existence of wolf" in the wild or in the experimental population, and thus would not jeopardize the recovery of gray wolf.

Grizzly Bear

The Moccasin Basin analysis area occurs outside the officially designated grizzly bear recovery zone and thus in an area of the Forest where management for bears and their habitat is not directed. In the past decade, grizzlies have expanded their range on the Forest and the recovery goals for this species in the Yellowstone Ecosystem has been met. It is probable that grizzlies occur in or near the analysis area. Federal agencies, such as the Shoshone National Forest, are required to conserve listed species, such as the grizzly, and not jeopardize their continued existence wherever they occur.

Nineteen percent of the analysis area consists of whitebark pine, which is a fall food source for grizzlies. None of this whitebark is in close proximity to the treatment site however, and since this action would not be done at a time when grizzlies utilize this food source, the activities would be unlikely to directly impact any individuals. The indirect effects on the habitat would be discountable for grizzlies. There would be no cumulative effects from this project, as the project has no effects.

Determination. In general, it appears that the Moccasin Basin project would not adversely affect habitat conditions for bears in the analysis area or increase the potential for grizzly bear/human conflicts and bear mortalities, over existing conditions. Because the habitat in the project area has already been modified by the fire, the contract period is extremely short, no new roads are being constructed, the scope of project is very small, and treatments occur within close proximity of the road, where human disturbance already exists, the project will have "no effect" on the grizzly bear or its habitat.

Canada Lynx

The U.S. Fish and Wildlife Service published a Final Rule in the Federal Register on March 24, 2000 listing the North American lynx population in the contiguous United States as threatened, pursuant to the Endangered Species Act.

Primary lynx habitat in the western mountains consists of lodgepole pine, subalpine fir, and Engelmann spruce (Aubry et al. 2000). Lynx require both early successional forests with plentiful prey (especially snowshoe hares) for foraging as well as late-successional forests that contain cover for kittens (especially deadfalls) and for denning. Intermediate successional stages may serve as travel cover for lynx and provide connectivity within a forest landscape. Denning sites must be in close proximity to foraging habitat and denning and foraging habitats must be interconnected by stands suitable for lynx travel (Koehler and Aubry 1994).

Threats to lynx viability are the lack of quality foraging areas (snowshoe hare habitat), low quantities and poor interspersion of denning and travel habitats, and inadequate spatial distribution of these habitat components on the landscape. Often, the presence and abundance of snowshoe hare predators and competitors are also threats to lynx. Large burns or clear-cuts reduce available habitat and may create barriers to lynx movements. Road construction can increase lynx mortality as well as reduce suitable habitat.

Habitat and extensive winter snow survey work has been conducted for this species during the recent past on the Shoshone National Forest in partnership with the Wyoming Game & Fish Department. The areas with the most potential habitat occur in the Dubois/Togwotee Pass area with more limited potential on parts of the Washakie Ranger District and in the Beartooth Mountains. Tracks of two different lynx have been confirmed in the Dubois area and tracks of a single lynx in both the Washakie District area and in the Beartooths just across the Wyoming/Montana state line and immediately adjacent to the Shoshone National Forest were also located.

Effects on Canada Lynx

The analysis area is 77% forested with 54% of that being spruce-fir types. The majority of these spruce-fir forest types is considered mature and has accumulating amounts of down woody debris and multiple age classes that provide suitable denning or security areas for lynx and foraging habitat for red squirrels (alternate prey source). In other parts of the analysis area, younger stands provide foraging habitat.

The 1999 burns removed the suitability of the proposed treatment area for lynx. It is no longer lynx habitat. This treatment will not degrade or improve the short term suitability of this area for lynx.

The analysis area has potential habitat for lynx. The analysis area falls in LAU #12, which has approximately 45,600 acres of mapped lynx habitat. The Moccasin Basin Fire, and other burns, in 1988, modified approximately 1,500 acres in this LAU. Past clearcuts have modified approximately 4,600 acres but most of these were over 20 years ago and have regenerated into stands that are providing snowshoe hare habitat. These modifications represent 7% of this LAU in the last several decades. This project affects 0% of the suitable lynx habitat and therefore would not lead to a change of more than 15 percent of lynx habitat within the LAU to an unsuitable condition within a 10-year period and thus is within the standards established in the Canada Conservation Lynx Assessment and Strategy.

Determination. As the area proposed for treatment is not currently lynx habitat, no lynx habitat would be affected by this project. Therefore, no direct or indirect effects on lynx would occur, and this project has a “no effect” determination. There are no cumulative effects, as the project has no effects.

Sensitive species

Sensitive species that occur, or could occur, in the analysis area have been grouped according to the habitats in which they occur, and the effects from the project are discussed in that context. Additional information will be listed if it is helpful in determining effects, or the significance of effects on the species.

Subalpine Meadows

This habitat, which is present in the analysis area, is potential habitat for the dwarf shrew as well as the pink agoseris.

This project does not affect subalpine meadows as all activity would take place in the burn area so these species would not be directly, indirectly or cumulatively affected

Determination. Since this habitat type will not be affected in this project, there will be “no impact” on the dwarf shrew or pink agoseris.

Coniferous Forest Habitat

Species that occur or could occur in this habitat type as it appears in the analysis area are: marten, fisher, wolverine, northern goshawk, boreal owl, black-backed woodpecker, northern three-toed woodpecker, golden-crowned kinglet, and olive-sided flycatcher.

This project would not change the available coniferous forest habitat in the analysis area. The Moccasin Basin fire modified 40 acres of this habitat in 1999 and this project would simply remove the dead and dying trees.

None of these sensitive species would be directly impacted by this action. The woodpecker species would be indirectly impacted, as the removal of standing dead trees would reduce the suitability of these 40 acres for these species. The analysis area, however, has an abundant amount of snags that these species can utilize. There are no other known actions that would impact these species in this area, so there would be no cumulative impacts.

Determination. For marten, fisher, wolverine, northern goshawk, boreal owl, golden-crowned kinglet, and olive-sided flycatcher, this project would have “no impact.” For black-backed woodpecker and northern three-toed woodpecker this project “may adversely impact individuals, is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of viability rangewide.”

Riparian/Aquatic Habitat

Species that occur or could occur in the analysis area in riparian or aquatic habitats are: water vole, fox sparrow, northern leopard frog, tiger salamander, spotted frog, and boreal toad.

This project would not impact any wetland, pond, or streamside areas. The trees to be removed are not in these habitat types. As no new roads would be built, there is no likelihood of stream or wetland degradation by sediment carriage.

Determination. Because of the habitat not being impacted, this project is a “no impact” for the water vole, fox sparrow, northern leopard frog, tiger salamander, spotted frog, and boreal toad.

Summary of Effects

In summary, based on this analysis of effects for PETS species, it is my opinion that implementing the Moccasin Basin Timber Sale would have no effect on grizzly bear and lynx; would not likely jeopardize the continued existence of the gray wolf; would have no impact on the dwarf shrew, water vole, marten, fisher, wolverine, northern goshawk, boreal owl, olive-sided flycatcher, golden-crowned kinglet, fox sparrow, northern leopard frog, tiger salamander, spotted frog, boreal toad, pink agoseris, and may adversely impact individuals, but not likely result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of viability rangewide for the black-backed and northern three toed woodpeckers.

Completed by: /s/ Lynette A. Otto _____ Date: April 5, 2002 _____
Lynette A. Otto
Forest Wildlife Biologist
Shoshone National Forest

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Appendix D - Economic Analysis

This appendix is not available in an electronic format.

To request a copy of the financial analysis, call the Wind River Ranger District at 307.455.2466 and ask for a hard copy of Appendix D for the Moccasin Basin Pre-decisional Environmental Assessment.