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Garden Mountain Fuels Management Project

Environmental Assessment

For The Garden Valley and Crouch Communities
Boise County, Idaho

United States Department of Interior
Bureau of Land Management, Four Rivers Field Office

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List of Acronyms

BA	Basal Area
BLM	Bureau of Land Management
BMPs	Best Management Practices
BP	Before Present
CEQ	Council on Environmental Quality
dbh	Diameter at Breast Height
DG	Decomposed Granite
EA	Environmental Assessment
ECA	Equivalent Clearcut Area
ESA	Endangered Species Act
FORVIS	Forest Vegetation Information System
FRFO	Four Rivers Field Office
GMFMP	Garden Mountain Fuel Management Project
HUC	Hydrologic Unit Code
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Lands
IDT	Interdisciplinary Team
INFISH	Interim Strategy for Managing Non-Anadromous Watersheds
LCAS	Lynx Conservation Assessment and Strategy
MBF	Thousand Board Feet
MU	Management Unit
NEPA	National Environmental Policy Act
NOAA Fisheries	National Oceanic and Atmospheric Administration Fisheries (formerly National Marine Fisheries Service)
NFP	National Fire Plan
OHV	Off-Highway Vehicle
PM	Particulate Matter
RHCA	Riparian Habitat Conservation Area
RM	River Mile
RMP	Resource Management Plan
SCS	Soil Conservation Service
SHPO	State Historic Preservation Officer
SSS	Special Status Species
TPA	Trees per Acre
USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VRM	Visual Resource Management
WUI	Wildland Urban Interface

Glossary

Butt Rigging - A system of swivels and clevises that connect the haulback and mainline together and to which butt hooks are fastened. An essential part of the high lead, cable logging system.

Cable Yarding - Taking logs from the stump area to a landing using an overhead system of winch-driven cables to which logs are attached with chokers.

DG Soil - Highly erosive, decomposed granite soil formed from the Idaho Batholith.

Felling - Cutting standing trees, causing them to fall as a result.

Hand Treatments - A variety of hand treatments (e.g., brush removal, slash piling, lop and scatter, and pruning) that would be used on slopes greater than 35 percent to protect soil, site productivity, and water quality.

Haulback - A wire rope used to pull the mainline with carriage or butt rigging with chokers back to the timber for the next turn.

Highlead Yarding System - Wire rope system that involves yarding in logs or trees by means of a rope passing through a block at the top of the head spar. The basic system consists of a two-drum yarder and a spar or tower. The term "highlead" refers to the location of the mainline block elevated above the ground by the spar. Logs are not suspended off the ground.

Jackstrawed - Trees or logs that have fallen or have been piled in a random manner.

Cable Logging System - Cable logging system generally restricted to one skidding line and used for winching logs up to 300 feet from the cutting area to a log collection point.

Landing Site - Usually flat ground to which logs are yarded, where they will be loaded on railroad cars or trucks; a collection point for logs.

Lop and Scatter - A method for distributing logging "slash" (waste from timber harvest) to reduce fuelbed depth, protect soil, and help re-establish vegetation.

Mainline - The cable used to haul logs into the landing.

Mechanical Treatments - The use of tractors to pile slash. Mechanical slash piling is limited to slopes less than or equal to 35 percent to protect soil, site productivity, and water quality.

Riparian Habitat Conservation Area - Includes the transition zone between a water body and the adjacent uplands. Measured as the perpendicular distance from the high water mark. In general these are: 300 feet on both sides of the channel for perennial, fish-bearing waters; 150 feet on both sides of the channel for perennial, non-fish bearing waters; and 50 feet on both sides of the channel for intermittent waters.

Scarifying - The process of breaking up the soil surface (no deeper than 6 inches) to ameliorate compaction and restore infiltration.

Skidding - Transporting trees or parts of trees by trailing or dragging them.

Stand-Replacing Fire - An uncharacteristically high intensity or long duration fire that kills all trees in the stand.

Subbasin - U.S. Geological Survey 4th field HUC drainage area (e.g., Middle Fork Payette Subbasin).

Subwatershed - U.S. Geological Survey 6th field HUC drainage area (e.g., Pyle Creek Subwatershed). A tributary to a 5th field HUC watershed.

Subsoiling - The process of ameliorating compaction and restoring infiltration of soils by using a winged-subsoiler (a winged-subsoiler is designed specifically for this purpose and is not the same as a ripper). Subsoiling depth is less than 18 inches.

Target Canopy Closure - The percentage of post-project canopy closure that would be retained.

Tractor Skidding - Powered vehicle for off-the-road hauling. May be mounted on crawler tracks or wheels.

Uncharacteristic Fire - A fire that is burning with atypical behavior and effects, given the historic fire regime for the area. On Garden Mountain, an uncharacteristic fire would consist of a crown fire or stand-replacing fire.

Understory Burning - A fire that burns with a low-intensity, "cool" burn, producing very little mortality to large-diameter, fire-resistant trees. Flame lengths in this type of fire are generally four feet or less. It would primarily reduce litter, slash, and small-diameter trees and stimulate grasses and shrubs.

Watershed - U.S. Geological Survey 5th field HUC drainage area (e.g., Crouch Watershed). A major tributary to a 4th field HUC subbasin.

Yarding - Initial hauling of a log from the stump to a landing site.

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1 - PURPOSE AND NEED

1.1 Introduction

The United States Department of Interior (USDI) Bureau of Land Management (BLM), Boise District, Four Rivers Field Office (FRFO) has prepared the Garden Mountain Fuels Management Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) of 1969, as amended, the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1500), the BLM NEPA Handbook (H-1790-1 USDI BLM 1988), and other relevant federal and state laws and regulations.

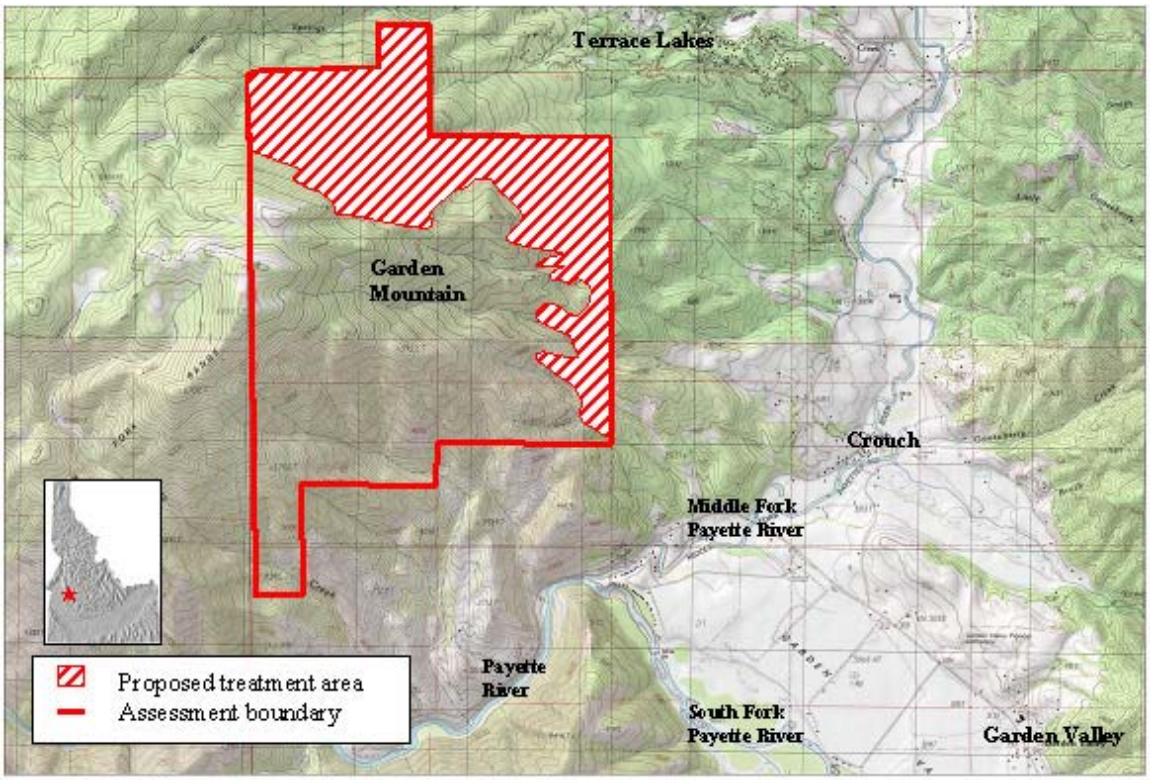
This EA discloses the direct, indirect, and cumulative environmental effects that would result from the Proposed Action and alternatives as required by NEPA and the CEQ Regulations. The EA provides the decision maker with pertinent information regarding the environmental impacts of implementing this proposal, displays the alternatives in comparative form, defines the issues, and provides a clear basis for choice among the alternatives. The primary purpose of this EA is to facilitate a decision and to ensure the policies and goals defined by NEPA and contained in the Cascade Resource Management Plan (RMP, USDI BLM 1987) and other guiding documents are adhered to. Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the FRFO in Boise, Idaho. The EA is organized into the following four chapters and attachments.

- *Chapter 1 – Purpose and Need*: This chapter includes information on the history of the project, the purpose of and need for the project, and the BLM's proposal for achieving that purpose and need. This section also briefly describes how the BLM informed the public of the proposal and the concerns that were identified.
- *Chapter 2 – Proposed Action and Alternatives*: This chapter presents the alternatives that were considered, and provides a detailed description of the agency's proposed action as well as alternatives for achieving the stated purpose. A summary of the environmental consequences associated with each alternative is also presented.
- *Chapter 3 – Affected Environment and Environmental Consequences*: This chapter describes the environmental effects of implementing the proposed action and other alternatives. The analysis is organized by resources and considers direct, indirect, and cumulative effects. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.
- *Chapter 4 – Consultation and Coordination*: This chapter describes the composition of the interdisciplinary team (IDT) and lists those agencies, interested groups, and members of the public that were consulted or provided comments during the development of the EA.
- *Attachments* – The final section provides a series of attachments that present more detailed information in support of the EA to assist the FRFO Manager in making an informed decision.

1.2 Project Location

Garden Valley and Crouch are small towns along the Middle Fork of the Payette River, approximately 40 miles northeast of Boise, Idaho in Boise County. The proposed project area is located northwest of these communities on Garden Mountain and consists of portions of T9N, R4E, Sections 5-8, 17-19, and T10N, R4E, Section 31 (Figure 1). In the surrounding area there are several older farmhouses and homesteads, as well as newer subdivisions, and several businesses.

Figure 1. Project Location



1.3 Background

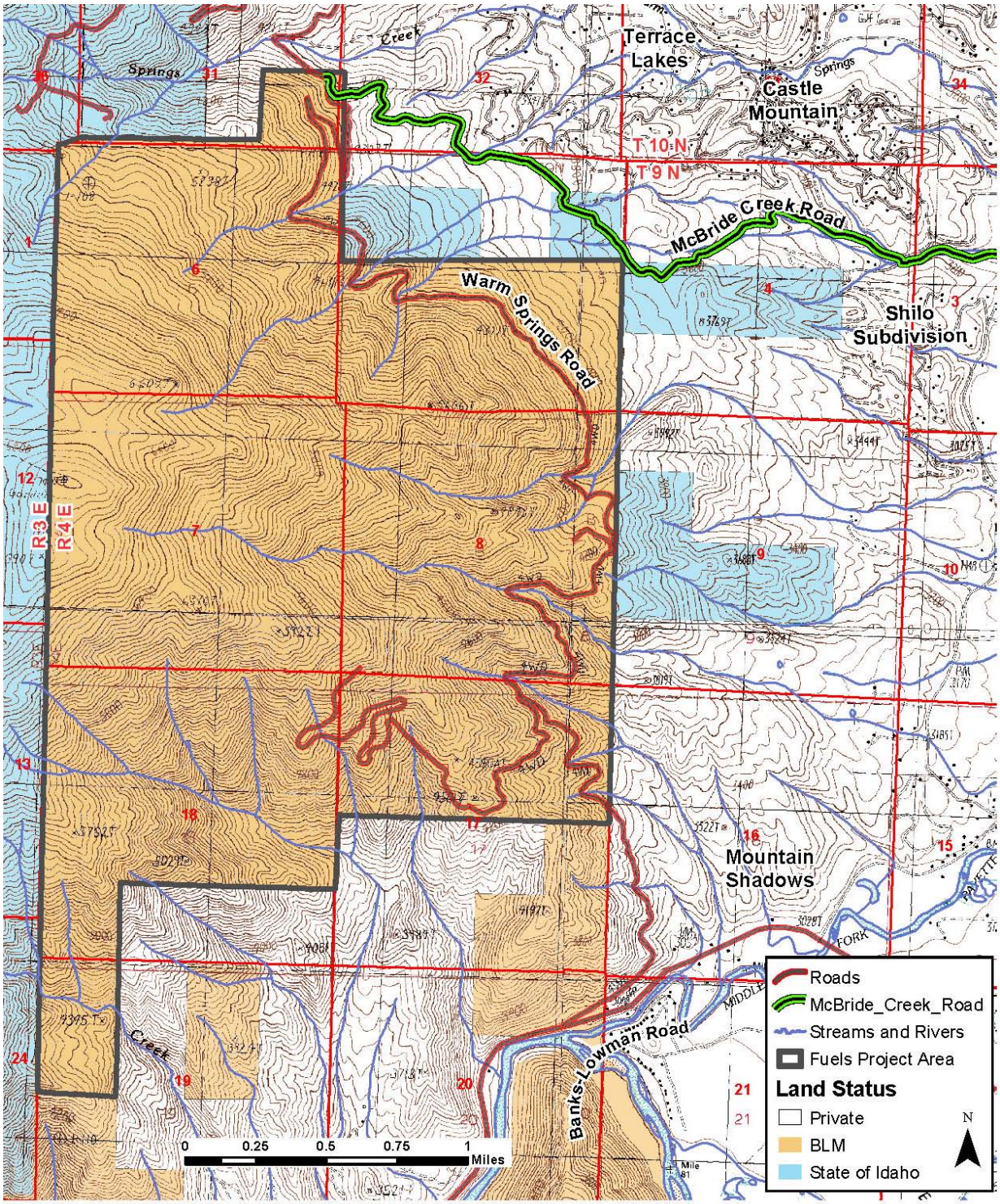
In 2001 a list of communities within the vicinity of federal lands at high risk from wildfire were identified in the Federal Register (Vol. 66, No. 160, August 17, 2001). Because of their high resource values and threat from wildfire, the communities of Crouch and Garden Valley were identified as high priority communities-at-risk. Since 2000, two large wildfires have burned adjacent to these communities and posed threats to life and property. Previously, a hazardous fuels assessment and a mitigation plan were developed for the area with input from the local community (USDI BLM 2001a). Approximately 3,130 acres of high-hazard fuels (i.e., dense, insect and disease infested stands with heavy fuel loading) were identified surrounding the communities. Due to overcrowding and over competition many of the stands in the project area have become weakened and are being infected by bark beetle, mistletoe, and western spruce budworm.

Historically (prior to 1900), low-intensity wildfires were typical, burning through the project area and surrounding regions in the Boise Basin every ten to 25 years. Since that time, the long-term exclusion of fire has also contributed to a decline in forest health and has led to an increase in stand density and ladder fuels. This makes the area highly susceptible to "uncharacteristic fire," which is defined as fire that is burning with atypical behavior and effects, given the historic fire regime for the area.

On Garden Mountain, an uncharacteristic fire would consist of a crown or stand-replacing fire. Typically, winds during wildfire season blow from southwest to northeast. A crown fire in combination with extreme weather conditions could quickly out-pace suppression capabilities and threaten lives and property in nearby communities, including the Terrace Lakes, Castle Mountain, Valley-Hi, and Mountain Shadows Subdivisions. Landowners in the surrounding area include BLM, U.S. Department of Agriculture (USDA) Forest Service, Idaho Department of Lands (IDL), and Boise Cascade Corporation (Figure 2).

Access to the project area is via the McBride Creek Road and Warm Springs Road on non-BLM land and would require procurement of the necessary easements prior to project implementation. Warm Springs Road is in need of repair and some road maintenance would have to be done in order to implement the Proposed Action. Within the project area, the Warm Springs Road includes BLM Boise District Transportation Plan Roads 805 and 854. Maintenance of these roads was analyzed in EA No. 94017, Road and Trail Maintenance.

Figure 2. Land Ownership



1.4 Purpose of and Need for Action

The FRFO is proposing to improve forest health and reduce fuels and associated fire hazards on approximately 1,348 acres of BLM-administered land within the project area, while maintaining scenic, watershed, and fisheries values. Selective harvesting for forest health and shaded fuelbreaks (defensible zones) are the two primary treatment types proposed. Activities such as shaded fuelbreaks, selective timber harvests, and slash piling and burning would be designed to reduce fuel hazards near roads, interface areas, and private land. These activities would help to create areas of defensible space in the case of wildfires, as well as restore the historic fire regime typical of the area. Efforts would also be made to develop cooperative agreements with adjacent private property owners in order to effectively manage fuels in the surrounding area and reduce the risk of fire. Warm Springs Road is in need of repair and some road maintenance would have to be done in order to implement the Proposed Action. A more detailed description of the Proposed Action is provided in Chapter 2.

The *purpose* of this proposal is to reduce fuels and restore the historic fire regime in the Garden Mountain project area. This proposal is *needed* to: 1) reduce the risk of a stand-replacing crown fire to resources and communities around Garden Mountain, 2) improve suppression success by creating fuelbreaks that would protect lives and public and private property, 3) improve forest health conditions, and 4) meet goals identified in the Cascade RMP (USDI BLM 1987) and the National Fire Plan (NFP, Cohesive Strategy, Goals 1, 2, and 3).

1.5 Conformance Statement: Relationship to Statutes, Regulations, or Other Plans

The project objectives were developed for consistency with the NFP and the President's Healthy Forests Initiative, and the Proposed Action is in conformance with the Cascade RMP (USDI BLM 1987). Timber harvest methods would be designed to comply with resource management objectives established in the RMP and all forestry practices would meet or exceed those set forth under the Idaho Forest Practices Act, Title 38, Chapter 13, Idaho Code. The project area is designated as a general forest management area, which means emphasis should be on managing timber "…to maintain healthy stands, …while maintaining site productivity, water quality, stream stability, and unique features for wildlife habitat, and providing for other uses" (USDI BLM 1987). Timber management practices would include special measures to protect riparian and other resource values found in this area.

All aspects of the Proposed Action and any alternatives would comply with the Decision Record for the *Inland Native Fish Strategies EA* (USDA Forest Service 1995). That EA was developed for managing inland fish-producing watersheds in order to protect habitat and populations of resident native fish habitat in Eastern Oregon and Washington, Idaho, and portions of California, commonly referred to as INFISH. In accordance with section 7 of the Endangered Species Act (ESA), BLM policy, and other regulations, the necessary consultation and coordination with the National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) for the protection of federally listed threatened and endangered species and designated critical habitat would be completed.

1.6 Decision Framework

The FRFO Manager will decide which of the alternatives meets the purpose and need of this project and is in accordance with BLM goals and objectives. Based on public input and the analyses in the EA, the FRFO Manager will decide whether to implement an action alternative, a modified action alternative, or to defer fuels treatment activities in the Garden Mountain area at this time (No Action alternative). The FRFO Manager will document any concurrence with the findings in the EA in a Decision Record and Finding of No Significant Impact, if appropriate. If an action alternative is selected, it would include: (1) project location, (2) silvicultural and fuels treatments, and (3) a description of the design features included as part of the action.

1.7 Scoping and Identification of Resource Concerns

Scoping is an initial step in the NEPA process that was conducted to determine the scope of issues to be addressed in the analysis and to identify the significant issues related to the Proposed Action (40 CFR §1501.7). A scoping notice was sent to other agencies, organizations, and the interested public on February 27, 2004, initiating a 30-day comment period. Two public meetings were held (See Chapter 4: *Public Meetings* for a summary). Using the comments from the public, in conjunction with the field-related resource information and field surveys of the proposed project area, a list of resource concerns to be considered in the analysis was developed. These concerns were considered and used to help refine the Proposed Action as presented in Chapter 2. Resource concerns identified in the development of this proposal and discussed in Chapter 3 are listed below.

1.7.1 Concerns Carried Through for Analysis

Special Status Species (SSS), water quality, invasive plant species/noxious weeds, soils, cultural resources, visual resources, air quality, and forest health were identified as resource concerns based on their potential to be affected by the Proposed Action. These resources are discussed in Chapter 3.

1.7.2 Concerns Considered, But Not Analyzed

Recreation - Garden Mountain is heavily used by local residents and visitors during hunting season. There is also camping, hiking, and off-highway vehicle (OHV) use. The action alternatives include activities that could affect recreation, including smoke from prescribed burning and dust from road use and construction. Users may experience some short-term impacts from the proposed action such as temporary access restrictions. The use of prescribed fires would result in displacing dispersed recreation users from the burned areas and the presence of logging equipment would result in temporary displacement from those areas as well. General deer and elk hunting season in the Garden Mountain area encompasses the period from October 5th to October 31st. General wild turkey hunting season is from April 15th to May 25th and from September 15th to October 4th. The BLM recognizes that this area represents a popular hunting area that is used by local residents as well as recreationists from outside the area.

In the long term, consumptive (such as hunting) and non-consumptive (such as wildlife viewing) wildlife activities would increase because of the improvement in wildlife habitat resulting from the Proposed Action. Additionally, vegetative mosaics that would result from

the thinning and use of prescribed fires could enhance the visitor's experience. The cumulative impact of this action would be positive in the long term because it would reduce fuel loads and lower the risks of large, uncharacteristic fires which could destroy recreation opportunities over large areas. Given the diffuse nature of activities that would occur, none of the action alternatives would have a significant effect on recreation. This issue is not discussed further in the EA.

Livestock Grazing - The proposed project area includes the Patterson & Goodwin Allotment (# 116), which is permitted for 168 AUMs from June 1 to September 30. Currently the forested communities on Garden Mountain produce little forage for livestock grazing because of the dense overstory of trees and shrubs and livestock do not typically utilize areas with steep slopes such as those in the treatment areas. Livestock would be restricted from the treatment areas until resource management objectives have been met. Subsequent to the proposed action implementation, the BLM would consult with the livestock permittee to address any potential issues and find other potential grazing areas if needed and/or alternative methods (i.e., fencing, herding, watering) to keep livestock off the treatment areas. After treatment there would be an increase in understory vegetation (i.e., perennial grasses and forbs) resulting in additional forage that would be available to livestock as well as wildlife. The Jerusalem Grazing Association was contacted during the scoping period. No comments were received. Because of the small size of the treatment areas in relation to the total size of the allotment in addition to the factors mentioned above this action is not expected to affect livestock grazing. This issue is not discussed further in the EA.

2 - PROPOSED ACTION AND ALTERNATIVES

This chapter describes and compares the alternatives considered for the Garden Mountain Fuel Management Project (GMFMP) area, which encompasses 3,130 acres of BLM land. It includes a description of each alternative considered and presents the alternatives in comparative form, defining the differences between each alternative and providing a basis for choice as required by the CEQ regulations (40 CFR §1502.14d).

Fuels modification recommendations were developed by analysis of timber stand exam data and non-timber vegetative surveys completed in summer/fall 2003, and through internal discussions. The alternative development process is described first, including alternatives that were considered but not carried forward for analysis. Full descriptions of the No Action alternative and the action alternatives are included along with maps of the action alternatives. The last section in this chapter provides a brief summary of the environmental consequences of the alternatives. A more detailed analysis of the effects on the environment follows in Chapter 3: *Affected Environment and Environmental Consequences*.

2.1 Alternative Development Process

During the alternative development process, alternatives were considered that if implemented would: 1) effectively reduce the potential for uncharacteristic fire in and around the communities of Crouch and Garden Valley and the surrounding areas; 2) provide for defensible space, escape routes and safety zones for fire fighting efforts and residents; 3) restore forest health and the historic fire regime; and 4) maintain the aesthetics of the viewshed. Alternatives were developed in coordination with forestry staff, resource and fire specialists, and the interested public (see Chapter 1: *Scoping and Identification of Resource Concerns* and Chapter 4: *Public Meetings* for a description.). A comprehensive field survey (described below) was completed in order to develop the most appropriate treatment alternative for the area.

Factors related to fire behavior (such as fuels, vegetation, topography, and prevailing winds), watershed boundaries, private land, proximity to towns, and visual resources were all considered when defining the treatment area. A full array of fuel treatments and combinations of treatments including various logging and utilization methods; commercial and public firewood cutting; chipping treatments; thinning; piling and understory burning; and construction of fuelbreaks were considered to develop the Proposed Action alternative.

To accurately inventory the existing vegetation, forest health, and fuels within the project area, multiple data sources were examined. First, all of the forested and non-forested areas within the project area were delineated into polygons (stands) through a combination of 1988, 1989, and 2000 aerial photography interpretation. Aerial photography interpretation defined general vegetation patterns and forest health and helped define areas for further field investigation. An evenly spaced grid (i.e., one point every 20 acres for forested areas and one point every 40 acres for non-forested areas) was developed for the project area.

In the summer and fall of 2003 a field crew conducted quantitative stand exams (for forested stands) at every point, and completed qualitative “walkthrough” surveys that described the

stands in general terms. Fuels data was collected at each point including species, standing and downed dead woody material, height to first live limb, tree health, age, diameter, and other data. All of the field data were entered into a Forest Vegetation Information System (FORVIS) database (USDI BLM 2001b) and are available in the project file at the FRFO. Information about FORVIS is available at http://www.blm.gov/nstc/resourcenotes/rn48.html.

2.2 Alternatives Considered but Not Carried Forward

In addition to the alternatives described in detail, three other alternatives were also considered during project analysis. These alternatives are described below along with the rationale for why they were dropped from further consideration.

1. **New Permanent Roads**. This alternative considered building new roads to access additional forested stands within the project area. This alternative was dropped from further consideration because helicopter logging and improvement of existing haul routes or construction of temporary spur roads was considered a feasible method for accessing the stands.

2. **No Prescribed Burning**. This alternative considered eliminating prescribed burning from all of the management units (MUs) associated with the action alternatives. Fire is an essential process for restoring forest health and therefore this alternative was dropped from further consideration because it would not fully meet the project objectives.

3. **Increased Treatment Areas**. This alternative considered fuels treatment on a larger portion of the project area. This alternative was not explored further because of the steep slopes and unstable granitic soils present in areas that are not currently proposed for treatment under the Proposed Action. In addition, some areas were judged to be a low priority based on low fuel loading.

2.3 Description of Alternatives

2.3.1 Alternative 1 - No Action

The No Action alternative, which encompasses the entire GMFMP area (3,130 acres), represents the existing condition against which the other alternatives are compared and is considered throughout the analysis process. Under the No Action alternative existing management direction for Garden Mountain would continue based on the Cascade RMP (USDI BLM 1987). Current management of forestland within the Crouch/Garden Valley area emphasizes maintaining healthy stands and protecting water quality, wildlife habitat, and other uses. Under the No Action alternative, fuels management treatments for the reduction of fuels and improvement of forest health would not occur. Fire suppression would occur for any wildfires burning in the area. Road maintenance on the northern portion of Warm Springs Road may still occur under the current management; however, it would likely be at a later date than under the Proposed Action alternative.

Summary of Impacts - Under the No Action alternative the potential for a high intensity, stand replacing crown fire in the GMFMP area would remain high and would continue to

increase over time due to accumulating fuel loads. In the event of a high intensity wildland fire several indirect effects would result. Wildlife habitat could be destroyed for as long as 80 to 100 years, and mid to late seral dependent wildlife could lose habitat for 80 to 200 years. Habitat and mechanisms for noxious weeds and invasive species introduction and proliferation would be created. A high intensity fire would affect soil productivity and increase soil erosion by reducing vegetative ground cover. Water quality would be impacted from increased sedimentation, which would in turn impair beneficial uses and affect proposed bull trout critical habitat and IDEQ 303(d) water quality limited stream segments. Air quality would be impacted for the duration of the fire and until the smoke could disperse from the area. Visual resources would be affected until revegetation occurred. Ceanothus (*Ceanothus velutinus)*, a native evergreen shrub that is present in the non-forested areas of the project area, would likely increase within burned areas.

If no maintenance were performed on Warm Springs Road, the road would continue to deteriorate. It would become increasingly difficult to travel and would pose safety problems for those attempting to travel the road. Without maintenance, the road would be more susceptible to wind and water erosion. In the short term, no direct surface disturbance would result if maintenance were not performed. In the long term, uncontrolled runoff water would cause additional soil erosion.

Management of the area calls for full suppression and, if a fire were to occur, the Forest Service, through a cooperative agreement, would work to suppress the fire. Impacts could occur to the area through suppression efforts including the use of staging areas, creation of fire lines, and other activities. If a large fire occurs in the Garden Mountain area, there is the potential that the fire would spread to private land and endanger property and lives.

2.3.2 Alternative 2 - Proposed Action (Forest Health)

The Proposed Action is designed to meet forest health objectives and reduce the threat of high intensity wildland fire from spreading to adjacent private land and vice versa. This alternative identifies specific actions and project locations that would meet the purpose and need for this project. Treatment prescriptions and four MUs have been identified in the Proposed Action (Figure 3); these are discussed in detail in Attachment A.

Figure 3. Proposed Action

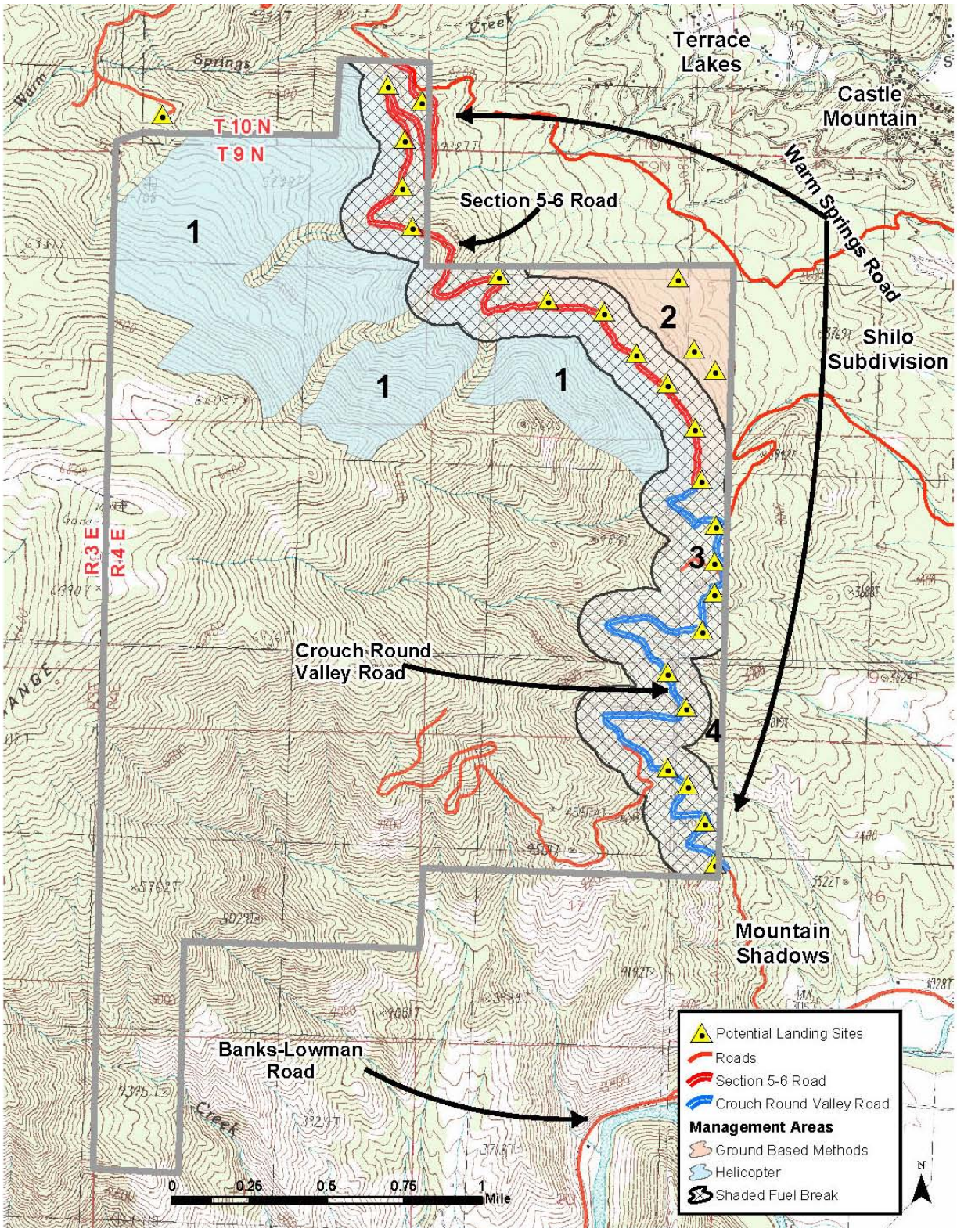
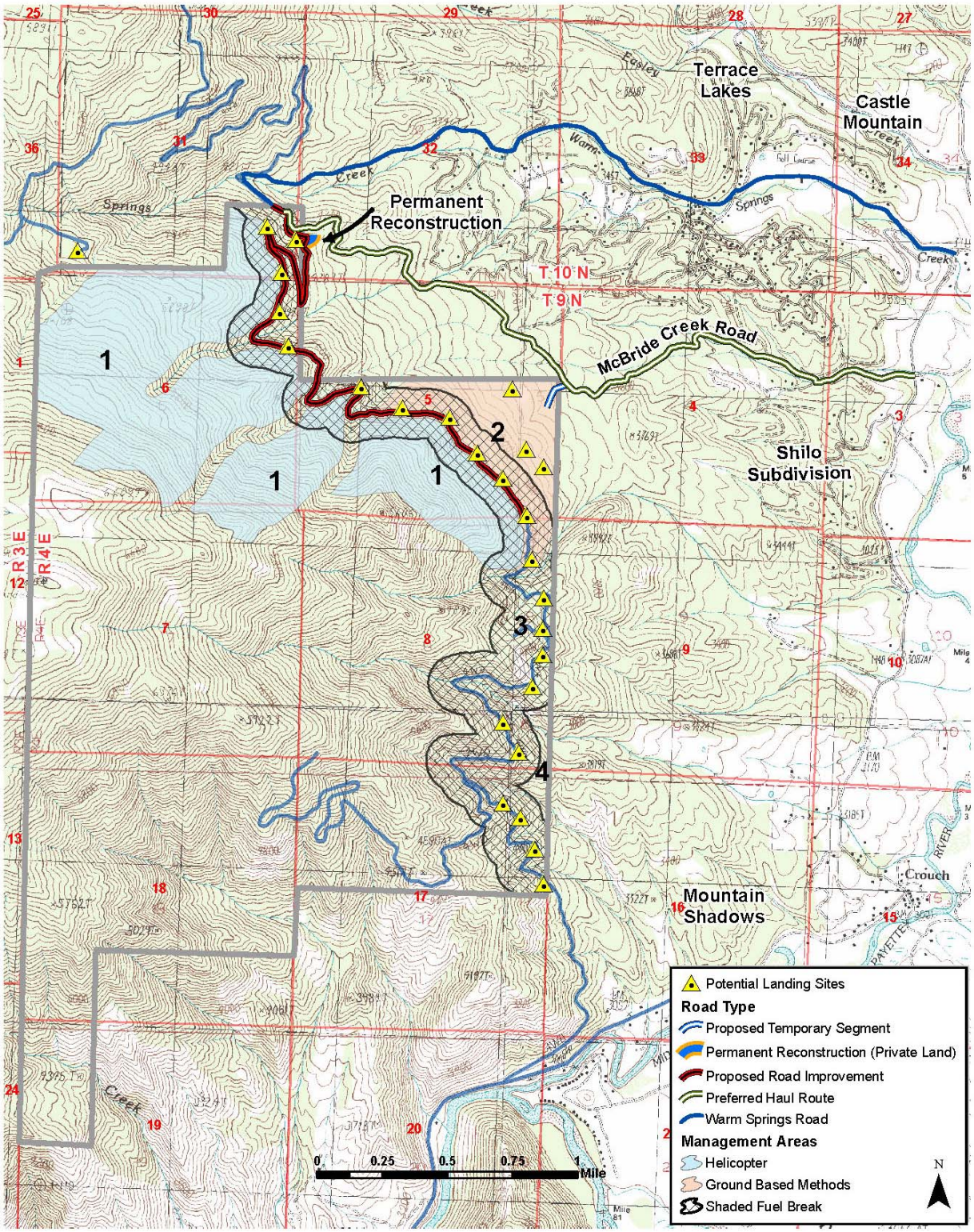


Figure 4. Haul Route, Road Construction, and Warm Springs Road Improvement.



Description of Improvement Harvest and Fuelbreak Treatments

Treatment areas are broken out into two treatment types: improvement harvest and fuels treatment harvest. Details for each of these are summarized below.

Improvement harvest

The goal of an improvement harvest is to increase overall forest health by removing trees that are declining in health/vigor from insects or diseases, deformed trees, or late successional trees. Grand fir (*Abies grandis*) and subalpine fir (*Abies lasiocarpa*) are considered late successional because they tend to regenerate under the shaded canopy of pioneer species such as ponderosa pine (*Pinus ponderosa*). Late successional or climax species are generally not as fire resistant as early seral or pioneer species. Once established, late successional species will crowd out the pioneer species, resulting in a stand populated by species that are not fire resistant.

Improvement harvests are proposed for MUs 1 and 2. This treatment would involve the removal of ladder fuels in the form of climax species (i.e., grand fir and subalpine fir) in favor of retaining seral species (i.e., Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine). This would create small openings in the canopy, maintain a less dense stand, which would be less likely to experience crown fire, and remove dead, infected, or diseased trees. Variation in spacing would be incorporated throughout units for visual diversity. Trees targeted for harvest would be 12 to 28 inches diameter at breast height (DBH). Treatments would remove infestation, release suppressed species, and retain large mature trees for wildlife, seed stock, and visual aesthetics. Design criteria provide sufficient amounts of standing and down woody material to: (1) maintain soil moisture, (2) provide “nurseries” for regeneration, (3) maintain wildlife habitat, and (4) maintain biodiversity.

Specific treatments for improvement harvests – On the eastern side of the Warm Springs Road, 193 acres with slopes less than or equal to 35 percent would be harvested using ground-based systems (MU 2). This would be accomplished through manual felling (chainsaw), and skidding using tractor, cable based logging systems, or a “highlead” yarding system. Cable logging is an uphill yarding system with a reach of 100 to 300 feet (Figure 5). The term highlead refers to the location of the mainline block elevated above the ground by the spar. Highlead logging is the most widely used yarding system in the United States and Canada and comes in a variety of sizes. The basic system consists of a two-drum yarder and a spar or tower (Figure 6). The high block provides the vertical lift that allows the logs to over-ride obstacles. Logs are yarded to the landing by the mainline and the haulback pulls the butt rigging back to the timber.

The units on steep slopes (greater than 60 percent) and no road access would be helicopter logged (MU 1) (Figure 3). Harvest of 648 acres in this unit would be accomplished by helicopter logging because it eliminates the need for new roads, spurs, cable corridors, or skid trails and protects sensitive terrain.

A 500-foot long, 14-foot wide (travel surface) temporary spur road with a zero to eight percent grade would be constructed to access the landing in MU 2 through an easement on adjacent private land (Figure 4) (T9N, R34E, S5). It would be used for four years of the

project (i.e., the ground-based and helicopter logging), then rehabilitated. Six skid trails, approximately 10-feet wide by an average of 600-feet long, would be constructed in MU 2. A seventh skid trail would be approximately 10-feet wide and average approximately 1,400-feet long. Skid trails would be predesignated by the sale administrator prior to commencement of treatment activities. The temporary spur road, landings, and skid trails would be rehabilitated after use.

Various types of erosion control practices would be utilized to minimize erosion and sediment movement from these activities. The rehabilitated areas would be recontoured to provide adequate drainage and scarified or subsoiled to a minimum depth of 18 inches, if needed to enhance infiltration. Slash would be distributed over 30 percent of the area and then the area would be reseeded with a BLM approved seed mix. Waterbars (cross ditches) would be installed at approximately 20-foot intervals where skid trails exceed 35 percent slope. Where logs are available immediately adjacent to the skid trails, logs six inches in diameter or greater would be placed against the ground surface on a diagonal instead of cross ditches.

For all improvement harvests (MUs 1 and 2), slash that is less than four inches in diameter would be manually lopped and scattered in preparation for fuels reduction treatments. On slopes less than or equal to 35 percent, slash would be tractor piled or lopped and scattered in order to facilitate a cool understory burn. On slopes greater than 35 percent, the slash would be hand piled or lopped and scattered in order to facilitate a cool understory burn. Lopping and scattering the slash would reduce fuelbed depth, protect soil, and help re-establish vegetation on landings and skid trails by providing seedling protection. Attachment A contains specific design criteria for lop and scatter. Lopping and scattering would also retain coarse woody debris cover to protect the soil from rainfall impact and harvest equipment making passes through the stand, reduce surface temperatures creating a favorable environment for seedling regeneration, and provide soil organic matter through decomposition. Subsequent prescribed fires would not completely consume the woody debris, but would burn in a “mosaic” pattern, leaving some areas unburned and other areas “lightly” burned. Whole-tree yarding or yarding with tops attached may be used in some areas to reduce slash and facilitate subsequent prescribed fire treatments.

Fuels Treatment Harvest

The goal of a **fuels treatment harvest** is to provide a fuelbreak. These would be in the form of shaded fuelbreaks that would create defensible zones strategically located to break up the continuity of fuels and reduce the potential for high intensity crown fires that could spread to private land within the WUI. Sections of MUs 1 and 2 would have shaded fuelbreak treatments in addition to other prescriptions (Figure 3). Treatments in the shaded fuelbreak would include tree felling, brush cutting, pruning, lopping and scattering of slash, “understory burning” of slash, tractor or hand piling of slash, brush, and debris, and covering and burning slash piles. The result would be an open, park-like stand and an environment that would allow ground fuels to burn in a controllable manner.

Specific treatments for fuels treatment harvest – A shaded fuelbreak unit is proposed along the entire length and on either side of the Warm Springs Road within the GMFMP area (MU

3) (Figure 3). The 500-acre fuelbreak would be 300 to 500-feet wide. The fuelbreak would run along the eastern boundary of the project area and border state and private lands, and would buffer the Warm Springs Road which experiences large volumes of recreational use. As a result, this is a high-risk zone for human-caused fires that could spread from BLM lands onto state and private lands, and into nearby WUI areas.

Logs would be yarded to the Warm Springs Road, and decked on the existing roadbed. No harvest or ground-based skidding would occur on landslide-prone areas. These areas would be identified by a resource specialist prior to project implementation.

An additional 7-acre fuelbreak (MU 4) would be created in a draw near the Mountain Shadows Subdivision (Figure 3). The draw and adjacent private land contain heavy brush, unhealthy ponderosa pine saplings, and high volumes of downed hazardous fuels (Figure 3). This would increase the width of the shaded fuelbreak to 2,592 feet at this location. Therefore, the total shaded fuelbreak (MUs 3 and 4) would be 507 acres.

The terrain along the road is highly variable and slopes range from approximately 35 to more than 70 percent. If ground based mechanical treatments (which may include tractor or cable logging) are used, they would be limited to slopes less than 35 percent (Figure 3). No harvest or ground-based skidding would occur on landslide-prone areas. These areas would be identified by a resource specialist prior to project implementation.

If road reconstruction does not occur, helicopters would be needed to yard commercial timber within the entire fuel break. Logs would be flown to a landing identified in MU2. Understory trees targeted for priority removal would include insect- or disease-infected trees, shade-tolerant species such as grand-fir, and smaller diameter, suppressed trees. Seral species (i.e., ponderosa pine and Douglas-fir) would be retained whenever practical. Non-commercial trees, including seedlings, saplings, and other “ladder fuels” would also be targeted, unless their density does not contribute to a potential crown fire hazard. If road reconstruction occurs, non-commercial trees would be cut mechanically, using chain saws or specialized equipment that could access the area on the improved road; removal of the logs by short-bed haul trucks would occur. If road reconstruction does not occur, non-commercial trees and other ladder fuels would be cut using chain saws and the area would be accessed only by pick-ups, on foot, or using All-Terrain-Vehicles (ATVs) that could safely use the existing road.

Brush and slash would either be lopped and scattered and burned using an understory burn, or it would be removed and tractor piled in areas with less than or equal to 35 percent slopes or hand piled in areas with greater than 35 percent slopes where thinning and removal of material is not sufficient to allow follow-up burning. Some residual Douglas-fir and grand fir would be pruned to remove branches within five feet from the ground.

Maintenance of the shaded fuelbreak could include all of the same elements included in the initial treatment. Maintenance treatments would be based on site evaluations occurring every three years. An implementation schedule is included in Attachment B.

Activities Common to All Treatments

All treatments and units would use prescribed fire to reduce fuel loads and fire hazards and restore fire to the ecosystem after thinning activities occur. Prescribed fire is the use of management-ignited fire to meet specific resource goals and objectives under pre-defined fuel and weather conditions. These conditions are referred to as the "prescription." Several factors are described in a prescription, including fuel moisture, wind speed and direction, relative humidity, and temperature. Fire behavior is predicted using models that take these factors into account. Fire managers combine this information with professional experience when deciding if the right conditions exist for a safe and effective controlled burn to occur. Other factors that are taken into account when deciding whether or not a prescribed fire would occur, or continue, include smoke dispersal, resource availability (e.g., crews and equipment), and fire risk.

Skid trails and landings would be necessary to yard timber and other nonmerchantable fuels. It is anticipated that skid trails would be used in the first two years of the contract. The skid trails would be designed and located to minimize soil disturbance and rehabilitated after use. Location of skid trails would be determined prior to project implementation by the appropriate resource specialist.

The size and number of landings would be the minimum necessary to accommodate safe, economical operation. Potential landing sites are shown in Figure 3. The exact location of the landings may vary and would be determined in the timber sale contract. Pre-existing landings on State and private land, or the roadbed surface would be used whenever possible. Landings on the roadbed would be approximately 14 to 20-feet wide and 50 to 75-feet long. Three 75-foot by 100-foot landings would be constructed on the flat ground in MU 2. One new 100-foot wide by 100-foot long helicopter landing would be built on BLM land at the bottom of MU 2. Two previously established helicopter landings on State and Boise Cascade land may also be useable.

The ground-based logging would be completed in two years and the associated landings would be rehabilitated. The helicopter logging would take an additional two years to complete. Upon completion of harvest activities, all the skid trails and BLM landings used in association with this project would be reshaped to provide adequate drainage, scarified to a minimum depth of 18 inches, with slash distributed to cover approximately 30 percent of the reshaped surfaces, and planted with a BLM approved seed mixture. The existing helicopter landings on State and private land have flat gradients, and BMP and design features are in place to prevent erosion. The temporary spur road into MU 2 (T9N, R34E, S5) would be decommissioned upon completion of harvest and burning activities.

Transportation Management

Access to the project area would primarily occur along McBride Creek Road on non-BLM land and would require procurement of the necessary easements prior to implementation (Figure 4). McBride Creek Road runs east of the project area north of the Shilo Subdivision. The haul route would also include approximately 2.0 miles along the Warm Springs Road (Figure 4). The Warm Springs Road runs from just above the Terrace Lakes Subdivision, south inside the project area along the eastern BLM boundary, to the Banks-Lowman Road

(Figure 2). Maintenance and improvement of the north half of this road would be necessary to implement the Proposed Action. These activities would result in a travel surface with a width of 14 to 16 feet, which would allow access for trucks through the Shilo Subdivision. The following road work would occur:

1) Routine and corrective maintenance within the existing disturbance area (road surface, cut and fill slopes, relief culverts, ditches, etc) would occur under EA 94017 (Road and Trail Maintenance).
2) Widening of two switchbacks at the northern end of the project area would occur to meet BLM road standards (Manual 9113) (T10N, R4E, S31 and T9N, R4E, S6, Figure 4).
3) Stabilization of a shallow seated cutslope failure at mile 2.1.
4) Construction of a 0.10 mile road segment to join the McBride Creek Road to the Warm Springs Road in order for log trucks to avoid a sharp corner between the Section 5-6 Road and the McBride Creek Road on private land (Figure 4) (T10N, R4E, S32 SWSW). This work would require an easement with the land owner.
5) Construction of turn-arounds at mile 2.6 and 3.2 to accommodate an 80-ft turning radius.
6) Installation of rolling dips, water bars, and other drainage structures after log hauling to ensure long term stability of the road surface and prism.

Maintenance of the north half of Warm Springs Road would provide for public convenience via continued physical access to the public lands and public safety. It would also provide for resource protection by diverting water runoff from travel surfaces and by encouraging vehicle operators to use the existing developed road rather than driving around bad spots and establishing alternate routes. Although the purpose of maintenance is to improve access and avoid resource damage, surface disturbance would result from blading, shaping, and other actions associated with the maintenance activities. Some vegetation would temporarily be removed and the ground surface would be exposed to erosion. Revegetation would typically occur within a few months.

If the remainder of the Warm Springs Road (south half) is reconstructed in the future, a separate NEPA analysis would be completed at that time. Undertaking of this activity would be dependent on several factors including sufficient funding, procurement of necessary easements to access the project area, etc.

Approximately 0.10 miles of temporary road would be constructed to access MU 2 (T9N, R4E, S5 SENE). The 500-foot long, 14-foot wide temporary spur road with a zero to eight percent grade would be constructed to access the landing in MU 2 through an easement on adjacent private land (Figure 4). It would be used for four years of the project (i.e., during the ground-based and helicopter logging) and then rehabilitated.

All logs would be removed via the preferred haul route shown in Figure 4. The preferred haul route through the McBride Creek Road east of the project area would avoid potential traffic problems that could be incurred due to Terrace Lakes Subdivision traffic. The haul route through the project area is native surface (0.3 miles is gravel and the rest of the road is a combination of dirt and granitic soils) up to the County road in T9N, R4E, S3, E½ NW¼

(approximately 1.2 miles below the new temporary spur road in MU 2) (Figure 4). The haul route would include a short segment of the Warm Springs Road between the Section 5-6 Road and the McBride Creek Road that needs to be constructed in order for log trucks to avoid a sharp corner (Figure 4). The Terrace Lakes Road would be an alternative (secondary) haul route.

It is anticipated that approximately 100 truck loads of logs would be hauled to the highway from the ground-based logging units. The helicopter unit would generate an additional 500 truck loads of logs. It is estimated that the ground-based logging would be completed in two years and the helicopter logging would take an additional two years to complete. The road would continue to be used for up to ten years or until the shaded fuelbreak work is completed.

Signs alerting other traffic of logging truck activity would be placed near all intersections along the haul route. Erosion barriers such as weed-free straw bales, silt fences, or SEDIMAT™ (i.e., a biodegradable in-stream sedimentation control matting) would be installed in all perennial stream crossings prior to pre- and post-project road maintenance activities and retained in the stream until the end of operations for that field season. Cut and fill slopes at stream crossings that are disturbed during pre- and post-project road maintenance activities would be mulched with weed-free straw and seeded with a BLM approved seed mixture along the distance that directly contributes to the stream. These areas would be identified and mapped by a resource specialist prior to implementation of the activity or as part of sale contract map.

Timing of Treatments

The ground-based logging would be completed in two years and the associated landings would be rehabilitated. The helicopter logging would take an additional two years to complete. Upon completion of harvest activities, all the skid trails and landings used in association with this project would be reshaped to provide adequate drainage, scarified or subsoiled to a minimum depth of 18 inches (if needed to enhance infiltration), have slash distributed to cover approximately 30 percent of the reshaped surfaces, and planted with a BLM approved seed mixture.

Design Criteria and Best Management Practices Incorporated into the Proposed Action

Design criteria and Best Management Practices (BMPs) have been incorporated into the action alternatives to reduce or prevent undesirable effects resulting from management activities. Incorporated into the project design criteria and BMPs are: 1) Cascade RMP standards and guidelines, 2) special status species population and habitat information, including ESA listed threatened, endangered, proposed, and candidate species and BLM sensitive species, 3) INFISH riparian habitat conservation areas (RHCAs) (USDA 1995), 4) NFP ESA consultation process project design criteria, 5) air quality, smoke management, and water quality regulatory requirements, 6) pre-and post-project weed treatments, 7) post-project soil augmentation and revegetation, and 8) requirements of the Idaho Forest Practices Act. BMPs and design criteria are listed in Attachment A along with the details associated with the Proposed Action. Some of these are discussed below.

Buffer zones would be created on both sides of all perennial and intermittent streams in the project area. No harvest, yarding, skidding, intentional ignition, or other project-related activities would occur in these buffer zones in order to protect riparian zones, streams, water quality, and fisheries habitat. If prescribed burning does occur adjacent to riparian buffer zones, the fire would be allowed to "back in" to these zones, resulting in a low burn intensity. INFISH recommended buffer widths would be followed, and would be pre-approved by the BLM fisheries biologist or watershed specialist.

BLM would implement a temporary closure to motorized vehicle access within MU2 to allow recovery of ground cover. The closure would be in effect for a period of two years, beginning when heavy equipment for treating fuels in MU2 is no longer needed on site.

Summary of Impacts - The Proposed Action alternative has the potential to affect soil productivity and soil erosion could increase as a result of loss of ground cover. Water quality would potentially be impacted from increased sedimentation, which could in turn impair beneficial uses and affect proposed bull trout critical habitat and IDEQ 303(d) water quality limited stream segments. Air quality and visibility would be temporarily affected during, and for a period of time after, burning. Visual resources would be affected in the short-term while thinning is occurring and for a period of time after treatment until revegetation occurs.

Ground disturbance such as logging, burning, road maintenance, and vehicle traffic may create areas of disturbed soil and create suitable conditions for noxious weed and invasive species introduction and proliferation. Traffic would increase due to the presence of logging trucks and would lead to an increase in fugitive dust due to use of unpaved roads. Noise would increase in the area from logging operations, and particularly at times that helicopter logging occurs. Design criteria were developed to ease some of the potential effects the action alternatives may cause and would be integral to project implementation (Attachment A). For example, design features incorporated into the alternatives were designed to achieve water quality standards and ensure compliance with the Federal Clean Water Act of 1972, as amended (1977 and 1987). Provisions would be applied to minimize potential for erosion and sedimentation on disturbed areas. RHCAs would be designated to protect fisheries habitat, riparian habitat, and water quality within the project area as directed by INFISH (USDA Forest Service 1995).

2.3.3 Alternative 3 - (Shaded Fuelbreak)

The Shaded Fuelbreak alternative would implement only the shaded fuelbreak treatments (MUs 3 and 4) discussed in the Proposed Action, and would exclude all the forest health treatments described in the Proposed Action. The 507-acre shaded fuelbreak (MUs 3 and 4) would be the same as described in the Proposed Action - located along the entire length and on either side of the Warm Springs Road in the GMFMP area (Figure 5). A combination of mechanical treatment (78 acres) and hand treatment (429 acres) would be used to remove hazardous fuels under this alternative.

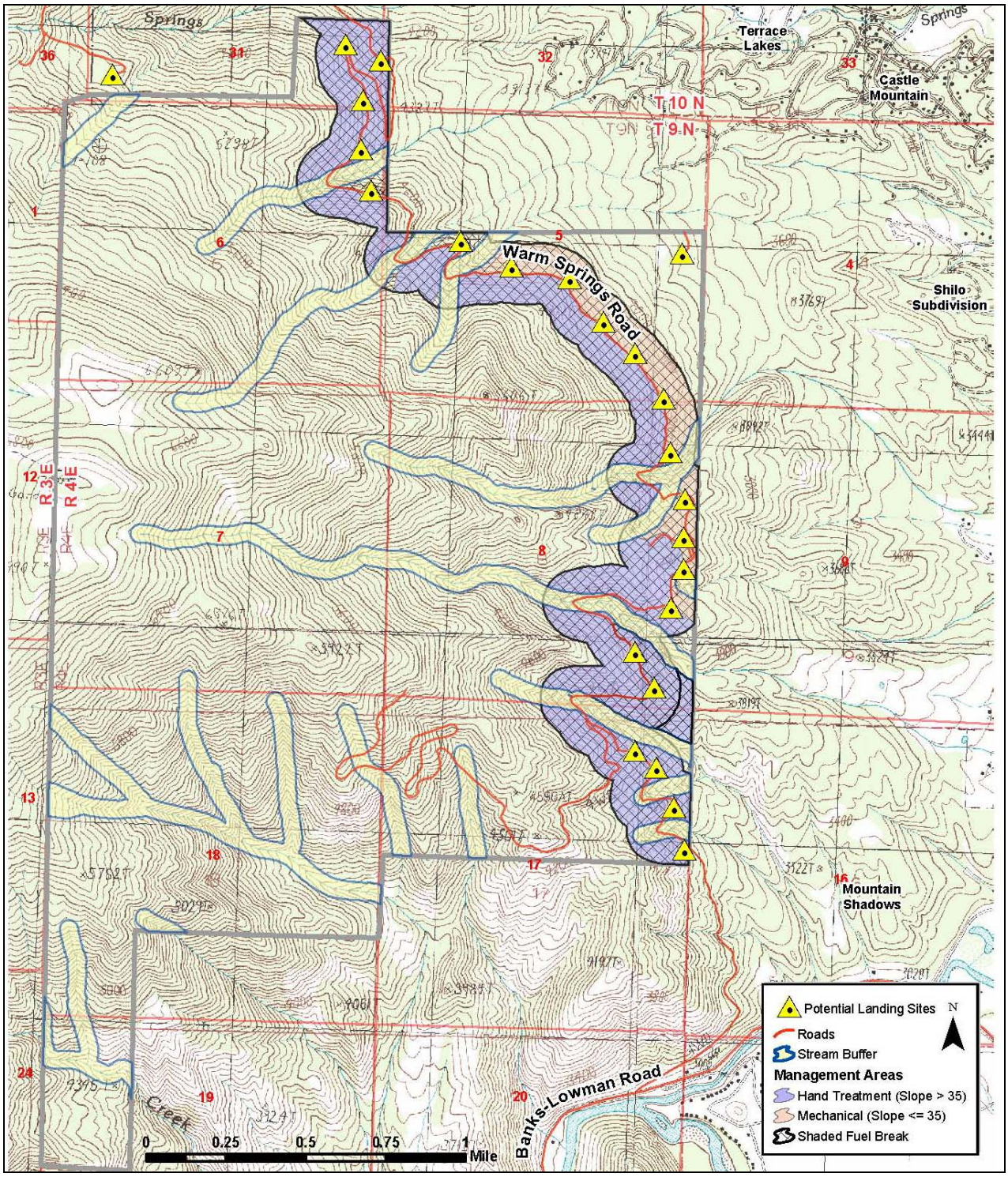
The area encompassed by this alternative is a high-risk zone due to vehicle traffic, the high volume of recreational use, and proximity to private and State land and the WUI interface. The shaded fuelbreak would create a defensible zone, 300 to 500 feet-wide along the Crouch-

Round Valley Road and 2,592-feet wide near the Mountain Shadows Subdivision, to breakup the continuity of fuels and reduce the potential for high intensity crown fires that could spread to adjacent lands and into WUI areas (Figure 5).

Road maintenance to the northern portion of Warm Springs Road would occur as described under the Proposed Action. Maintenance of this road was described in the Road and Trail Maintenance EA. Road maintenance would allow commercial logging of fuels within the SFB because of improved access for hauling logs out. If road maintenance cannot be completed, due to lack of funding or some other reason, only the small-diameter work in the shaded fuelbreak would be completed using hand treatments (e.g., non-commercial thinning and pruning) and access with pickups or 4-wheelers.

Summary of Impacts - Effects to soils and other resources would be less than under the Proposed Action because of: 1) smaller vegetation treatment and prescribed burning area, 2) less tree removal, 3) significantly less log yarding and hauling, and 4) the temporary landing, temporary spur road, and skid trails in MU 2 would not be constructed.

Figure 5. Shaded Fuelbreak Alternative



2.4 Alternative Comparison

This section summarizes the analytical results that serve to highlight the differences among the alternatives (Table 1). Information is focused on activities and effects where different levels of direct effects or outputs can be distinguished quantitatively or qualitatively among alternatives. This summary assumes that for any action alternative, mitigations, BMPs, and project design features specified herein would be implemented, thus reducing the direct effect on the resource. Therefore, in many cases the direct effect of implementing an action alternative is negligible, not of great extent, and/or of temporary duration. Furthermore, the No Action alternative assumes that existing conditions and management direction continues, and that a large fire does not occur. If such a fire were to occur, there would be large, negative consequences of the No Action alternative on all the environmental resources listed below. Chapter 3 describes in detail the environmental consequences of the alternatives and presents further comparison of the effects of the alternatives. A cost analysis is included as Attachment C.

Table 1. Comparison of Alternatives

	Alternative 1[1] *No Action*	**Alternative 2** *Proposed Action*	**Alternative 3** *Shaded Fuelbreak*
Helicopter Yarding Acres (MU 1)	0	648	0
Ground Based Logging Acres (MU 2)	0	193	0
Shaded Fuelbreak Hand Treatment	0	429	429
Shaded Fuelbreak Ground Based Mechanical Treatment	0	78	78
Total Treatment Acres	0	1,348	507
Approximate Volume (MBF)[2] (For MUs 1-4)	0	10/acre	0[2]
Prescribed Burn Acres	0	1,348	507
Uncharacteristic Fire Potential[3]	High	Low	Low
Fuel Levels[3]	None	Reduced in Key Locations	Reduced in Key Locations
Forest Health Treatment Only[3]	No Improvement	841 Acres Improved	No Improvement
Acres of High to Highly Erodible Soil in Management Units	0	1,348	507
Impacts to Soils	0	Moderate-Short Term Low-Long Term	Low
Impacts to Air Quality	None	Localized/Temporary	Localized/Temporary
Impacts to Cultural Resources	None	Low	Low
Impacts to Visual Resources	None	Short-term/ Localized	Short-term/ Localized
Wildland Fire Risk	High	Low	Low-Moderate

Table 1. Comparison of Alternatives

	Alternative 1[1] *No Action*	**Alternative 2** *Proposed Action*	**Alternative 3** *Shaded Fuelbreak*
Impacts to Water Quality	None	Low	Low
Impacts to Water Yield	None	Low	Low
Impacts to Fisheries and Aquatic Habitat	None	Low	Low
Impacts to IDEQ 303(d) Listed Stream Segments	None	Low	Low
Impacts to Special Status Plants	None	Low	Low
Impacts to Wildlife	None	Short-term	Short-term
Potential for Noxious Weed and Invasive Species Proliferation	No Change	Low	Low

[1]Because the potential for an uncharacteristic stand replacing crown fire is highest with the No Action alternative, it has the potential to have the greatest negative impact on existing resources. This comparison of alternatives table does not indicate degree of impact for an uncharacteristic fire, but only for continued management direction.

[2]Volumes of thousand board feet (MBF) are rough estimates based on stand exam data collected as part of this project. Actual volumes will be determined during harvest and timber sale administration, if an action alternative is selected. These volume estimates are only provided for comparative purposes to illustrate the potential difference between the alternatives. The estimate of zero for the Shaded Fuelbreak alternative is because of the uncertainty of the market for the size of trees that would be removed.

[3]Although forest health is improved and fuels reduced in both alternatives 2 and 3, because alternative 2 treats a larger area, by default it has a greater beneficial effect.

3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Chapter 3 sets the framework for understanding the baseline environment – the existing environmental resources of the area that may be affected by the alternatives if implemented. In addition to the resource descriptions, the general setting of the area is described and a table of critical elements is presented. This chapter also describes the potential changes to the environmental resources due to implementation of the alternatives and presents the scientific and analytical basis for the comparison of alternatives shown in Table 1, Chapter 2. The consequences to the affected resources from the No Action alternative are described first, followed by the consequences from the Proposed Action alternative and the Shaded Fuelbreak alternative.

Cumulative effects are presented in this chapter for each resource. Cumulative effects are the impact on the environment that results from the incremental impact for the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions (40 CFR § 1508.7).

3.1 General Setting

Garden Mountain is located northwest of the small communities of Garden Valley and Crouch along the Middle Fork of the Payette River (Figure 1). Topography is mountainous and consists of steep slopes and ridges with deeply incised perennial and intermittent drainages. Slopes in the treatment areas range between 30 and 75 percent with the majority exceeding 50 percent. Soils are generally residual and are formed from granite rocks. The dominant timber species found on Garden Mountain are subalpine fir, Douglas-fir, grand fir and ponderosa pine.

Climate in the area is taken from the Lowman Station, southeast of the project area. Average precipitation in the area is approximately 25 inches. Most of it falls as snow from November through February, although high precipitation also occurs in March and April. Average daily maximum temperatures range from 32.6° F in December to 87.9° F during July (Abramovich et al. 1998). The project area is drained via several perennial, intermittent and ephemeral streams to the Middle Fork Payette River. The Warm Springs Road travels through the project area. There have been four wildland fires larger than 2,000 acres and numerous small fires (generally less than one acre) in the Middle Fork Payette River Subbasin since the mid-1980s.

The United States Forest Service, IDL, Boise Cascade Corporation, and private individuals own land near the project area and various activities are taking place on these lands. The West Central Highlands Resource Conservation & Development Council, in conjunction with Castle Mountain Subdivision, has requested and will receive a grant for removing, modifying, or breaking up fuel loads on 250 acres of the subdivision in order to lessen damage from high intensity fires. The BLM study to assess wildfire risk in the Garden Valley-Crouch area found that the Castle Mountain Subdivision was a high-risk fuel area within the assessment area (USDI BLM 2001a). The study recommended that the buildup of flammable fuels be reduced in the area and that hazardous fuels be cleaned up around

residences. In 2002 and 2003, 11 units in the subdivision received fuels reduction activities. Equipment or techniques to be used for further reductions may include: mechanical and hand tree-felling, mechanical slash and brush mulching, hand brushing, mechanical and hand piling of slash, and burning of piled slash. The prescriptions will be carried out between 2004 and 2006 at 430 home sites.

Some adjoining IDL lands have undergone recent harvesting and prescribed burning: 1) 160 acres in T9N, R4E, Section 9 were selectively harvested in 2002 and jackpot burned in 2003, 2) 100 acres in T9N, R4E, Section 4 were harvested in the 1970s, and 3) 160 acres in T9N, R4E, Section 31 were selectively harvested and jackpot burned in 2003. No other activities are currently planned for State lands in the area.

Boise Cascade has sold two parcels in the area (T10N, R4E, Sections 32 and 34 (218 acres) and T10N, R4E, Sections 27 and 28 (307 acres)). The first parcel in Sections 32 and 34 is slated for development into another subdivision. In addition, they are selling a parcel for logging this fall in T10N, R4E, Section 14 (231 acres), which is within ten miles of the project area.

The Warm Springs Road consists of BLM Boise District Transportation Plan Roads 805 and 854. In 2003, the FRFO replaced three culverts and cleared debris from several cutslope failures off the northern portion of the road. Additional maintenance and improvement to the northern portion of Warm Springs Road is necessary for completion of the Proposed Action. The maintenance would facilitate the use of short-bed haul trucks to remove logs from the project area. The southern half of the road has experienced severe degradation and erosion, and most of the drainage structures are no longer functional or apparent. The road surface varies from eight to 14 feet wide, with a vegetation-free running surface from about six to ten feet wide (Napkora 2004). Reconstruction of the southern portion of Warm Springs Road is not part of this project and if it is reconstructed in the future, a separate NEPA analysis would be completed at that time. The effects of this activity are considered in the cumulative effects analysis in Chapter 3.

3.2 Critical Elements of the Human Environment

Consideration of critical elements is required as specified in statute, regulation, executive order, or policy and must be considered in all EAs (Table 2). Critical elements identified by an “X” in the “Not Present” or “Applicable or Present, No Impact” columns are not affected and will receive no further consideration in this EA. Elements that are present and are likely to be affected by the alternatives are discussed further in this chapter.

The following will not be affected and therefore are not addressed in this EA: energy requirements, conservation potential, Areas of Critical Environmental Concern (ACECs), environmental justice, prime or unique farmlands, floodplains, Native American religious concerns, hazardous wastes, Wild and Scenic Rivers, and Wilderness Areas. Both a Class I and a Class III Cultural Resource Inventory were completed and no cultural sites were identified in the treatment areas (North Wind 2004a; 2004b). A special status plant survey was completed for the treatment areas and none of the species with potential habitat were identified (North Wind 2004c). A Biological Assessment is being completed in conjunction

with this EA to examine the potential for effects to threatened and endangered species. All of these reports will be available at the FRFO at the completion of the EA process.

Table 2. Critical Elements of the Human Environment

Critical Elements	N/A or Not Present	Discussed In EA
Air Quality		X
ACEC	X	
Cultural Resources		X
Environmental Justice (EO 12989)	X	
Farm Lands (prime or unique)	X	
Floodplains	X	
Invasive, Non-native Species		X
Migratory Birds		X
Native American Religious Concerns	X	
Threatened or Endangered Species		X
Wastes, Hazardous Substances or Solid Wastes	X	
Water Quality – Surface & Ground		X
Wetlands/Riparian Zones		X
Wild & Scenic Rivers (Eligible)	X	
Wilderness	X	

3.3 Soils

The USDA Soil Conservation Service (SCS) conducted a soil survey of the Middle Fork of the Payette River area (USDA SCS 1976). The SCS survey did not include Garden Mountain, however, the information is specific to the same watershed and can be generalized to the project area. The project area is primarily coarse textured, decomposed granitic (DG) soils derived from the Idaho Batholith. “Rock” content of the soils, defined as particles larger than two-millimeter diameter (i.e., gravel) based on USDA soil classification standards, is estimated to be around 40 percent.

Slopes are generally steep, on average 35 to 75 percent and landslide-prone. DG soils located in mountainous topography are moderately deep to very deep, well-drained, and have weak development in the subsurface horizons including a very shallow organic layer (USDI BLM 1987). The soils formed in the lower elevation stands that are dominated by ponderosa pine generally have a better developed duff layer than the high elevation stands that are dominated by the fir species because the pine produces more organic litter.

The BLM uses a soil and landtype erosion hazard classification system developed by the NRCS that is based on run-off potential, susceptibility to erosion (wind or water), and percent slope. High erosion potential is associated with greater than 30 percent slopes that are subject to water erosion, mass wasting, and other processes. The DG soils and the steep slopes in the project area are susceptible to water erosion and are classified as “high to very high soil erosion hazard” (USDI BLM 1987).

The Watershed Erosion Prediction Project (WEPP) model developed by the USDA Forest Service Rocky Mountain Research Station in Moscow, Idaho was used to determine the relative differences between potential erosion and sediment delivery rates (i.e. the amount of sediment that could be delivered to waterways) associated with background conditions and proposed project activities (USDA Forest Service 2004a). The WEPP results should be used as a relative comparison of alternatives not as an absolute number. Generally, the predicted erosion rates are likely to be within plus or minus 50 percent of the mean (USDA Forest Service 2004a). This range of variability is due to natural variability in the ecosystem, as much as errors in the modeling assumptions. The model is often used as a project planning tool because changes in any of the input conditions will result in changes in predicted sediment yields.

WEPP model parameters include local climate, elevation, soil type, hillslope length, RHCA buffer widths and average toe slopes, pre- and post-project groundcover, road and skid trail slopes, fillslope slope and length, road width and surface type, spacing between road drainage structures or skid trail waterbars, and the amount of rock in the soil profile. The variables used for this project analysis are available in Attachment F: WEPP Hillslope Model Assumptions and Results.

The WEPP model was used to predict potential wildfire sediment delivery from the No Action alternative versus the probability of erosion and sediment delivery occurring within the first year post-project from log hauling, skid trails (MU 2 only), mechanical vegetation management (e.g., thinning, brushing), and prescribed fire. The WEPP analyses were based on local climate data adjusted for a range of elevations over a 50-year period. A rainfall event of specified size and return interval frequency (i.e., storms that occur once every 2.5 or 50 years) were used to calculate the sediment delivery potentials (Table 3). The model assumes that the lower elevation units (MUs 2, 3, and 4) receive less annual precipitation on average than the higher elevation unit (MU 1), and that increased precipitation may increase potential erosion rates in combination with other factors such as slope and percent cover.

Vegetation alterations due to timber management, road building, livestock grazing, fire, and other actions can further increase the rate of erosion hazard potential and noxious weed and

invasive species proliferation unless ground-cover in the form of organic debris or vegetation is retained or re-established. Currently, there is an expanding population of rush skeletonweed (*Chondrilla juncea*), an Idaho State listed noxious weed, in the project area. Noxious weeds and invasive species out-compete native vegetation and provide less soil cover than native species.

3.3.1 No Action Alternative

Background Hillslope Erosion

Idaho DG soils in undisturbed condition (i.e., no roads or other disturbances) have a typical background erosion rate of 25 tons per square mile (Megahan 1974). The maximum WEPP model background erosion rate and the potential sediment delivery for the Proposed Action area were the same, approximately 13 tons per square mile or 0.02 tons per acre based on the occurrence of a 50-year return interval storm, which is within the reported range (Table 3; Attachment F). MU 1 is 648 acres (i.e., approximately one square mile, 640 acres), and is the only unit that would generate background sediment delivery, so the total maximum background sediment delivery potential would be approximately 13 tons (Table 3; Attachment F). The probability that MU 1 would have some sediment delivery of an unknown amount annually is six percent (Table 3).

The WEPP model results for MUs 2, 3, and 4 do not indicate any background sediment delivery at any of the 2.5 to 50-year storm intervals (Table 3). However, these units have a four percent probability that some sediment delivery would occur annually as a result of background erosion (Table 3).

Wildfire Potential

The No Action alternative would have greater potential for indirect impacts to soils due to an increased risk of large scale, high intensity fire if the area is left untreated. In the absence of any fuels reduction, the current stand densities and down woody debris accumulation would increase, along with the possibility of a high intensity wildland fire. A large scale, high intensity fire would: 1) increase erosion, 2) reduce site-productivity, 3) facilitate the proliferation of noxious weeds and invasive species, 4) decrease infiltration, 5) increase water yield, and 6) impact downstream water quality and fisheries habitat through sediment transport.

WEPP model results indicate a high intensity wildfire (i.e., post-fire cover 45 percent and no RHCAs) would result in 2,729 tons of sediment delivery potential from all of the MUs if a 2.5-year return interval storm occurred within the first year after the fire (Table 3; Attachment F). The highest 2.5-year return interval storm sediment delivery potential is associated with MU 1 (3.2 tons per acre) and the lowest with MU 2 (0.5 tons per acre). MUs 3 and 4 would each have a sediment delivery potential of 1.1 tons per acre. There is a 74 to 92 percent probability that sediment delivery of an unknown magnitude would occur during this time period (Table 3; Attachment F). The greatest probability of this occurring is associated with MU 1 (92 percent). MUs 2, 3, and 4 have a 74 percent probability of sediment delivery occurring the first year after a high intensity wildfire.

The maximum high intensity wildfire sediment delivery potentials are 12.6 to 32.5 tons per acre, or a total of 32,310 tons from the project area based on the occurrence of a 50-year

return interval storm in the first year after a wildfire (Table 3; Attachment F). MU 1 would have the greatest sediment delivery potential (32.5 tons per acre), and MU 4 the lowest (12.6). MUs 2 and 3 would have sediment delivery potential of 16.9 and 15.8 tons per acre, respectively.

A high intensity wildfire in the Garden Mountain area would not be confined to the project area, so there would be additional sediment delivery from burn areas outside the project area. The cumulative effects of a large, high intensity wildfire within the Payette Subbasin could be significant to downstream bull trout habitat.

The premise of the action alternatives is that they would significantly decrease the likelihood of high intensity wildfire, which would reduce the probability of high sediment yield due to wildfire. Presumably, wildland fires would be larger and burn hotter under the No Action alternative than the action alternatives, and erosion potential would be higher and re-establishment of vegetation would take longer. Therefore, the No Action alternative would result in a relatively higher increase in potential soil erosion, loss of site productivity, sediment delivery, and noxious weed and invasive species proliferation in the event of wildfire than the fuel reduction alternatives.

Background Native Surface Road Erosion

The road network (6.4 miles, including the Warm Springs and McBride Creek Roads) that accesses the project area consists mainly of native surface material (0.3 miles is gravel and the rest of the road is a combination of dirt and decomposed granitic soils), except for the lower 1.0 mile of the Warm Springs Road, which is paved with asphalt. These access roads occur on non-BLM land and are maintained by those entities.

The Warm Springs Road portion within the project area extends from the Warm Springs Creek crossing south to the Banks-Lowman Highway. Field reconnaissance was conducted in October 2004 to determine which road segments are currently delivering sediment to the stream network. The Warm Springs Road intersects nine perennial, three intermittent, and many ephemeral channels. The original road construction appears to have been insloped to a ditchline, which was serviced by numerous cross drains. The ditchline has become filled in with debris from adjacent hillslopes and vegetation has become established. Past maintenance included water bars spaced at irregular intervals. Most of the drainage structures now appear to be ineffective. Three cross drain relief culverts were installed in 2003along an outsloped portion of the road in the middle of Section 5. In general, the road margins are vegetated and the average vegetation-free running surface of the road varies from six to ten feet wide. Thirteen road segments totaling 2.8 miles were identified as sediment sources, although physical evidence of sediment movement (i.e., sediment plumes) from the road surface into stream channels was minimal. Additional sources of sediment include three cut and fill slope failures.

The Water Erosion Prediction Project (WEPP) software was used to model the annual average amount of sediment delivered to streams from road surfaces. The WEPP model calculated an average annual sediment yield leaving stream buffers areas of ~ 0.02 lb/ft^2 (1,100 lb/mile) of road surface. The WEPP model did not include contributions from cut and fill slope failure. Estimated sediment movement from the three failure areas is approximately

48,000 cubic yards (~ 36,000 tons). The amount of sediment that actually reached a stream channel from the failures is not known. The amount of sediment delivered from non-BLM roads into the stream network was not calculated. If no road maintenance occurs on the northern portion of the Warm Springs Road, the road would continue to deteriorate. The road would be increasingly susceptible to wind and water erosion.

Table 3. Sediment Delivery Potential for Fire and Vegetation Treatments[1]

Mechanism & Sediment Delivery Potential[2]	**Alternative 1: No Action**		**Alternative 2: Proposed Action**		**Alternative 3: Shaded Fuelbreak**	
Common 2.5 Year Interval Storm Conditions[3]						
	Tons	% Probability[4]	Tons	% Probability	Tons	% Probability
Background Hillslope Erosion	0	4-6	0	4-6	0	4
High Intensity Wildfire	2,729	74-92	NA	NA	NA	NA
Low Intensity Prescribed Fire	NA	NA	0	10-22	0	10-14
Mechanical Thinning	NA	NA	0	6-8	0	6-8
Skid Trail (2 acres)	NA	NA	0	12	NA	NA
Total Sediment Delivery Potential in the First Year After Project Implementation	**2,729 Tons**		**0 Tons**		**0 Tons**	
Infrequent 50 Year Interval Storm Conditions						
	Tons	% Probability	Tons	% Probability	Tons	% Probability
Background Hillslope Erosion	13	4-6	13	4-6	0	4
High Intensity Wildfire	32,310	74-92	NA	NA	NA	NA
Low Intensity Prescribed Fire	NA	NA	580	10-22	152	10-14
Mechanical Thinning	NA	NA	78	6-8	9	6-8
Skid Trail (2 acres)	NA	NA	9	12	NA	NA
Total Sediment Delivery Potential in the First Year After Project Implementation	**32,323 Tons**		**680 Tons**		**161 Tons**	

[1]MU specific information is in Attachment F.
[2]Sediment delivery potential is the amount of sediment that may end up in waterways as a result of erosion caused by a variety of specified mechanisms. Total tons calculated from tons/acre by MU.
[3]A rainfall event of specified size and return frequency (e.g., a storm that occurs only once every 2.5 years) that is used to calculate the sediment delivery potentials.
[4]Percent probability that sediment delivery will occur within first year post-project based on 50 years of climate data. A range of values indicates differences between management units.

Noxious Weeds and Invasive Species

There would be no direct impact to the rate of noxious weed and invasive species proliferation as a result of the No Action alternative. However, the increased risk of high intensity, large scale wildfire would indirectly increase the risk of noxious weed and invasive species proliferation, and eventual loss of site productivity and increased soil erosion.

3.3.2 Proposed Action Alternative

Under the Proposed Action logging activities, road maintenance and improvement to the northern portion of Warm Springs Road, construction of the temporary spur road, construction of a portion of the road on private land, and post-harvest actions including prescribed fire and slash treatments would directly affect soils in the project area. The Proposed Action alternative would harvest timber from approximately 1,348 total acres (Table 1). Approximately 271 acres in MUs 2, 3, and 4 would be harvested using ground based methods and 648 acres in MU 1 would be helicopter logged (Figure 3). The other 429 acres of the shaded fuelbreak is on slopes greater than 35 percent and would be hand treated. All the Proposed Action activities combined would result in a cumulative sediment yield potential of 680 tons above background (i.e., 13 tons). This is significantly less than the sediment delivery potential if a high intensity wildland fire where to occur in the project area, followed by a 50-year return interval storm (i.e., 32,310 tons) (Table 2). The project activities that would contribute to potential sediment yield are addressed individually below.

Given that implementation of the project specific design criteria and BMPs common to all action alternatives would be used to effectively minimize effects to soils (Attachment A), helicopter logging would cause the least amount of soil disturbance. Logs would be completely lifted off the forest floor and delivered to a designated landing site (Figure 3). As a result there would be no skid trails or ground-based vehicles to cause soil damage and impacts would be localized at landings. Helicopter logging would improve site regeneration potential because there would be little soil disturbance.

Two of the helicopter landings – one on State land and one on former Boise Cascade land – have already been constructed for other projects, erosion control is in place, and the landings have little or no erosion potential. One new 100-foot wide by 100-foot long helicopter landing would be built on BLM land at the bottom of MU 2. Impacts at the new landing would include loss of vegetation and organic soil, compaction, loss of infiltration, and potential noxious weed introduction and/or proliferation.

The ground-based mechanical methods in MU 2 would have the highest amount of impact to the soil. Froelich et al. (1980) indicates that crawler tractor skidding results in more soil compaction and displacement than rubber-tired tractor skidding. Cable logging may also occur in areas and would result in less disturbance. With any ground-based skidding method, impacts such as soil compaction and the displacement of existing organic horizons would result from repeated passes of machinery as logs are skidded or yarded from the harvest area to landings. Soil compaction alters the natural flow of surface water and rainfall by reducing soil infiltration and aeration. In the short-term, this can result in increased overland flow, reduced root growth, increased water yield, and reduced plant vigor. Over the long-term, as vegetation matures and organic litter accumulates, compacted upper soil horizons can

eventually loosen and move towards pre-harvest conditions. Some disturbance can also aid in the regeneration potential for ponderosa pine.

A 500-foot long, 14-foot wide (travel surface) temporary spur road with an eight percent grade would be constructed to access the temporary helicopter landing in MU 2 through an easement on adjacent private land (Figure 4) (T9N, R4E, S5). In addition, one area on the Warm Springs Road would need new permanent road construction in order to allow log truck access between the Warm Springs Road and the McBride Creek Road (Figure 4, T10N, R4E, S32) and two major switchbacks on the Warm Springs Road (at the northern end of the project area) would also be widened to meet the minimum BLM road standards (Manual 9113) (T10N, R4E, S31 and T9N, R4E, S6, Figure 4). These standards include a travel surface with a width of 14 to 16 feet, which would allow access for trucks through the Shilo Subdivision (Figure 4). Two 80-foot diameter turn-arounds would be constructed: one at mile 2.5 and one at mile 3.2. The landing, temporary spur road, turn-arounds and the skid trails would be rehabilitated after use. Erosion control devices would be utilized as necessary to minimize erosion and sediment movement. Various types of erosion control devices may be used and include the use of securely anchored hay bails in ditches; geotextile mats or fabric used in the stabilization of cut and fill slopes; energy reducing riprap, gabions, or mats at the outlets of culverts to minimize scour; and broadcast seeding or hydroseeding of disturbed surfaces.

Various types of erosion control devices would be utilized to minimize erosion and sediment movement from these activities. The rehabilitated areas would be recontoured to provide adequate drainage and scarified or subsoiled to a minimum depth of 18 inches. The soil surfaces would be left with a rough, corrugated surface to help anchor seed. Slash would be lopped and scattered to reduce soil movement. Disturbed areas and reclaimed landings and skid trails would be seeded with a mixture of BLM approved native grasses, forbs, and/or shrubs suitable for the site.

Slash would be distributed over 30 percent of the area and then the area would be reseeded with a BLM approved seed mix. Waterbars (cross ditches) would be installed at approximately 20-foot intervals where skid trails exceed 35 percent slope; not to exceed 80-foot spacing elsewhere. Where logs are available immediately adjacent to the skid trails, logs six inches in diameter or greater would be placed against the ground surface on a diagonal instead of cross ditches.

There are two primary species combinations in the MUs – ponderosa pine/Douglas-fir and grand fir/subalpine fir. Each of these combinations would have specific canopy closure and soil organic matter cover targets that would minimize direct impact to the exposed forest floor after harvest. The ponderosa pine/Douglas-fir areas (MUs 2, 3, and 4) would have a deeper natural duff layer and the target canopy closure would be 50 to 70 percent with average residual tree size of 18-inch DBH with approximately 50 percent organic debris retained on slopes less than or equal to 35 percent. MU 1 is dominated by grand fir, Douglas-fir, and subalpine fir, has less organic duff, and is on steeper slopes (greater than 35 percent). These stands would have a target canopy closure of 60 to 80 percent with average residual tree size of 16 inch DBH and greater than 50 percent organic debris retention would

be required as part of the design criteria to provide adequate protection to the forest floor and upper soil.

Mechanical Thinning

Based on the WEPP results, the mechanical thinning treatments (does not include the 429 acres of hand treatment in the shaded fuelbreak, MUs 3 & 4) in the action alternatives would not result in any sediment delivery if a 2.5-year interval storm occurred in the first year post-project due to design features (e.g., greater than 85 percent post-project groundcover) and RHCA buffers (e.g., 150 feet on perennial, non-fishbearing streams) (Table 3; Attachment F). The Proposed Action mechanical thinning treatments (approximately 919 acres and 2 acres of skid trails) could result in a maximum of 87 tons of sediment delivery if a 50-year return interval storm occurred within the first year after project implementation (Table 3; Attachment F). The greatest sediment delivery potential (52 tons) would be produced by MU 1, the 648-acre helicopter unit. The 193-acre ground-based logging unit including skid trails (MU 2) and the 78-acres in the shaded fuelbreak (MUs 3 and 4) that would be mechanically treated would contribute 26 and 9 tons, respectively. It is assumed the 427 acres that would be hand-treated in the shaded fuelbreak would not contribute to the sediment delivery potential.

The helicopter landings would not contribute to the sediment delivery potential because they are essentially flat and erosion control measures would be in place. The existing roadbed would be used as landing sites for MUs 2, 3 and 4. Potential sediment delivery from the existing roadbed was modeled separately (Table 4).

The probabilities that runoff, erosion, or sediment delivery would occur the first year following the proposed thinning are expressed as percentages in Table 3. The probabilities of sediment delivery occurring are the same for all the MUs (i.e., eight percent) except for the 7-acre MU 4 (six percent). The skid trails in MU 2 (approximately 2 acres) have the greatest probably of sediment delivery (12 percent) within the first year post-project (Table 3).

The potential rate of sediment delivery would be slightly higher for ground-based harvest in MU 2 (0.09 tons per acre) than MU 1, the helicopter unit (0.08 tons per acre). MUs 3 and 4 have higher rates of potential sediment delivery, 0.12 and 0.11 tons per acre, respectively. These differences in sediment delivery rates (tons/acre) were used to calculate the potential (tons) that could be produced in the first year post-project (Table 3; Attachment F).

The mechanical thinning would be completed in the first four years of the project; ground-based logging two years, helicopter logging four years. The greatest short-term increase in sediment yield would be in the first two years following project implement until vegetation is re-established and soil is stabilized. Project impacts would decrease over time as vegetation becomes re-established and soils stabilize, recovery is generally complete within ten years after project implementation.

Prescribed Fire

Following any timber harvest, considerable amounts of slash are generated. In the Proposed Action, the logging slash would be applied to the soil surface in the MUs, on log landings

and skid trails (Attachment A). Slash would be either: 1) lopped and scattered, 2) burned using a low-intensity jackpot method, or 3) piled and burned. On slopes less than or equal to 35 percent, slash would be tractor piled and burned, or lopped and scattered and burned using an understory burn. On slopes greater than 35 percent the slash would be hand piled or lopped and scattered and burned using an understory burn. Lopping and scattering the slash would reduce fuelbed depth, protect soil, and help re-establish vegetation on landings and skid trails by providing seedling protection. Lopping and scattering would also retain coarse woody debris cover to protect the soil from rainfall impact and harvest equipment making passes through the stand, reduce surface temperatures creating a favorable environment for seedling regeneration, and provide soil organic matter through decomposition. Subsequent prescribed fires would not completely consume the woody debris, but would burn in a "mosaic" pattern, leaving some areas unburned and other areas "lightly" burned. The specific design criteria for lop and scatter are listed in Attachment A.

Slash pile and prescribed jackpot burning would reduce fuel loads throughout the stands but could have localized impacts to the soil if it burns too hot. Conducting burns during spring or late fall would minimize the potential for hot burns and for slash pile fires to spread to adjacent areas and ignite wildfires.

WEPP model results indicate low intensity prescribed fire would not result in any sediment delivery potential if a 2.5-year return interval storm occurred within the first year post-project (Table 3; Attachment F). However, there is a ten to 22 percent probability that a larger magnitude storm could occur during the same time period and result in sediment delivery. The greatest probabilities of this occurring are associated with MU 1 (22 percent) and MU 2 (18 percent) in the Proposed Action. MUs 3 and 4, common to the Proposed Action and Alternative 3, have lower probabilities (14 and ten percent, respectively).

The Proposed Action would have a maximum prescribed fire sediment delivery potential of 580 tons based on the occurrence of a 50-year return interval storm in the first year after a low intensity prescribed burn (Table 3; Attachment F). This is approximately two percent of the sediment yield potential associated with high intensity wildfire in the No Action alternative.

The WEPP model assumes that all prescribed burn treatment activities would take place within a single year. However, the Proposed Action is a multi-year project that could take up to ten years to complete, allowing revegetation of treatment areas and mitigating the risk of maximum sediment delivery potential in the first year post-project. The greatest short-term increase in sediment yield would be in the first two years following project implementation until vegetation is re-established and soil is stabilized. Project impacts decrease over time as vegetation becomes re-established and soils stabilize, recovery is generally complete within ten years after project implementation.

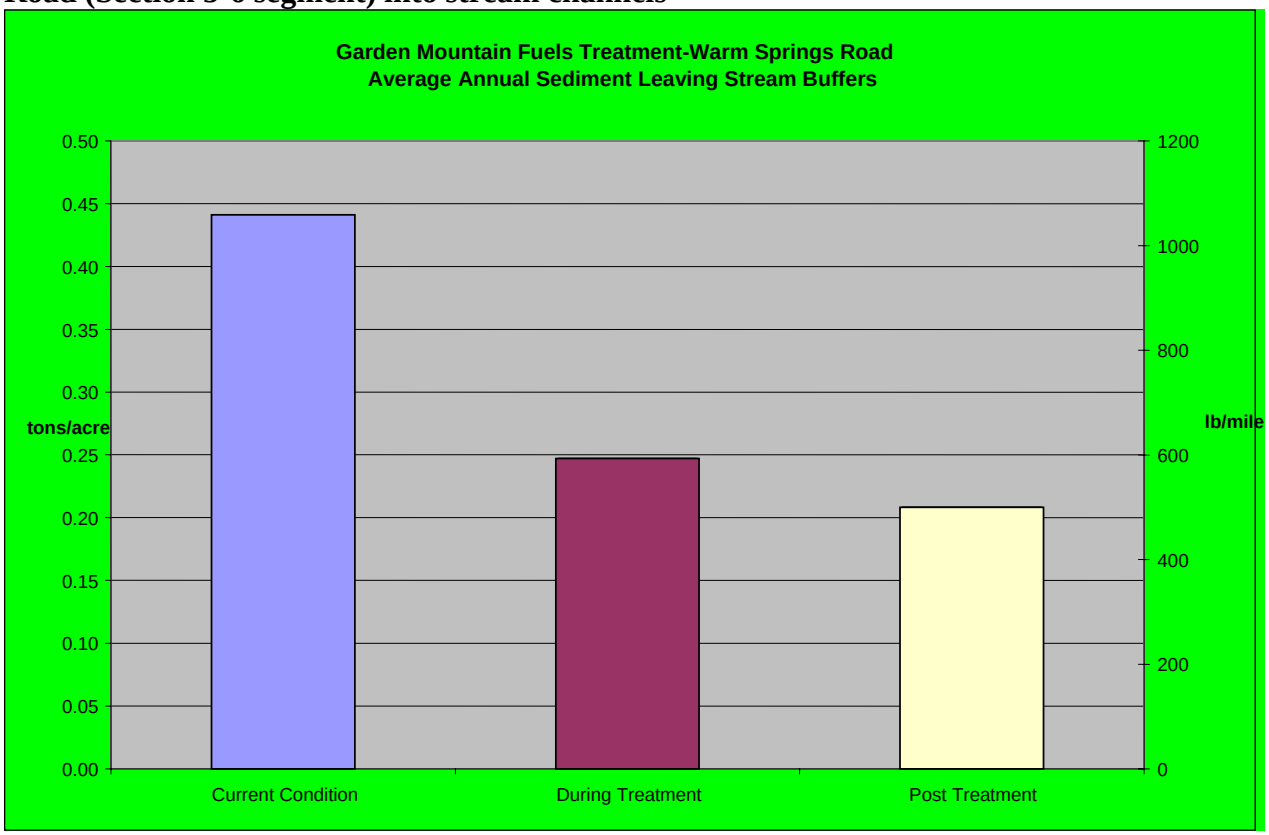
Native Surface Haul Roads

The BLM would conduct maintenance and improvement activities as described above (Section 2.3.2 under *Transportation Management*) on approximately 3.5 miles of road beginning near the Warm Springs Creek crossing (Section 5-6 Road as shown on Figure 3). Renovations would include blading the road surface and installing cross drain structures as

specified by the BLM Boise District engineer. Surface disturbance from maintenance of the north half of Warm Springs Road would result from blading, shaping, and related activities. Some vegetation would temporarily be removed and the ground surface would be exposed to erosion. In the long term the action would provide for resource protection by diverting water runoff from travel surfaces and revegetation would typically occur within a few months.

The WEPP model was run to compare sediment delivery to streams from three scenarios for the Section 5-6 Road: 1) existing road condition, 2) renovated road under high use (during treatment) and 3) renovated road under low use (post treatment). Figure 6 compares these three scenarios.

Figure 6. WEPP Road Model predictions of sediment delivery from the Warm Springs Road (Section 5-6 segment) into stream channels



Prior to running WEPP Road, the WEPP Cross Drain program was used to estimate the culvert spacing required for a given road length and gradient and associated buffer length and gradient (Attachment G contains the input parameters and assumptions). These parameters are 'fixed' in WEPP, but provide reasonable approximations. The WEPP Road program was then run using the cross drain spacing from the Cross Drain program to estimate post construction sediment yield. The WEPP Road input variables were either measured in the field or estimated based on professional judgment (see Attachment H for input variables).

The purpose for using a model such as WEPP is to provide a comparison among treatments. The results should not be taken as absolute values. WEPP assumes all sediment delivered is

derived from the road prism and does not include sediment delivered via cutslope, fillslope, or culvert failure. Potential sediment delivery from the native surface haul roads outside the project area and routine pre-project and post-project maintenance were not modeled. The landing sites for MUs 2, 3 and 4 would be on the existing native surface roadbed, so these landings were not considered additional sediment sources. The WEPP outputs for year 0 (during treatment) and post treatment assume that 41 cross drain structures will be installed and then the road surface, cross drain structures, and ditchlines are maintained annually thereafter. The actual road renovation work would probably not include 41 cross drain structures, therefore, the sediment delivery potential will lie between the minimum and maximum values shown on Figure 6.

Noxious Weeds and Invasive Species

The Proposed Action has the potential to increase the rate of noxious weed and invasive species proliferation due to vehicle traffic, off-road and skid trail traffic, soil disturbance, prescribed fire, and other sources of weed introduction and distribution. The project specific design criteria and BMPs to contain and prevent the introduction and/or spread of noxious weeds and invasive species, including pre- and post-project herbicide treatments, would help to minimize this impact. Herbicide treatments would not be applied within RHCAs to protect water quality.

Comparison to BOISED Modeling Results

In a similar landtype, the effects from the South Fork Wildfire Salvage project which involved harvest of fire damaged trees (through ground based and helicopter logging) and restoration activities for roads in the project area, were modeled using the Boise National Forest Sediment Model (BOISED) (USDA Forest Service draft 2004). The salvage project occurred in the Boise National Forest, 20 miles northeast of Cascade, Idaho, and north of the Garden Mountain project area. BOISED predicts the percent over natural sediment yield as a result of all past and ongoing management activities, and provides a tool through which to compare the relative effects of different management strategies. Although BOISED reflected slight increases in sedimentation as a result of the South Fork salvage project, it was noted that the modeled output did not reflect the benefits of many design features and BMPs that are typically incorporated into project activities. For example, the effectiveness of streamside buffers was not taken into account by BOISED. Stream buffer widths are a WEPP model variable however, the model outputs do not reflect the benefits of many other design features and BMPs that are typically incorporated into project activities.

Extensive research has been conducted on the effectiveness of BMPs applied to timber harvesting and road-related activities (IDEQ 1997; Seyedbagheri 1996; Belt et al. 1992; Cook and King 1983; Gray and Megahan 1981). Proper application of these design features would be expected to decrease the likelihood of on-site erosion and off-site sediment delivery to streams in sufficient quantities to impact water quality conditions (USDA Forest Service draft 2004). The design features and BMPs associated with the Proposed Action (Attachment A) in addition to the streamside buffers considered in the WEPP model would minimize soil disturbance and sediment delivery during and after implementation. Therefore, the WEPP results need to be viewed not as absolute values but as *relative* values to display the differences between alternatives, management units, and project related activities.

3.3.3 Shaded Fuelbreak Alternative

Only the 507-acre shaded fuelbreak (MUs 3 and 4) along the Warm Springs Road would be implemented in this alternative (Figure 5). The objective of this alternative is to minimize stand density and fuel loading and provide a defensible space for firefighters to suppress wildland fire in the highest risk part of the project area. Specific details of this alternative are discussed in Chapter 2: *Proposed Action and Alternatives* and Attachment A. The project activities in this alternative would result in 76 percent less total sediment delivery potential (i.e., 161 tons versus 680 tons) than the Proposed Action (Table 3; Attachment F). Road maintenance to the northern portion of Warm Springs Road would occur as described under the Proposed Action alternative.

Prescribed Fire

Alternative 3 would have a significantly lower maximum potential for sediment delivery from prescribed fire than the Proposed Action (i.e., 152 tons versus 580 tons) because only the 507 acres in MUs 3 and 4 would be treated (Table 3; Attachment F). The probabilities that runoff, erosion, or sediment delivery would occur the first year following a prescribed fire would also be less than the Proposed Action because the higher probabilities (22 and 18 percent) are associated with MUs 1 and 2.

Mechanical Thinning

Direct impacts to the soil would be similar to those introduced in the Proposed Action but fewer acres (78 acres versus 921 acres) would be impacted and there would not be any skid trails. The shaded fuelbreak units are narrow so logs would be winched to the roadbed (no skid trails), and the steeper sections (greater than 35 percent slope) would be treated by hand (e.g., hand piled or lopped and scattered and burned using an understory prescribed fire). Therefore no appreciable sediment delivery is expected from these treatment areas. The sediment delivery potential from the mechanical thinning in this alternative would be nine tons or 88 percent less than the Proposed Action (i.e., 78 tons) (Table 3; Attachment F). The probabilities that runoff, erosion, or sediment delivery would occur the first year following thinning and fuels treatment are lower than with the Proposed Action because no skid trails would be constructed (Table 3).

Native Surface Haul Roads

Alternative 3 would use the same haul route as the Proposed Action (Figure 4), affecting the same segments of native surface road because the shaded fuelbreak is common to both alternatives (Figure 3). However, Alternative 3 would have less potential for erosion because the number of roadbed landings, the heavy equipment traffic, log hauling, and duration of implementation would be less than the Proposed Action. The increased road use associated with ground-based logging in Alternative 3 would occur within a shorter timeframe (i.e., two years or less) than the Proposed Action so that the sediment delivery potential would also be less. Road maintenance to the northern portion of Warm Springs Road would occur as described under the Proposed Action alternative. Effects from this activity are described in the previous section (Section 3.3.2 under *Native Surface Haul Roads*). Other shaded fuelbreak activities such as prescribed burning and brushing would not result in high road use. The shorter timeframe would also decrease the likelihood of a high run-off year occurring within the timeframe of implementation.

Noxious Weeds

This alternative would limit the potential noxious weed and invasive species invasions and proliferation to previously infested areas along the Warm Springs Road, and would not introduce or spread weeds in the unroaded areas of MUs 1 and 2. There would be fewer treatment acres than the Proposed Action (507 versus 1,348 acres) and pre- and post-project herbicide treatments could be applied more easily and would probably be more effective in containing weeds because of good road access.

3.3.4 Cumulative Effects

Other recent actions or reasonably foreseeable actions include State and private land timber harvest for commercial and fuel mitigation purposes, subdivision development, road projects, and prescribed burning (Table 4). The slopes and soil types in the adjacent private and State lands have similar properties as the project area but may be less erodible due to more moderate slopes (USDI 1987; USDA SCS 1976).

Table 4. Recent, Past and Reasonably Foreseeable Watershed Cumulative Actions

Ownership	Location	Disturbance	Treatment	Approximate Implementation Year
BLM	T9N, R4E, Sections 5 and 6	14 feet wide travel surface x 3.5 miles	Warm Springs Road Renovation	2006
BLM	T9N, R4E, Sections 5 and 6	200 feet	Warm Springs Road Culvert Replacement and Cutslope Stabilization	2003
Idaho Department of Lands	T9N, R4E, Section 9	160 acres	Commercial Harvest and Prescribed Burned	2002-2003
Idaho Department of Lands	T9N, R4E, Section 31	160 acres	Commercial Harvest/Prescribed Burned	2002-2003
Boise-Cascade Corporation	T10N, R4E, Sections 32 and 34	218 acres	Commercial Harvest and/or Subdivision Development	Unknown
Boise-Cascade Corporation	T10N, R4E, Sections 27 and 28	307 acres	Commercial Harvest and/or Subdivision Development	Unknown
Boise-Cascade Corporation	T10N, R4E, Section 14	231 acres	Commercial Harvest	2004
Castle Mountain Subdivision	T10N, R4E, Section 33	250 acres	Fuels Mitigation	2004-2006
Terrace Lakes, Shiloh, and Castle Mountain Subdivisions	See Figure 4	Unknown	Soil disturbance for roads, houses, and associated facilities	On-going

Watershed condition can be discussed in terms of disturbance indicators (e.g., road density, percent timber harvest, percent equivalent clearcut area), estimates of sediment yield (percent over natural), and narratively for other timber harvest impacts (Gerhardt et al. 1991). Disturbance indicators are used to assess watershed condition based on their effects on runoff

or erosional processes. For example, roads affect runoff processes through creation of impervious surfaces and disruption of subsurface flow paths. Roads also expose soil and change slope conditions, and increase drainage densities, which nearly always results in increased surface erosion such as gullies, and can result in accelerated rates of mass erosion, relative to natural conditions. Timber harvest effects are generally not as severe on a per unit area basis as roads, but generally result in increased runoff and erosion (Gerhardt et al. 1991). The magnitude of the other timber harvest effects (other than roads) is similar to fire, although substantial differences exist between timber harvest and fire effects (Gerhardt et al. 1991).

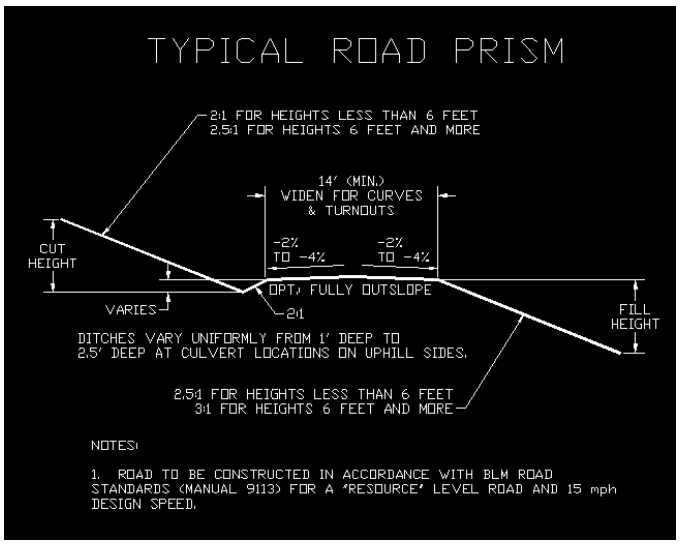
Most of the projects in Table 4 are scheduled to occur before 2006. The Proposed Action may take up to ten years to complete. The shaded fuelbreak would require on-going maintenance to remain functional. Maintenance of the shaded fuelbreak could include all of the same elements included in the initial treatment. Maintenance treatments would be based on site evaluations occurring every three years. As long as soil disturbances such as skid trails are ongoing on a site, the site cannot begin hydrologic recovery. The varying levels of new temporary road construction, new road construction, and road improvement associated with the projects in Table 4 are unknown but would cumulatively influence sediment yield in the project watershed.

The existing Warm Springs Road has experienced severe degradation and erosion and at the present time, is partially passable by pickup truck or ATV only. In 2003, the FRFO cleared a shallow-seated cutslope slump and several smaller cutslope failures and replaced three culverts (Table 4). The road surface consists of native material and the most recent construction appears to have been insloped to a ditch, which was drained by a combination of dips and cross drain culverts. The ditch line has become entirely filled in with material from the adjacent cut slope and most of the drainage structures are no longer functional or apparent. Cut and fill slopes are generally stable and well vegetated with forbs, grasses, shrubs and trees. The road surface width varies from eight to 14 feet, with a vegetation-free running surface from about six to ten feet wide. The road crosses nine drainages via culverts and four drainages via dips. The main sources of sediment are the running surface of the road, two cutslope failures, and two fillslope failures. The actual amount of sediment being transported to perennial stream channels appears to be low (Napkora 2004).

Maintenance to the north half of Warm Springs Road would reduce erosion in the long term. If the remainder of the Warm Springs Road (south half) is reconstructed in the future to meet BLM Road Standards (Manual 9113) as described in Chapter 2: *Proposed Action*, direct effects to soils would be expected and soil erosion could increase in the short term. BLM Road Standards include the construction of a road prism (Figure 7) including backslopes, fillslopes, ditches (V-shaped or flat bottom), foreslopes, and travel surface (at a width of 14 to 16 feet with crowned or fully slopped cross drainage); drainage control structures such as waterbars, leadoff ditches, and culverts; adherence to minimum and maximum road gradients (including realignment or construction of new route segments if current grades are too steep); stopping and sight distance~~s~~ issues and concerns (including vegetation removal); widening or expansion of turning curve radiuses; and pullout or wayside passing zones. The improvement would allow short-bed haul trucks to travel into and out of the project area for ground-based logging activities.

Road building on this soil and landtype is potentially a major source of sediment and the disturbance could lead to an increase in noxious weeds and invasive species. Ultimately site productivity, water yield, water quality, and aquatic habitat could be affected. A study of logging roads in the Idaho Batholith region (including the project area) reported roads led to accelerated sediment production that was 770 times greater than similar undisturbed areas (Megahan and Kidd 1972). This high amount of sediment yield can be attributed to the low clay content and high percolation rates of these soils, which result in low water holding capacity, making the re-establishment of vegetation difficult due to a lack of available soil moisture (USDA SCS 1976). Another reason that the construction and maintenance of roads can be difficult is the small, uniform, rounded particle size of these granitic soils, which reduces the ability for the soil to aggregate and form a stable road prism on cut and fillslopes.

Figure 7. Typical Road Prism



Overall, under the current condition, the road, drainage ditches, cutslopes, and fillslopes do not appear to be delivering large amounts of sediment downstream. If the road is improved, decomposed granitic material would be exposed. Sediment yields would increase in the short term and would gradually diminish as ditch lines, cutslopes and fillslopes become revegetated. Erosion control devices would be utilized as necessary to minimize erosion and sediment movement associated with the road improvement. Various types of erosion control devices may be used and include the use of securely anchored hay bails in ditches; geotextile mats or fabric used in the stabilization of cut and fill slopes; energy reducing riprap, gabions, or mats at the outlets of culverts to minimize scour; and broadcast seeding or hydroseeding of disturbed surfaces.

The greatest short-term increase in sediment yield would be in the first two years following project implementation until vegetation is re-established and soil is stabilized. Project impacts decrease over time as vegetation becomes re-established and soils stabilize, generally within ten years after project implementation. In the long term the road improvement activities would reduce sedimentation from existing sources. Some improvements to the road including the installation of new culverts, was done in 2003. Installation of additional

culverts and replacement of undersized existing culverts would further reduce sediment yield (Seyedbagheri 1996) and reduce the risk of future road failures (USDA Forest Service draft 2004).

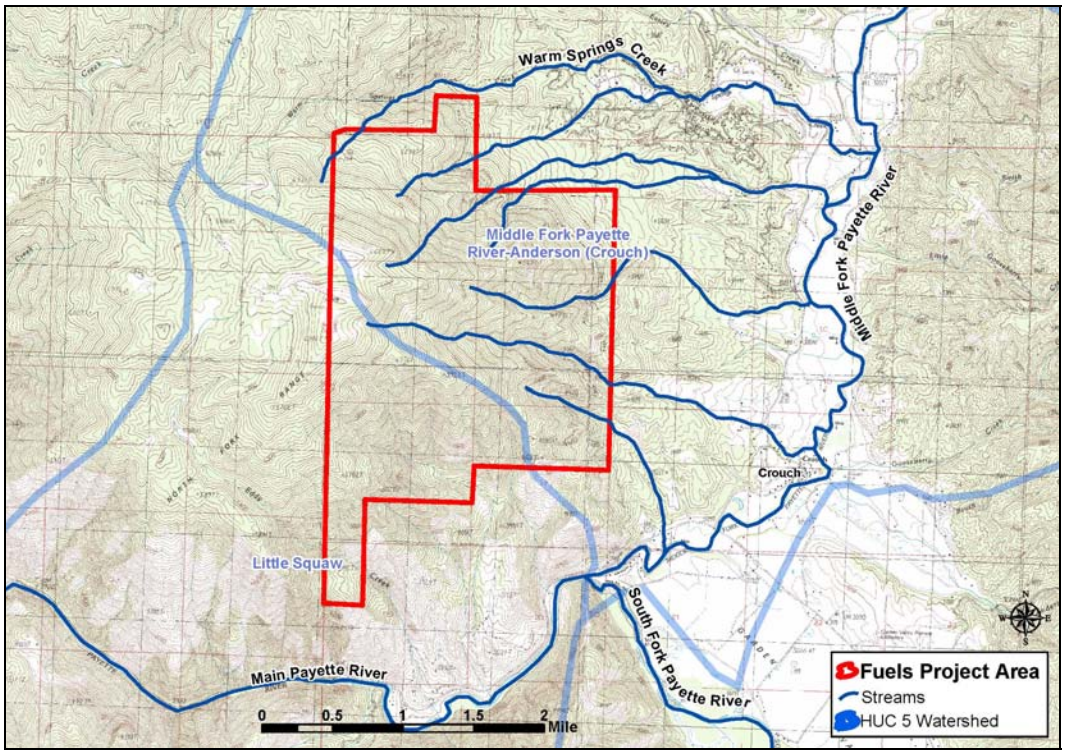
3.4 Water

3.4.1 Hydrology and Water Yield

The project area is in the Middle Fork Payette River Subbasin located in central Idaho, about 40 miles north of Boise. The Middle Fork Payette River generally flows south, southwest, through the town of Crouch, Idaho. The South Fork Payette joins the Middle Fork downstream of the town of Crouch and the project area to form the mainstem of the Payette River.

The project area boundary includes two U.S. Geological Survey (USGS) 5th field hydrologic unit code (HUC) watersheds: the Middle Fork Payette River-Anderson (aka Crouch Watershed) (1705012101) and Little Squaw (1705012214) (Figure 8). None of the proposed project activities would take place in the Little Squaw Watershed. Therefore, Little Squaw Watershed is not described or considered in the water quality analyses. All of the activities would take place in the 6th field Middle Fork Payette River-Pyle Creek Subwatershed (170501210101) (aka Pyle Subwatershed) near the mouth of the Middle Fork Payette River (Idaho Department of Water Resources database 2003).

Figure 8. Watershed Boundaries and Water Bodies



The Middle Fork Payette River Subbasin is located in the Northern Rocky Mountain physiographic province at the western edge of the Salmon River Mountains. The annual

weather cycle consists of cold winters and warm summers where gradual changes of season are marked by rapid changes in weather (IDEQ 2003). During the winter and early spring months, rain-on-snow events occur periodically and can trigger large and/or numerous landslides. A large rain-on-snow event during the winter of 1964 and 1965, and again in 1997, resulted in numerous landslides within much of the Middle Fork Payette River Subbasin, which has greatly influenced the current sediment load within the subbasin (IDEQ 2003).

The valley cross-sections within the Middle Fork Payette Subbasin are usually deep, V-shaped in the mountainous upper elevations and shallow and rounded at mid-elevations. The valley cross-sections become very wide within the lower valley near Crouch where depositional processes dominate.

Eighty-five percent of the stream flow within the Middle Fork is the result of subsurface charging and deep seepage (IDEQ 2003). Springs and seeps in the subbasin vary in size, source, and location. Constantly flowing springs and intermittent seeps occur in areas of well-fractured bedrock commonly found on north-facing toe slopes. Seeps are common at mouths of secondary drainages where surface waters flow intermittently in spring. Hot springs are usually in the bottoms of major drainages and associated with fault zones.

The potential for water yield increases as a result of project implementation is a factor of the percentage of crown removal, increased drainage network (e.g., roading), vegetative re-growth since the initial disturbance, and stream channel stability (Gerhardt et al. 1991). Equivalent clearcut area (ECA) is often used as a surrogate for increased water yield. The ECA model assumes a pre-existing canopy of 100 percent for a mature, forested area although in reality, canopy closure is naturally variable.

Various thresholds of concern for ECA, ranging from 15 to 30 percent, have been in use since the 1970s. Decommissioned roads, even when grown in, are still considered as open roads in ECA models due to soil compaction, subsurface flow interruption, increased drainage density, and other factors.

Generally, less than 15 percent ECA in the watershed and each individual subwatershed, and low concentrations of disturbance in landslide-prone, streamside, and first order headwater areas indicate high habitat condition and a low probability of increased water yield. Low habitat condition is generally indicated by ECA greater than 20 percent in a 5th field watershed or greater than 30 percent in one or more 6th field subwatersheds, and/or concentrations of disturbance in landslide-prone, streamside, or first order headwater areas.

The Boise National Forest calculated an ECA of 12 percent for the 6th field Pyle Creek Subwatershed for the revised Forest Plan (USDA Forest Service 2003). The Forest Plan calculations are based on timber management history and fires that occurred prior to 2003. The calculations do not include other factors that affect ECA such as roading and development. Therefore, the pre-project ECA is actually higher than indicated by the Forest Plan analysis. However, the Forest Plan ECA provides an accurate relative comparison of pre- and post-project timber management-based ECA.

The existing road/drainage densities in the Pyle Creek Subwatershed are high (3.7 miles of road per square mile of area) and numerous road crossings in the subwatershed route water to stream channels more efficiently and probably result in higher magnitude peakflows than occurred historically before the era of road building, logging, and other development.

3.4.1.1 No Action Alternative

Implementation of the No Action alternative would not impact water yield directly because there would be no vegetation removal, road building or maintenance (unless approved under another project), understory burning, or other disturbances. The No Action alternative could potentially increase water yield because of the risk of high intensity, large scale wildland fire. Wildland fire can increase water yield in a number of ways including the loss of vegetative cover, decreased soil permeability, increased drainage density (e.g., gullying), and compaction caused by fire suppression techniques and the need for vehicle access.

3.4.1.2 Proposed Action Alternative

The Proposed Action would selectively remove trees, brush, and other understory vegetation from 1,348 acres including 193 mechanically treated (tractor and cable yarded) acres, construction of skid trails and landings (Figure 3; Table 1). The temporary spur road in MU 2 and all skid trails and landings would be reclaimed after project implementation. Road construction along the Warm Springs Road to connect to the McBride Creek Road and to the new temporary spur road would be permanent (Figure 4, T10N, R4E, S32). Controlled understory burning could occur throughout the entire 1,348-acre area. Project specific design criteria and BMPs (Attachment A) would maintain greater than or equal to 50 percent organic groundcover and greater than 50 percent canopy cover to intercept precipitation, protect soil, and increase infiltration.

The 507-acre shaded fuelbreak (MUs 3 and 4) would require on-going maintenance based on site evaluations occurring every three years. The maintenance would include additional hand and mechanical treatments, and broadcast burning. As long as soil disturbances are on-going the site would not fully recover and a linear reduction in ECA would not occur. However, the on-going effects of the actions would be patchy, spread out over time, and would have little or no effect on ECA due to design criteria. The ECAs would diminish to pre-project levels within ten years after site disturbance is completed as the vegetation becomes re-established, hydrologic recovery is completed, and cumulative effects are reduced over time. The largest reductions in ECA would occur within the first two years post-disturbance due to vegetative re-growth and site stabilization.

Any short-term increase in ECA associated with the Proposed Action has to be weighed against the risk of potential large scale, high intensity fire that could result from implementation of the No Action alternative. A large scale, stand-replacing fire would cause a much greater and potentially significant, long-term increase in ECA than the Proposed Action.

3.4.1.3 Shaded Fuelbreak Alternative

Alternative 3 would create a 507-acre shaded fuelbreak along the Warm Springs Road (Figure 5; Table 1). The shaded fuelbreak in this alternative is the same as the shaded fuelbreak in the Proposed Action, and would have the same design criteria, BMPs, and on-

going maintenance needs. Seventy-eight acres would be tractor or cable yarded (Table 1). Slopes greater than 35 percent would be hand treated (429 acres). Therefore, the potential to impact water yield would be less, and the project implementation time and hydrologic recovery time would be shorter than the Proposed Action. No measurable change in ECA at the 6th field watershed level would be expected.

3.4.1.4 Cumulative Effects

Other known recent or proposed actions that would increase the ECA in the watershed during the next ten years include reconstruction of the southern portion of the Warm Springs Road; State and private land commercial timber harvest; State and private land prescribed burning and fuels mitigation; and subdivision development. In addition to the Proposed Action (1,348 acres) at least 1,300 known acres plus an unknown additional number of State and private acres would have some disturbance or activity in the ten-year cycle (the minimum cumulative total including the Proposed Action is 2,648 acres) (Table 4).

It is highly probable that within the general area, other unforeseeable Federal, State, and private land management, development, and/or wildland fires would occur in this timeframe, which could result in a cumulative ECA impact. Increased water yield in combination with the high to highly erosive DG soil in the project area could result in increased erosion and higher peakflows so that more sediment would be transported to stream channels, impacting channel morphology, water quality, and fish habitat downstream of the project area.

3.4.2 Water Quality

The Middle Fork Payette River Subbasin including the project area is a fifth order tributary of the Payette River (4th field USGS Hydrologic Unit Code 17050121) in the northern part of Boise County and the southern part of Valley County, Idaho. The Middle Fork Payette River originates approximately 46 miles north-northeast of Crouch, Idaho and flows from 6,860 feet in the headwaters to 3,208 feet at its confluence with the South Fork Payette River downstream of Crouch. The river drains a 292 square-mile basin managed predominately by the USDA Boise National Forest. The Forest Service, IDL, and the Boise Cascade Corporation manage 97 percent of the subbasin, primarily for timber production. The remaining three percent is the town of Crouch and small agricultural/livestock grazing operations and recreational homes in the lower subbasin near the project area.

In 1994, and again in 1996, numerous segments within the Middle Fork Payette River were classified as water quality limited due to sediment under Section 303(d) of the Federal Clean Water Act (CWA) (Table 5). Unlisted segments within the Middle Fork Payette River Subbasin also contribute sediment to the listed segment (IDEQ 1998). Subsequent to the Section 303(d) requirements a Total Maximum Daily Load (TMDL) management plan was developed and approved by the Environmental Protection Agency (EPA). A copy of the final TMDL *Sub-basin Assessment and Total Maximum Daily Load for the Middle Fork Payette River* (IDEQ 1998) can be obtained from the IDEQ Boise Regional Office. An Addendum to the Implementation Plan (IDEQ 2003) indicates that sediment from anthropogenic (i.e., human-caused) sources within the Middle Fork of the Payette River Subbasin will need to be reduced by 76 percent in order for beneficial uses to be obtained (IDEQ 2003).

Table 5. IDEQ 303(d) Listed Water Bodies Downstream of Project Area

Water Body	Segment	Length	303(d) Pollutant	Approximate River Miles Downstream of Project Area Boundary
Middle Fork Payette	Big Bulldog Creek to SF Payette	13 miles	Sediment	0.9 to 1.7
South Fork Payette	Wilderness Boundary to Payette	59.5 miles	Sediment	1.7 to 6.7

The Middle Fork Payette River TMDL Implementation Plan is based on the following premises: 1) natural background levels of sedimentation are assumed to be fully supportive of the beneficial uses, 2) the river system has some finite yet unquantified ability to process sedimentation (i.e., attenuate through export and/or deposition) rate greater than background rates, and 3) beneficial uses are not likely to be met without addressing the hydrologic modification of the Implementation Plan for the Middle Fork Payette River system associated with loss of sinuosity, entrenchment of the channel, and loss of floodplain connectivity (IDEQ 2003). An increase in the 2-meter pool frequency within these lower reaches has also been identified as the primary interim target that will be used to support the identified beneficial uses.

In order to achieve the goals of the TMDL Implementation Plan, BMPs will need to be implemented within the Middle Fork Payette Subbasin to reduce the Load Allocations from non-point source pollution (IDEQ 2003). Full implementation of this Plan should lead to the reduction of excessive sediment loads from land management activities, riparian vegetation losses, and bank destabilization.

There are 6.5 miles of perennial streams in the project area that could be impacted by the action alternatives (Figure 9). The IDEQ State Water Quality Standards designate the beneficial uses in Middle Fork Payette River Subbasin as: 1) coldwater communities, 2) salmonid spawning, 3) primary contact recreation, 4) domestic water supply, and 5) special resource water (IDAPA 58.01.02). There are no domestic water supplies, special resource waters, or primary contact recreation waters in the headwaters. Whether or not the stream reaches in the project area are fish-bearing has not been determined.

Four of the six perennial streams that originate in the Crouch Watershed flow into the Middle Fork Payette River approximately one to two river miles (RM) upstream of the confluence with the South Fork Payette (Figure 9). The other two perennial streams in the Crouch Watershed action area are the headwaters of Warm Springs Creek and a tributary that flows into Warm Springs Creek approximately two RM from the Middle Fork Payette (Figure 9).

The headwater tributary streams in the project action area are Rosgen A and B-type “source” reaches that produce sediment (e.g., landslides along the Warm Springs Road), which is readily transported downstream to lower gradient, depositional reaches (Montgomery and

Buffington 1993; Rosgen 1996). The stream-road crossings are generally steep (e.g., 50 to 70 percent slope).

As previously stated, the Warm Springs Road has on-going erosion problems including landslides and culvert washouts that produce periodic, large volumes of sediment and the current drainage structure spacing is inadequate. These problems would be reduced if road improvement occurs in the future (see Soils, Section 3.3.4, *Cumulative Effects*).

3.4.2.1 No Action Alternative

The No Action alternative would not have any direct impact on water quality because no ground-disturbing activities would take place. The No Action alternative would have potential indirect impacts to water quality because of the risk of a large scale, high intensity fire occurring in the area. A high intensity fire on DG soils would initiate substantial erosion that could impact site productivity, water quality, water yield, and fisheries habitat downstream of the project area (Table 3).

If no road maintenance occurs on the northern portion of the Warm Springs Road, the road would continue to deteriorate. Over time the road would become increasingly difficult to travel and “alternate” routes could be created as motorists attempt to drive around impassable areas. The “main” road would be increasingly susceptible to wind and water erosion and the newly created alternate routes would also be subject to erosion. In the long term, indiscriminate vehicle use would increase surface disturbance, and uncontrolled runoff water would cause additional soil erosion.

3.4.2.2 Proposed Action Alternative

The Proposed Action, including skid trail construction, tree cutting and removal, site preparation, prescribed fire, temporary and permanent road construction, and road maintenance and improvement to the northern portion of Warm Springs Road would increase the potential for sediment delivery in the short term and may cause non-point pollution (see Section 3.3 *Soils*). Sediment, fuel, and fluids from logging equipment, nutrients from harvested areas, herbicides, and increased water temperatures are the major types of potential pollutants that can be produced by these sources. The fuel haul, storage and transfer, and spill containment design criteria and BMPs (Attachment A), in addition to the fact that no work would take place in RHCAs, would reduce the risk of petroleum products and other chemicals coming in contact with live water. Reclamation of disturbed sites would help promote vegetative recovery and reduce the risk of erosion and sediment delivery (Attachment A).

Maintenance to the north half of Warm Springs Road would result in direct effects to soils and soil erosion could increase in the short term. Direct effects to water quality would occur if soil enters into stream channels. BMPs, such as silt fences, would be implemented to minimize the amount of soil transported off site during maintenance and improvement activities. Indirect effects to water quality would occur if a high runoff producing event occurs during and immediately after road work and road bed sediment is transported to stream channels.

The Proposed Action would have the greatest potential for direct water quality impacts due to sedimentation because the most acres (1,348) would be disturbed by the proposed actions. The greatest soil impacts are generally associated with ground-based logging systems, and a total of 271 acres would be tractor or cable yarded in this alternative (i.e., 193 acres in MU2 and 78 acres of the shaded fuelbreak). The prescriptions for canopy closures (50 to 70 percent in ponderosa pine dominated units and 60 to 80 percent in fir dominated units) and organic groundcover (50 percent on slopes less than or equal to 35 percent and greater than or equal to 50 percent on slopes greater than 35 percent) would reduce the risk of erosion. The proposed logging systems, unit locations, and soil/water/aquatic habitat design criteria and BMPs (Attachment A) have been designed to reduce the risk of erosion and sediment delivery in the short and long-term. Proper application of these and other design features would be expected to decrease the likelihood of sediment delivery to streams in sufficient quantities to impact water quality conditions (USDA Forest Service draft 2004). No harvest activities would take place in RHCAs, so soil and vegetative infiltration would occur between all the units and live water to mitigate potential sediment delivery. The water temperature baseline condition would be maintained since no harvest would take place within the RHCAs.

The shaded fuelbreak would require on-going maintenance to remain functional. Maintenance of the shaded fuelbreak could include all of the same elements included in the initial treatment. Maintenance treatments would be based on site evaluations occurring every three years. As long as soil disturbances are on going, the site cannot fully recover, however the on-going effects of the actions would be patchy and spread out over time. The largest recovery would occur within the first two years post-disturbance due to vegetative re-growth and site stabilization.

Any short-term erosion and potential water quality impacts associated with the Proposed Action (Table 3) have to be weighed against the risk of potential high intensity fire that could result from implementation of the No Action alternative. The Middle Fork Payette, the South Fork Payette, and the lower mainstem Payette River are already beyond capacity to route sediment efficiently as a result of numerous land management practices that have created a legacy of stored sediment (IDEQ 1998). Large scale, long-term reductions in sediment will be required before the system can regain sediment routing balance (i.e., sediment sources equal to sediment transport). A large scale, high intensity fire in the Upper Middle Fork Payette Watershed would probably result in large scale sediment delivery to the Payette River system (Table 3), and long-term water quality impacts due to poor sediment routing.

3.4.2.3 Shaded Fuelbreak Alternative

Only the 507-acre shaded fuelbreak along the Warm Springs Road would be implemented in this alternative (Figure 5). This alternative would have less potential to generate soil erosion and sediment than the Proposed Action because: 1) fewer total acres would be treated (507 versus 1,348 acres), 2) no skid trails would be needed, 3) only 78 acres would be tractor or cable logged, the rest would be hand treated, and 4) the thinning would be completed in two years so the potential sediment yield from high road use would be less than half of the Proposed Action (Table 3). Initial project implementation would be shorter duration than the Proposed Action so site recovery would begin sooner. The fuelbreak would require on-going maintenance to maintain effectiveness in either action alternative; therefore, the effects from

maintenance would be the same as with the Proposed Action. Direct and indirect effects from road maintenance and improvement on the northern portion of Warm Springs Road would be similar to the Proposed Action.

3.4.2.4 Cumulative Effects

Past, current, and planned road maintenance and construction, timber harvest, and agriculture and subdivision developments on private, state, and federal lands have the potential to contribute to cumulative effects to water quality within the watershed.

The potential for the Proposed Action to contribute to cumulative effects to water quality are primarily related to road improvement and maintenance. This is because riparian buffer zones would be put in place so mechanical fuels treatments would not occur in close proximity to streams, therefore, reducing the potential for sediment derived from ground disturbance in uplands to be transported to and enter into waterways.

Field reconnaissance has found that 13 road segments and three slope failure areas are currently adding sediment to streams within the project area. The WEPP model indicates that the sediment load derived from the road surface is low and the major sediment sources are due to slope failures. Maintenance to the north half of Warm Springs Road would include blading the road to create a smooth running surface, clearing ditchlines, re-installing drainage structures, and stabilizing hillslopes. WEPP modeling has shown that these activities would decrease the long term road bed sediment load.

If the remainder of the Warm Springs Road (southern portion half) is reconstructed in the future as part of a separate project, some vegetation would temporarily be removed and the ground surface would be exposed to erosion. Revegetation would typically occur within a few months and the action would provide for resource protection by diverting water runoff from travel surfaces in the long term.

The cumulative sediment delivery potential from the 2.8 miles of native surface road within the project area that have potential for overland flow connections to ephemeral, intermittent, or perennial channels (Napkora 2004) was modeled. Road bed sediment delivered to stream channels would be between 500 and 1000 pounds per mile (Figure 6).

Non-BLM roads have not been modeled for sediment because BLM has no control over use levels. The non-BLM roads are all native surface (except for the lower mile of the Warm Springs Road), many are in close proximity to stream channels and all receive high vehicle use from residents, recreationists, and logging traffic that access private, state and other federal lands (mainly Forest Service). The Proposed Action would include approximately 100 loads during the first two years and approximately 500 trips during the subsequent two years. BLM would maintain these non-BLM roads as required by the easements.

It is unlikely that cumulative effects due to implementation of an action alternative would impact the 303(d) listed segments of the Middle Fork or the South Fork Payette due to the relatively low potential for sediment delivery and the transport distance. The proposed road renovations have potential for delivering sediment to the Middle Fork Payette River system,

if a large runoff-producing event occurs immediately after construction. Implementation of BMPs during and after construction is anticipated to mitigate potential adverse effects.

Implementation of the No Action alternative would increase the risk of large scale, high intensity wildland fire and subsequent erosion would add to the existing cumulative impacts in the Middle Fork and South Fork Payette river segments that are 303(d) listed for sediment (IDEQ 1998). Roadbed erosion would continue to contribute small, but steady amounts of sediment into stream channels, which would transport sediment downstream to the Middle Fork Payette River. Cut and fill slope failures would likely continue to occur, as the road grade slowly "puts itself to bed". Depending on the location of these sites, sediment may enter into stream channels and be transported downstream to the Middle Fork Payette River.

The greatest short-term increase in sediment yield would be in the first two years following project implement until vegetation is re-established and soil is stabilized. Project impacts decrease over time as vegetation becomes re-established and soils stabilize, generally within ten years after project implementation. In the long term the road improvement activities would reduce sedimentation from existing sources. Installation of new culverts and replacement of undersized existing culverts would reduce sediment yield (Seyedbagheri 1996) and reduce the risk of future road failures (USDA Forest Service draft 2004).

Overall, under the current condition, the road, drainage ditches, cutslopes, and fillslopes do not appear to be delivering large amounts of sediment downstream. If the remainder of the Warm Springs Road (south half) is reconstructed in the future direct effects to soils would be expected and soil erosion could increase in the short term. If the road were to be improved, decomposed granitic material would be exposed. Sediment yields would increase in the short term and would gradually diminish as ditch lines, cutslopes and fillslopes become revegetated. Erosion control devices would be utilized as necessary to minimize erosion and sediment movement associated with the road improvement. Various types of erosion control devices may be used and include the use of securely anchored hay bails in ditches; geotextile mats or fabric used in the stabilization of cut and fill slopes; energy reducing riprap, gabions, or mats at the outlets of culverts to minimize scour; and broadcast seeding or hydroseeding of disturbed surfaces.

Implementation of the No Action alternative would increase the risk of large scale, high intensity wildland fire that would add to the cumulative impacts in the Middle Fork and South Fork Payette river segments that are 303(d) listed for sediment (IDEQ 1998) (Table 5). It is unlikely that cumulative impacts due to implementation of the action alternatives would significantly impact the 303(d) listed segments of the Middle Fork or the South Fork Payette due to the relatively low potential for sediment delivery and transport distance.

3.5 Cultural Resources

Cultural resources are those fragile and non-renewable remains of human activity, occupation, or endeavor reflected in districts, sites, structures, objects, artifacts, ruins, and works of art and natural features that were of importance in human events (USDI BLM 1983). The BLM is required to identify, evaluate, protect and wisely manage cultural

resources on BLM-managed public lands and ensure that their actions do not inadvertently harm or destroy cultural resources (USDI BLM 1987).

Three phases are used to describe the prehistory of the area around Garden Mountain: the Early Salmon River Period dates from 8,100 years before present (B.P.) and earlier; the Middle Salmon River period dates from approximately 8,100 to 1,200 years B.P; and the Late Salmon River Period begins approximately 1,300 years B.P. and ends with the removal of all Native American groups from the region in the first decade of the 20th century (Ross 1985).

Historical records indicate that Shoshone, Bannock, and Nez Perce Tribes occupied the region. Like many regions in Idaho, fur traders explored this area in the 1820s and 1830s. Gold was discovered in the Boise Basin in the 1860s and the area gained distinction as the major mining region of the Northwest in 1863 and 1864 (ISHS 1970). Ranching also bloomed in the late 1860s. Cattle ranching and mining continue today in a far more limited form. Logging has also been an important theme in the region.

A literature search/Class I inventory was conducted and revealed that no projects have occurred in the project area and that no sites have been recorded (North Wind 2004a). The homestead information from the BLM General Land Office records (USDI BLM 2004) indicated that 12 homesteads were patented in the area. The IDL holds the most land under the patents, followed by the Northern Pacific Railroad Company. The vast majority of this acreage is outside the project area. The remaining patents average nearly 160 acres and were issued to individuals under various homestead acts (North Wind 2004a). A Class III Cultural Resource Inventory was conducted for the treatment areas and no sites were located (North Wind 2004b).

Both prehistoric and historic sites could occur in the project area. However, because of the rugged terrain, few prehistoric sites would likely be encountered. Prehistoric sites would likely consist of open camps and lithic scatters, although cairns, rock alignments, or other rock features may be located on ridges, knolls, or other high spots. Historic sites would likely consist of both mining and stock-raising related sites. Mining sites would likely consist of scattered prospect pits, although adits may also exist. Placer mine sites are possible but unlikely due to the paucity of drainages.

Lands in the Boise District are part of Shoshone-Bannock and Shoshone-Paiute Tribes (the Tribes) aboriginal lands and the Tribes are sovereign, self-governing entities. The Tribes have a government-to-government relationship with the United States, and the Federal government has a trust obligation to protect the Tribes' interests, including protection of paleontological, cultural, and heritage resources. The BLM has consulted with the Tribes regarding this project.

3.5.1 No Action Alternative

The No Action alternative would not result in direct effects but may result in indirect effects to unknown cultural sites in the project area. Without the fuels reduction activities there would be a greater chance of a severe fire that would damage or destroy sites that may be eligible for the National Register of Historic Places - particularly wooden structures

associated with homesteading in the area. Ground disturbing activities associated with fire suppression could also result in damage or destruction of cultural resources. As noted by Keesling (1993), the major damage to cultural resources usually results from suppression related activities. Post-fire erosion effects to cultural resources would also result from a high intensity fire. In addition, if no road maintenance occurs on the northern portion of the Warm Springs Road, the road would continue to deteriorate. Over time erosion could occur and expose hidden cultural sites, exposing them to collection. Travel on "alternate" routes around the original road bed could also damage resources.

3.5.2 Proposed Action Alternative

Of the methods proposed under this alternative, helicopter logging would have the least potential for impact to cultural resources, followed by hand labor, because they would result in the least amount of ground disturbance. Ground-based mechanical operations, using tractors and cable yarding, would have the most potential for disturbance. Ground disturbing treatments such as timber removal, slash piling and burning, prescribed burning, seeding, and implementation of erosion control measures all have the potential to affect cultural resources that may be present in the project area. All activities proposed under this alternative would be conducted in accordance with existing laws that provide for the protection of cultural resources. Design features have been incorporated into the Proposed Action to offset any potential negative impacts (Attachment A).

A Class III (intensive) inventory was conducted as specified in BLM Manual section 8111.4. If significant properties had been discovered, the BLM would have consulted with the State Historic Preservation Office (SHPO). However, no sites were discovered (North Wind 2004b). In the event an inadvertent discovery is made during implementation, all activities would be stopped until the BLM Archaeologist could evaluate the finding and make a determination as to whether the project could continue or not. By surveying the area and including provisions for sites located during implementation, cultural resources would be protected and no adverse effects would occur.

Potential impacts from fires related to the Proposed Action would be less than from the No Action because the fires would be smaller and less intense. Post-fire effects resulting from erosion would also be less than with the No Action. Cultural sites may be closed and patrolled as needed to prevent post-fire damage from livestock, vehicles, and people until sites are stabilized.

3.5.3 Shaded Fuelbreak Alternative

Potential effects to cultural resources under this alternative would be similar to those described above for the Proposed Action but less extensive due to the smaller number of acres treated. The same mitigations described for the Proposed Action would be implemented and no effects are anticipated.

3.5.4 Cumulative Effects

If any cultural resources exist in the project area they could be damaged or destroyed by a large wildland fire depending upon their composition. OHV use that occurs in the project area could impact cultural resources through ground disturbance. Skid trails would be rehabilitated under the Proposed Action and are not expected to create new trails that would

lead to additional use by OHVs. The temporary motorized vehicle closure within MU2 would allow recovery of ground cover. The closure would be in effect for a period of two years, beginning when heavy equipment for treating fuels in MU2 is no longer needed on site. Thinning treatments would result in more open areas that may make cultural resources more visible and subject to collection. Grazing use could also damage cultural resources although it is not likely that grazing occurs on the steeper slopes of the project area that are proposed for treatment. Road improvement, construction, and reconstruction by the BLM would result in some new ground disturbance; however; a survey would be required prior to construction to avoid impacts to cultural resources. No additional activities are planned on the BLM lands in the project area. Subdivision construction and fuels mitigations on surrounding lands could impact cultural resources if they are present on those lands.

3.6 Visual Resources

Public lands have a variety of visual values. Visual values are identified through the Visual Resource Management (VRM) inventory (BLM Manual section 8410) and are considered with other resource values in the resource management planning process. Visual management objectives are established in conformance with the land use allocations. These area specific objectives provide the standards for planning, designing, and evaluating future management projects. There are four classes, I-IV, with Class I being the most restrictive and Class IV being the least restrictive.

The GMFMP area is in a Class III management area. Management activities may attract attention in Class III areas but should not dominate the view of the casual observer. Every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic elements (USDI BLM 1987).

The landform topography of Garden Mountain dominates the view from Garden Valley and provides the backdrop for the town of Crouch. The mountain is primarily comprised of a coniferous forest with areas of non-forested vegetation that create a contrast in color and texture. The color is primarily dark due to the types of trees present and lighter areas represent different types of vegetation, non-forested areas, and bare soils. Due to variations in topography and vegetation type, small-scale vegetation changes are not readily evident when viewed from a distance. The project area has a natural appearance to the majority of viewers and the landscape character can “absorb” some visual alterations. Actions such as vegetation manipulation, road building, and fire can change the appearance of landscapes. The majority of the treatment units would not be visible from the surrounding communities. The helicopter unit (MU 1) would be visible from Crouch and the Terrace Lakes and Castle Mountain subdivisions. However, treatments leave sufficient canopy cover to reduce visual impacts and maintain VRM Class III.

3.6.1 No Action Alternative

The existing conditions of the project area increase the potential for insect and disease infestations, especially western spruce budworm, western pine beetle, Douglas-fir beetle and dwarf mistletoe. Without prescribed burning or associated management activities that disturb the landscape, the extent and intensity of insects and pathogens would increase, resulting in a community that is less healthy. Stand densities would continue to increase and more shade

tolerant species would continue to occupy the understory. Under the No Action alternative, the future viewshed would include a less healthy forest.

The No Action alternative would not have the benefit of reducing fuels and creating fuelbreaks within the analysis area. Under this alternative, there would be a greater chance for significant impacts to visual resource values from a large scale fire due to the continued high fuel load present. In the long-term there would be a need for more ground disturbing fire suppression activities resulting in line and color contrasts. If a large, high intensity wildfire occurs within the analysis area, the landscape character could be greatly altered with the complete loss of existing vegetative cover and possible scars from suppression methods. A large fire would create a larger scale contrasts in the landscape than would result from the Proposed Action and would take much longer to recover.

3.6.2 Proposed Action Alternative

The proposed forest management and road maintenance activities have the potential to affect visual resources. However, criteria have been built into the Proposed Action to offset any potential negative effects and therefore, visual resources in the project area would not be significantly affected. The project design features, including 1) re-seeding of disturbed areas, 2) noxious weed and invasive species control, and 3) use of low impact methods, would be used to protect viewshed quality by maintaining vegetative cover and preventing soil erosion and the spread of noxious weed and invasive species. Road maintenance and improvement activities along the northern portion of Warm Springs Road would affect visual resources in the short term during implementation. Revegetation would be expected to occur within a few months reducing the long-term effects.

The Proposed Action would result in density reduction and removal of understory vegetation on 1,348 acres and provide for diverse ecosystems by reducing competition stress from uncharacteristically high stand densities. Removal of much of the understory vegetation, reduction of overall stand densities, and manipulation of species composition toward mid-seral species that are more adapted to a frequent fire interval ecosystem, would promote both health and sustainability of the landscape and improve the appearance of the forest on MUs 1 and 2. Treatments would encourage regeneration by opening the canopy and allowing light to reach the forest floor. In MUs 3 and 4, understory harvests would target small trees for removal, include brush control, and pruning up to five feet on selected residual trees, creating an open space. The 507-acre shaded fuelbreak that buffers the Warm Springs Road would result in an open, park-like stand.

Impacts to visual resources related to fire would include smoke production during the fire and the charred appearance of the lands after the fire. Smoke from the use of fires would cause short-term impacts to scenic values. Burning activities would be evident during the first year but visibility of burned areas would be reduced after a season of snow-cover and spring growth. Thinned areas would also create a greater contrast because of the opening of the canopy and increase in understory plants. Thinning and the use of prescribed fire would result in line, color and texture contrasts. In general, these contrasts would be of small scale associated with the landscape. Line contrasts would result from fingers of burned and thinned areas within a landscape of a generally forested hillside. Small fire blackened areas interspersed with areas of unaltered, live vegetation would create color contrasts. This would

remain noticeable to the casual observer for two to three years. Changes in texture would also result but would depend primarily on viewing distance. As the revegetation of grasses and shrubs occurs, the visual effects could change adding greater visual diversity to the landscape. In the long-term, the alternative could improve scenic quality by increasing vegetative diversity and age class.

Logging activities and post-harvest actions including prescribed burning and slash treatment would directly affect soils in the project area. These disturbed areas would be visible in the foreground to people in the treatment areas. Because of the remaining canopy cover however, these areas are not expected to be visible from a distance. Skid trails would be visible in the short-term until revegetation occurs. This would be particularly true during the winter months when there is snow on the ground. The ponderosa pine/Douglas-fir areas (MUs 2, 3, and 4) would retain a target canopy closure of 50 to 70 percent. MU 1, which is dominated by grand fir, Douglas-fir, and subalpine fir, would have a target canopy closure of 60 to 80 percent. Implementation of the project specific design criteria (Attachment A) would effectively minimize effects to soils and consequently to the visual resources.

3.6.3 Shaded Fuelbreak Alternative

The Shaded Fuelbreak alternative is a subset of the Proposed Action alternative and would implement only the treatments discussed in the Proposed Action for MUs 3 and 4. The 507-acre shaded fuelbreak unit would be visible along its entire length on either side of the Warm Springs Road. A combination of mechanical and hand treatments would be used to remove hazardous fuels under this alternative. Effects to visual resources would be similar to the effects described above for the Proposed Action. However, because less area would be treated fewer impacts would be visible. Less prescribed burning and slash pile burning would occur because of the smaller total treatment area.

3.6.4 Cumulative Effects

Other recent actions or reasonably foreseeable actions are listed in Table 4. Harvesting and prescribed burning has taken place on adjoining state lands and the Castle Mountain Subdivision, located northeast of the project area, is planning to remove, modify, or break up fuel loads on 250 acres within the subdivision between 2004 and 2006. These other projects in the area will lead to greater reduction of fuels and an increase of open areas.

The impacts from ground disturbance associated with the Proposed Action would be visible for one or two growing seasons. The cumulative impact of the Proposed Action would be positive in the long term because it would reduce fuel loads and lower the risks of large, stand-replacing fires which could significantly alter the area and result in a long-term loss of some of the visual resources in the project area. Other thinning activities on private lands, state lands, and Forest Service lands would also be visible and would result in a greater contrast across the landscape as fewer large trees are present and more understory vegetation develops. Additional subdivisions are planned in the area and would also result in clearing of forested vegetation. Development of these areas to housing will create a contrast in the landscape. If reconstruction of the southern portion of Warm Springs Road occurs in the future, visual resources could be affected in the short term until revegetation occurs.

3.7 Air Quality

Under the Clean Air Act (1990 as amended), BLM-administered lands (including the project area) were given a Class 2 air quality classification, which allows for moderate deterioration associated with moderate, well-controlled industrial and population growth (USDI BLM 1987). The Sawtooth Wilderness, approximately 35 air miles east, and the Hells Canyon Wilderness, approximately 90 air miles northwest, are the closest Class 1 airsheds to the project area.

Minor periodic occurrences of pollutants may occur in the Garden Valley area during summer and fall wildfires, prescribed burning, and from smoke from home heating sources. Roads in the project area also contribute fugitive dust to the atmosphere. IDEQ monitors levels of particulate matter (PM) (specifically PM 2.5, particulate matter less than 2.5 microns in diameter) in Garden Valley and although the area is technically unclassified it is considered to be in attainment because no exceedances have been measured (IDEQ 2004). There are no significant industrial sources and vehicle traffic is not a factor. Local dust, prescribed fires, and wildfires are considered to be the main sources of particulate matter.

Fires are a potentially significant source of air pollutant emissions. The amount of emissions depends on the size and intensity of the fire, the fuel type and moisture content, and the available fuel loading. The most effective means of controlling air pollutant emissions from wildfire is to inhibit large, high intensity fires through vegetation treatments that break up heavy, continuous fuels. Depending on conditions, prescribed fire can effectively reduce heavy fuels and create vegetation mosaics. All prescribed fires would be continually monitored to assure that the burning conditions remain within a previously determined prescription of controlled fire and smoke behavior. When properly executed, these managed fires are expected to result in fewer air quality impacts in both the short-term and the long-term. Logging and hauling are also potential contributors to increased particulate matter and could result in a temporary decline in air quality for the homes and businesses in the area.

3.7.1 No Action Alternative

This alternative precludes the implementation of the fuels reduction and therefore no prescribed or post-harvest burning would occur. In the short term, the No Action Alternative would result in no change to air quality. Wildland fire suppression activities would continue as in the past. Continuing the practice of suppressing wildfires could provide some short-term benefit to air quality by eliminating any smoke production as quickly as possible. In the long-term, continued fire suppression would lead to further accumulation of fuels increasing the chance of more severe fires. As the fuel loading increases, the incidence and intensity of wildland fires, and the smoke they produce, would increase. The amount of smoke produced by uncontrolled wildland fires would greatly exceed that produced by prescribed fires. High intensity fires produce high air pollutant emission levels and would result in more intense and widespread air quality impacts. Therefore, this alternative would eventually increase air quality and visibility impacts from smoke and increase the potential of sensitive receptors being impacted. In the long-term there would be greater degradation of air quality. A large wildland fire could potentially impact air quality in the Sawtooth Wilderness Class 1 area.

Under this alternative, fugitive dust related to road use would not be produced beyond the amount produced by existing activities. However, large areas of bare ground created by a severe wildland fire could significantly increase fugitive dust.

3.7.2 Proposed Action Alternative

Soil disturbing activities associated with the Proposed Action, such as harvest activities, post-harvest seeding, prescribed burning and slash burning, road maintenance and improvement, and weed treatments, may affect air quality for a short duration through increased fugitive dust. This alternative also has the potential to affect air quality through increased fugitive dust produced by logging traffic, especially on unpaved roads. The effects of fugitive dust are directly related to the volume of timber to be removed and include reduced visibility on and adjacent to roads and increased levels of PM 2.5 and PM 10 (particulate matter less than 2.5 and 10 microns, respectively). It is estimated that over the span of the project, approximately 600 truck loads of logs would be removed from the project area. BMPs would be employed to address fugitive dust emissions (Attachment A). Practices that may be used to reduce fugitive road dust emissions within the project area include: the application of chemicals that increase the moisture retention of road surfaces, watering during high use periods or during road maintenance operations, and speed and timing restrictions in sensitive areas.

Project implementation would include the burning of slash piles and prescribed burning. This burning would take place at favorable times to ensure safe burning and minimization of adverse effects and would be conducted in accordance with applicable air quality regulations. Post-harvest burning would be conducted consistent with plans such as the Montana/Idaho Smoke Management Plan. Methods such as those in the Operating Guide of the Montana/Idaho State Airshed Group would be utilized to reduce impacts of post-harvest burning.

Smoke produced from the post-harvest burning of slash piles under the action alternatives can have a direct effect on air quality and may impact local communities including residents of Garden Valley and Crouch. There would be some short-term impacts to air quality resulting from smoke that may last from several hours to several days. In non-forested vegetation types, smoke would dissipate rapidly and should be gone shortly after the fire. In the forested areas, there would be some residual smoke for approximately one to five days after active burning. The impacts to air quality would vary by the amount of smoke produced, which varies by the amount, type, and timing of burning as well as weather conditions. The criteria used to select timing of post-harvest burning would include fuel moistures, risk of escape, general weather patterns, smoke dispersion, live fuel moistures, and other factors.

Impacts from smoke emissions would be minimized through daily monitoring of airshed conditions. Burning would not all occur in one day and days would be selected on which atmospheric conditions are such that emissions drift into the upper atmosphere and away from developed areas. The BLM would monitor weather and the burning and smoke dispersion conditions to assure air quality impacts remain within prescribed smoke management levels. A smoke monitoring system has been established that provides daily air quality predictions and determines the need for restrictions on prescribed burning. If the

monitoring unit forecasts ventilation problems, burning is either restricted by elevation or curtailed until good ventilation conditions return. The IDEQ uses the monitoring data to inform the public of high levels during burns, wildfires, and other activities. The data is available in real time on the IDEQ website (www.deq.state.id.us). No impacts to Class 1 airsheds are expected.

3.7.3 Shaded Fuelbreak Alternative

The amount of fugitive dust produced under this alternative would be less than the Proposed Action because of the smaller size of the area harvested. Fugitive dust produced from road maintenance activities would be the same as for the Proposed Action alternative. Slash pile burning and prescribed burning would still occur under this alternative but not to the same extent. Because fewer acres would be treated in comparison to the Proposed Action, fewer smoke emissions would result. No long-term effects to air quality are expected from this alternative.

3.7.4 Cumulative Effects

Present and foreseeable effects include impacts from State and private land timber harvest for commercial and fuel mitigation purposes, other prescribed burning, as well as wildland fires, residential wood combustion, traffic exhaust, fugitive road dust, road construction and reconstruction, subdivision development, or point sources of pollution (Table 4).

Road reconstruction, maintenance, and improvement on this soil and landtype is potentially a major source of fugitive dust that could impact air quality. Some of the adjoining state lands have undergone recent harvesting and prescribed burning, and the Castle Mountain Subdivision is preparing to implement a plan for removing, modifying, or breaking up fuel loads on 250 acres within the subdivision. Treatments will begin in 2004 and will be completed by 2006. Road construction associated with the private land development, as well as the timber clearing and construction could also result in localized increases of fugitive dust. If reconstruction of the southern portion of Warm Springs Road occurs in the future ground disturbance associated with the project could lead to a short-term increase in fugitive dust.

Not all of these projects would occur concurrently and therefore effects would be spread out over time. The greatest potential foreseeable effects would occur due to a large long-term wildfire if one were to occur before any of the dead and dying trees and high levels of hazardous fuels could be removed. No long-term adverse effects to air quality are expected from any of the action alternatives. In the long term, there would be an indirect reduction of total smoke emissions because of smaller less intense fires resulting from reduced fuel loading. This would result in less degradation of air quality.

The cumulative effects on air quality from prescribed burning smoke, produced by implementation of one of the action alternatives, would result in a temporary decrease in air quality. PM 2.5 and PM 10 particles from this source combined with other particles produced both by the implementation of other aspects of this project, specifically fugitive road dust, as well as other upwind local and regional sources, would lead to the decline. Other prescribed burning would also contribute particulates, as would private burning, and fugitive dust from roads.

The cumulative effects of wildland fire on air quality, for all alternatives, would include the smoke produced by wildland fires and all other pollution sources that contribute to the amount of particulate matter in the air. If multiple wildland fires were burning concurrently in the general area or multiple thinning or road construction projects were taking place at the same time, the cumulative effect of these sources could result in periods of poor air quality. Prescribed burning associated with the action alternatives would likely occur in either late spring or late fall and is not expected to occur concurrently with other potential large sources.

3.8 Fishes and Aquatic Habitat

Resident fishes include native suckers (*Catostomus* spp.), sculpins (*Cottus* spp.), mountain whitefish (*Prosomium williamsoni*), interior redband trout (*Oncorhynchus mykiss gibbsi O. m. gairdneri*), and Columbia River bull trout (*Salvelinus confluentus*). Bridgelip suckers (*Catostomus platyrhynchus*) have been collected at the confluence of the Middle Fork and South Fork of the Payette rivers and also observed in Anderson Creek (IDEQ 2003). The upper portions of Bull Creek and Upper Middle Fork Payette are the only segments currently being used for bull trout spawning and rearing (IDEQ 2003). Redband trout, the resident form of steelhead trout has a distribution in tributaries within the watershed. Middle Fork Payette River Subbasin fishes are species of concern because of their reduced numbers (IDEQ 2003). For example, redband trout are a BLM special status species and an Idaho Department of Fish and Game (IDFG) state species of special concern. Introduced, non-native resident fishes include coastal rainbow trout (*Oncorhynchus mykiss irideus*) and brook trout (*Salvelinus fontinalis*).

The beneficial uses of the Middle Fork Payette and South Fork Payette rivers include coldwater communities (i.e., game and non-game fishes, macroinvertebrates, and aquatic plants) and salmonid spawning (IDEQ 1998). Bull trout were listed as threatened by the USFWS June 10, 1998 (64 FR 31647), and the State of Idaho has identified the Middle Fork Payette River Subbasin as a key bull trout subbasin. The Upper Middle Payette Watershed is proposed bull trout critical habitat for Columbia River bull trout that are listed as threatened under the ESA. The Payette River Subbasin including the project area is part of the Southwest Idaho Bull Trout Recovery Unit (USFWS draft 2002). The bull trout recovery goals are “to ensure the long-term persistence of self-sustaining, complex, interacting groups of bull trout distributed throughout the species’ range, so that the species can be delisted” (USFWS draft 2002).

Historically, there were no barriers between the Payette, Boise, and Weiser subbasins in the Southwest Idaho Bull Trout Recovery Unit. Today, the bull trout in this recovery unit occupy suitable habitat upstream of the dams and the unsuitable habitat lower in the subbasins. Therefore, these subbasins were combined as a recovery unit since historically they probably functioned as a population unit. The reasons for population declines include habitat fragmentation and degradation (USFWS draft 2002).

The Middle Fork Payette River Core Area (USFWS draft 2002) is one subbasin in the Southwest Idaho Bull Trout Recovery Unit and includes the watersheds upstream of the confluence with the South Fork Payette. Spawning and rearing occurs primarily in the upper watersheds. Bull trout in this area are primarily resident fish and relatively low numbers of

migratory fish. Adult bull trout have been found in the lower mainstem indicating migratory individuals may exist. Connectivity of the Middle Fork Payette fish with bull trout in the South Fork Payette is unknown.

Historically the low gradient reaches of the Payette River system provided high quality fisheries habitat. Currently, the aquatic habitat in the Payette River system, including the Middle Fork and South Fork Payette is degraded due to high sediment loads (IDEQ 1998), which cause aggrading, shallow width to depth ratios, low habitat complexity, and low productivity.

The six perennial streams in the project area are headwater reaches with steep gradients and natural upstream migration barriers. The streams in the project area have not been surveyed so fish presence or absence has not been determined. There is fish habitat and a bull trout population approximately one to two miles downstream of the project area in the Middle Fork Payette.

Four of the project area perennial streams flow directly into the Middle Fork Payette River (Figure 8). The distances from the project boundary to the confluence of the Middle Fork Payette range from approximately 0.9 to 1.7 RM (Table 5). The distances from the tributaries' confluences with the Middle Fork to the South Fork Payette range from approximately 0.8 to 5 RM. These segments of the Middle Fork and South Fork Payette are both IDEQ 303(d) listed for sediment (IDEQ 1998).

The other two perennial streams in the Crouch Watershed action area are the headwaters of Warm Springs Creek and a tributary that flows into Warm Springs Creek approximately two RM from the Middle Fork Payette (Figure 7). Fish surveys have not been done in Warm Springs Creek.

The distances from the project boundary to the confluence of Warm Springs Creek range from approximately 0.3 to 1.6 RM. The distance to the confluence of Warm Springs Creek with the Middle Fork is approximately 1.8 RM. The distance from the confluence of Warm Springs Creek and the Middle Fork to the South Fork Payette is approximately 5.6 RM (Figure 7).

3.8.1 No Action

There would be no direct fisheries or aquatic impacts as a result of the No Action alternative. Indirect impacts to proposed bull trout critical habitat in the Middle Fork and South Fork Payette, water quality, and aquatic habitat could occur in the event of large scale, high intensity wildland fire due to sedimentation if the No Action alternative is implemented (Table 3). A stand-replacing fire in the RHCAs would increase short-term large woody debris recruitment but would reduce long-term large woody debris recruitment potential and stream canopy cover.

If no road maintenance occurs on the northern portion of the Warm Springs Road, the road would continue to deteriorate. Over time the road would become increasingly difficult to travel and "alternate" routes could be created as motorists attempt to drive around impassable areas. The "main" road would be increasingly susceptible to wind and water erosion and the

newly created alternate routes would also be subject to erosion. In the long term, lack or maintenance and indiscriminate vehicle use would increase surface disturbance, and uncontrolled runoff water could affect downstream fisheries.

3.8.2 Proposed Action

Aquatic and riparian habitat elements such as canopy cover, water temperature, bank stability, and large woody debris recruitment potential would not be affected by the Proposed Action because there would be no tree removal, prescribed burning, or associated activities in RHCAs. Surface disturbance from maintenance of the northern portion of Warm Springs Road would result from blading, shaping, and other related activities. Some vegetation would temporarily be removed and the ground surface would be exposed to erosion. In the short term these activities could contribute sediment to the stream system but revegetation would typically occur within a few months. In the long term the action would provide for resource protection by diverting water runoff from travel surfaces.

Whether or not stream reaches in the project area are fish-bearing has not been determined. There is known fish habitat and a bull trout population approximately one to two miles downstream of the project area in the Middle Fork Payette and there could be indirect impacts to water quality, aquatic habitat, and proposed bull trout critical habitat in these reaches as a result the Proposed Action. The project specific RHCAs, design criteria and BMPs (Attachment A) were developed to minimize the potential of erosion and sediment delivery in the short-term. Extensive research has been conducted on the effectiveness of BMPs applied to timber harvesting and associated road activities. Proper application of these design features would be expected to decrease the likelihood of sediment delivery to streams in sufficient quantities to impact water quality conditions (see Section 3.3 *Soils* and 3.4 *Water Quality*).

There would be an increased probability of sediment delivery in the short-term due to project implementation (Table 3). The probability of increased erosion and delivery increases with elevation and the possibility of larger return interval storms. In the long-term, proposed bull trout critical habitat and other fisheries habitat would be protected by implementation of the Proposed Action because the risk of large scale, high intensity fire and subsequent erosion would be reduced in this section of the watershed.

3.8.3 Shaded Fuelbreak Alternative

Alternative 3 would have the same direct and indirect impacts on fisheries, riparian and aquatic habitat, and proposed bull trout critical habitat as the Proposed Action. Direct and indirect effects from road maintenance and improvement on the northern portion of Warm Springs Road would be similar to the Proposed Action. However, the potential for project-related sediment delivery would be less because fewer total acres (507 versus 1,348) and fewer tractor or cable yarded acres (78 versus 271) would be treated than the Proposed Action, no skid trails would be constructed, and there would be less than half of the high road use logging traffic because there would be fewer loads removed from the project area (see *Soils*, Section 3.3).

3.8.4 Cumulative Effects

Cumulative effects to fisheries habitat within the watershed exist from past, current, and planned road construction and maintenance, timber harvest, agriculture, and subdivision developments on private, state and federal lands. Cumulative effects to fisheries habitat (especially bull trout and redband trout) from the Proposed Action are primarily related to road reconstruction and maintenance. Riparian buffer zones would be implemented so that mechanical fuels treatments would not occur in close proximity to streams, therefore, the potential for sediment derived from ground disturbance in uplands has a low risk of being transported to and entering into waterways. Field reconnaissance has found that 13 road segments and three slope failure areas are currently adding sediment to streams within the project area. The WEPP model indicates that the sediment load derived from the road surface is low and the major sediment sources are due to slope failures. Road maintenance work would include blading the road to create a smooth running surface and would also include clearing ditchlines and re-installing cross drain structures. WEPP modeling has shown that these activities would decrease the long-term road bed sediment load.

Non-BLM roads have not been modeled for sediment because BLM has no control over use levels. The non-BLM roads are all native surface (except for the lower mile of the Warm Springs Road), many are in close proximity to stream channels and all receive high vehicle use from residents, recreationists, and logging traffic that access private, state and other federal lands (mainly Forest Service). The proposed action would include approximately 100 loads during the first two years and approximately 500 trips during the subsequent two years. BLM would maintain these non-BLM roads as required by the easements.

It is unlikely that cumulative impacts due to implementation of an action alternative would significantly impact downstream fish habitat due to the relatively low potential for sediment delivery and the transport distance. If the remainder of the Warm Springs Road (southern portion) is reconstructed in the future as part of a separate project, it would have the potential for delivering sediment to the Middle Fork Payette River system, if a large runoff-producing event occurs immediately after construction. The southern portion of the road has experienced severe degradation and erosion, and most of the drainage structures are no longer functional or apparent. As a result it is currently a source of sediment to the stream system although it does not appear to be delivering large amounts of sediment downstream. The reconstruction would result in direct effects to soils and an increase in soil erosion. Reconstruction of the road to BLM Road Standards including backslopes, fillslopes, ditches (V-shaped or flat bottom), foreslopes, drainage control structures such as waterbars, leadoff ditches, and culverts would lead to an increase in sediment yield in the short term but it would gradually diminish as ditch lines, cutslopes and fillslopes become revegetated. Implementation of BMPs during and after construction is anticipated to minimize potential adverse effects.

Implementation of the No Action alternative would increase the risk of large scale, high intensity wildland fire and subsequent erosion which would add to the existing cumulative impacts in the Middle Fork and South Fork Payette river segments that are 303(d) listed for sediment (IDEQ 1998).

3.9 Wildlife

3.9.1 General Wildlife Species

The Garden Mountain project area provides habitat for many small mammals, songbirds, forest raptors (accipiters and owls), and big game ungulates (mule deer and elk). The project is located within an area designated as critical elk winter range, which is located in the southern extent of the project area. There is also crucial mule deer winter range located adjacent to the western extent of the project area (USDI BLM 1987). Within these areas activities would be scheduled to avoid or minimize disturbance to wildlife between December 1 and April 30 (USDI BLM 1987).

3.9.1.1 No Action Alternative

The No Action alternative is not anticipated to have a direct impact on wildlife within the project area. Indirect impacts to wildlife would occur as the canopy closes and reduces the amount of light that reaches the understory vegetation. This would reduce forage for big game. Without treatment of the fuel loads, the stands within the project area are at a higher risk of a stand replacing fire that would reduce the amount of suitable wildlife habitat in the project area.

3.9.1.2 Proposed Action Alternative

The increased human activity and noise within the treatment area and during the road maintenance would cause some wildlife species to avoid the area during the times that thinning occurs. Burning activities would also remove foraging vegetation from the areas burned. The removal of trees associated with the establishment of the fuelbreaks and thinning of stands to reduce fuel would open the canopy cover allowing more light to reach the forest floor and burning would promote the growth of understory grasses and provide an increase in forage habitat for deer and elk. The removal of brush and downed woody debris would reduce habitat for small mammals making them more susceptible to predation. Project activities would avoid trees containing raptor nests. However, disturbance at critical times could lead to abandonment of the nest by some raptor species and one year loss of reproductivity.

3.9.1.3 Shaded Fuelbreak Alternative

The Shaded Fuelbreak alternative would have less impact on general wildlife that utilize forest habitat because: 1) fewer forested acres would be treated, 2) the large diameter trees would not be harvested, 3) fewer total acres would be treated, and 4) the disturbance time frame would be shorter than the Proposed Action. Effects from maintenance of the northern portion of Warm Springs Road would be similar to the Proposed Action. Cover habitat, particularly downed woody debris, would be removed making small mammals more susceptible to predation in those areas. Tree thinning, brush removal, and understory burning would promote the growth of more palatable forage for big game and small mammals within the treated areas.

This alternative would treat the areas with the highest risk of wildland fire, and reduce the risk of stand-replacing fire so that forest habitat would be protected. However, forest health would not be improved and early seral habitat would not be promoted on the larger scale.

3.9.1.4 Cumulative Effects

The proposed Warm Springs Road improvement has a potential for delivering sediment to the Middle Fork Payette River system, however, it is anticipated that implementation of BMPs would minimize any potential adverse effects. Road activities may cause terrestrial wildlife to avoid the area due to the increased human activity and noise occurring during reconstruction. The additional fuels treatment that is scheduled on the adjacent Castle Mountain Subdivision may also cause wildlife to disperse from the general area and would reduce cover habitat. If the land sold by Boise Cascade is developed as a subdivision there would be an additional loss of forest habitat.

3.9.2 Special Status Terrestrial Species

The ESA requires: 1) all Federal departments and agencies to utilize their authorities to conserve species, subspecies or populations of plants and animals officially listed by the Secretary of the Interior or Secretary of Commerce as threatened or endangered; 2) Federal agencies to ensure that the continued existence of listed species is not jeopardized and that designated "Critical Habitat" of listed species is not destroyed or adversely modified; 3) consultation with the USFWS or NOAA Fisheries if it is determined that any BLM action may adversely affect a federal candidate or threatened or endangered species or its critical habitat; and 4) conference with USFWS or NOAA Fisheries if it is determined that an action may affect a candidate, proposed, listed threatened, or listed endangered species.

In accordance with the ESA requirements any action implemented by the BLM would be designed so as not to jeopardize the continued existence of federally listed threatened or endangered species or result in the destruction or modification of critical habitat. Federally listed species and BLM sensitive species will all be given the same consideration.

BLM Instruction Memorandum No. ID-2003-057 includes two fish, ten mammal, 23 bird, three amphibian, four reptile, and two invertebrate special status species that occur in the FRFO (BLM 2003; Attachment D). Of these, nine species are federally listed as threatened, endangered, or candidate under the ESA. One of these is a fish species that is discussed in Chapter 3: *Fisheries and Aquatic Habitat*. The other 30 species are BLM sensitive species.

The ESA listed and candidate terrestrial species with potential to occur in the FRFO are northern Idaho ground squirrel, southern Idaho ground squirrel, gray wolf, Canada lynx, bald eagle, yellow-billed cuckoo, Bliss Rapids snail, and Idaho springsnail (Table 6). Of these, only the gray wolf and Canada lynx have potential habitat in the Garden Valley project area. The other species have very specific habitat requirements that are not found in or near the project area, and therefore none of the alternatives would impact these species (Table 6). The other two species are considered below.

Suitable habitat for gray wolf exists within the project area although there have been no documented occurrences within a five-mile radius of the project area (IDFG 2003). As part of reintroduction efforts in 1995 and 1996, all gray wolves in Central Idaho were listed as an "experimental/non-essential population" under provision 10 J of the ESA (59 FR 60252-60266). There are two gray wolf packs that occur in the vicinity: the Scott Mountain Pack and the Orphan Pack. The Orphan Pack occurs east of the Crouch area, and there is the

potential they may travel through the project area. The Scott Mountain Pack territory is located approximately 20 miles to the east of the project area around Scott Mountain. There are no known den or rendezvous sites within the project area (J. Holyan pers. comm.).

Table 6. FRFO Terrestrial ESA Listed, Proposed, and Candidate Species

ESA Listed, Proposed & Candidate Animals		ESA Status
Scientific Name	**Common Name**	
Canis lupus	Gray Wolf	X/NE
Lynx canadensis	Canada Lynx	T
Spermophilus brunneus brunneus	Northern Idaho Ground Squirrel	T
Spermophilus brunneus endemicus	Southern Idaho Ground Squirrel	C
Haliaeetus leucocephalus	Bald Eagle	T
Coccyzus americanus	Yellow-Billed Cuckoo	C
Taylorconcha serpenticola	Bliss Rapids Snail	T
Pyrgulopsis idahoensis	Idaho Springsnail	E

X/NE – Experimental/Non-Essential; T – Threatened; E – Endangered; C – Candidate

The *Lynx Conservation Assessment and Strategy* (LCAS) (Ruediger et al. 2000) was developed to provide a consistent and effective approach to conserve Canada lynx on federal lands in the contiguous United States. Preferred lynx habitat includes areas above 4,000 feet in elevation in Engelmann spruce/subalpine fir forests (Koehler and Brittell 1990). Important habitat features include den sites and foraging habitat. Den sites are typically located in hollow logs or rootwads within mesic, mature or old growth coniferous forest (Koehler and Brittell 1990). Lynx foraging habitat corresponds with snowshoe hare habitat, because the hare is the lynx's favored prey. Snowshoe hare are most abundant in seedling/sapling lodgepole pine, subalpine fir, and Engelmann spruce forest stands.

There have been no documented occurrences of Canada lynx within a five-mile radius of the project area (IDFG 2003). The project is not located within a designated Lynx Assessment Unit. Therefore, under the definitions established within the LCAS, there is no suitable lynx habitat within the project area (Ruediger et al. 2000).

Attachment D lists the BLM sensitive species that occur within the FRFO management area and describes their suitable habitat. There is suitable habitat in the project area for five mammals, nine birds, one amphibian, and one reptile listed as BLM sensitive species (Table 7).

Table 7. BLM Sensitive Terrestrial Wildlife With Potential Habitat in the Project Area

Common Name	Scientific Name	Habitat
Mammals		
Fisher	*Martes pennanti*	Dense canopied, late seral timber types at higher elevations. Dead and down timber in grand fir, Douglas fir, or other conifer types.
Wolverine	*Gulo gulo*	Forested areas with minimal human intrusions at higher elevations.
Townsend's big-eared bat	*Plecotus townsendii*	A wide variety of habitats, which include canyon lands, arid juniper/pine forests, to high-elevation mixed conifer forests. Uses caves, mine tunnels, and buildings for roosts, obligate cave/mine user. Forages near foliage of trees and shrubs in riparian areas.
Fringed myotis	*Myotis thysanodes*	Found in desert, grassland, and woodland habitats, primarily at middle elevations of 3,940 to 7,050 feet.
Spotted bat	*Euderma maculatum*	Found, up to 8,040 feet, in various habitats from desert to montane coniferous forests. Individuals normally roost in deep rock crevices of canyon and cliff walls.
Birds		
Northern goshawk	*Accipiter gentilis*	Preferred habitats include forests, forest edge, and open woodlands. Most common in ponderosa pine, lodgepole pine, and Douglas-fir forests. Uses riparian habitats in the winter. Nests in tall conifers.
Flammulated owl	*Otus flammeolus*	Montane forests, open stands of fire-climax ponderosa pine or Douglas-fir forests. Nests in abandoned woodpecker holes.
White-headed woodpecker	*Picoides albolarvatus*	Montane coniferous forests, primarily dry open forests with ponderosa pine and Douglas fir. Nests in a hole in tree or stump, often close to ground.
Lewis' woodpecker	*Melanerpes lewis*	Found in open forests and woodlands (often logged or burned), coniferous forests (primarily ponderosa pine), and riparian woodlands and orchards.
Black-backed woodpecker	*Picoides arcticus*	Coniferous forests, especially windfall and burned. Boreal forests, fir, lodgepole pine, ponderosa pine at lower and middle elevations of mountains. Nests in holes in stump or dead tree.
Williamson's sapsucker	*Sphyrapicus throideus*	Found in montane coniferous forests, especially fir and lodgepole pine. Cavity-dependent species associated with mature forests and requires snags for nesting, roosting, and foraging. During migration and in winter, also found in lowland forests. Nests in cavity in standing snag/hollow tree; sometimes returns to same tree, but not same cavity, year after year.
Hammond's flycatcher	*Empidonax hammondii*	Found in old-growth Douglas-fir/ponderosa pine forests. During migration and in winter, they are found in desert habitats.
Olive-sided flycatcher	*Contopus borealis*	Found in forests and woodlands (especially in burned-over areas with standing dead trees) such as taiga, subalpine coniferous forests, mixed forests, boreal bogs, muskeg, and borders of lakes and streams.
Calliope hummingbird	*Stellula calliope*	Found in mountains (along meadows, canyons and streams), in open montane forests, and in willow and alder thickets. During migration and in winter, found in chaparral, lowland brushy areas, and deserts.
Amphibians and Reptiles		
Western toad	*Bufo boreas boreas*	Found from low to high elevation areas, in wide variety of habitats such as desert springs and streams, meadows and woodlands and in and around ponds, lakes, reservoirs, and slow moving rivers and streams.
Common garter snake	*Thamnophis sirtalis*	Inhabits virtually any type of wet or moist habitat.

The treatment areas are dominated by mature mixed coniferous forest with full crowns and a dense brush understory. There has been minimal past disturbance caused by land use and little to no habitat fragmentation has occurred in the proposed thinning areas. Fire suppression and the lack of timber harvest has increased the amount of mature and over-mature/old growth forest that provides habitat for fisher, wolverine, Williamson's sapsucker,

and Hammond's flycatcher that require large interior blocks of older forest. Some of the BLM sensitive birds are migratory species. It is important to maintain habitat for these species so that migratory patterns are not disrupted. The black-backed woodpecker uses early seral habitats seasonally or throughout the year. The bats primarily use the riparian areas or moist forest openings for foraging. Reptiles and amphibians use moist riparian areas and forested areas directly adjacent to riparian areas, bogs, and marshes. There is a high likelihood that flammulated owls and white-headed woodpeckers occur in this area due to the availability of suitable habitat. Flammulated owls would likely occur within the treatment areas as well as in the surrounding area. White-headed woodpeckers would probably not occur within the treatment areas themselves, but in the south facing pine stands (J. Holderman pers. comm.).

3.9.2.1 No Action Alternative

If the thinning activities do not occur within the project area the general health of the forest would continue to decline. The decline in forest health would increase the risk of stand-replacing fires that would remove the vegetation and habitat from the landscape, which would remove habitat for all of the BLM sensitive species that exist or have potential habitat within the project area. The implementation of the No Action alternative would also increase the closure of the forest canopy, which would have a negative effect on BLM sensitive species that occur in open coniferous forests (Table 7). Suitable habitat for these species would be lost within the project area.

3.9.2.2 Proposed Action Alternative

The area is not considered as Canada lynx habitat and no lynx have been documented in the area; therefore, the Proposed Action is not anticipated to have an effect on this species or its habitat. Although no wolves are known to occur in the project area, they could travel through the area and effects from harassment by operators on the scene could occur. If the project improves the prey base, it could indirectly increase the likelihood of wolves in the area (J. Holderman pers. comm.).

Thinning trees and prescribed burning have the potential for localized impact to BLM sensitive species. The design criteria and BMPs for cull logs (down woody debris), standing snags, and slash retention are meant to minimize terrestrial wildlife impacts. Slash and debris left on site that would provide suitable habitat for small mammals. These areas could be used as foraging and cover habitat. However, in the areas where prescribed fires would remove the woody debris there would be a reduction in the amount of habitat available for small mammals. The loss of habitat may indirectly affect raptors, in that these species are the primary prey of many raptors, including owls, and larger, carnivorous animals.

The proposed thinning activities would reduce the canopy cover and could increase foraging habitat for forest raptors and indirectly benefit the olive-sided flycatcher. Increasing forest health and reducing the risks of stand replacing fire would maintain suitable habitat for sensitive species including migratory birds in the project area.

Species that prefer dense mature coniferous forests (i.e., fisher, wolverine, Williamson's sapsucker, Hammond's flycatcher) would be impacted by the reduction in canopy cover. However, there are no known occurrences of these species in the project area.

Increased noise associated with the thinning and harvest activities could cause wildlife to avoid areas where tree cutting and brush removal are occurring. The burning activities would also cause wildlife to avoid treatment areas while treatment activities are occurring. Activities associated with the road maintenance of the northern portion of Warm Springs Road would have similar effects as thinning, harvest, and burning activities. Suitable habitat for these species would remain in areas adjacent to the treatment units. Nesting and denning activities could be affected for some species if spring burning occurs.

RHCAs would be excluded from project activities, which would minimize or eliminate any impacts to the western toad and common garter snake. RHCA designation would also protect bat foraging areas.

3.9.2.3 Shaded Fuelbreak Alternative

The Shaded Fuelbreak alternative would have less impact on sensitive wildlife that utilize forest habitat because: 1) fewer forested acres would be treated, 2) the large diameter trees would not be harvested, 3) fewer total acres would be treated, and 4) the disturbance time frame would be shorter than the Proposed Action. Direct and indirect effects from road maintenance and improvement on the northern portion of Warm Springs Road would be similar to the Proposed Action.

This alternative would treat the areas with the highest risk of wildland fire, and reduce the risk of stand-replacing fire so that forest habitat would be protected. However, forest health would not be improved and early seral habitat would not be promoted on the larger scale.

3.9.2.4 Cumulative Effects

Reconstruction of the southern portion of Warm Springs Road may cause terrestrial special status species to avoid the area due to the increased human activity and the noise during reconstruction. The additional fuels treatment that is scheduled on the adjacent Castle Mountain Subdivision could also cause wildlife to avoid the general area and would reduce cover habitat. Increased development can also lead to a decrease in available habitat in the area.

3.10 Vegetation

3.10.1 Forestry and Fuels

The dominant timber species found on Garden Mountain are subalpine fir, Douglas-fir, grand fir and ponderosa pine. Three forested zones occur within the project area. Zone 1 (6,000 to 7,000 feet) is dominated by subalpine fir (55 percent). The remainder is Douglas-fir (40 percent) and Engelmann spruce/quaking aspen (5 percent). This is a mid-aged, mixed species stand with multiple stories and 90 percent canopy closure. The majority of the timber stands are dense (approximately 300 trees per acre [TPA]). Non-forested areas are dominated by mountain sagebrush habitat or ceanothus/chokecherry/willow/Rocky Mountain maple shrubland. Of the three zones, this zone has the most natural regeneration within the forested areas, primarily comprised of subalpine fir seedlings. There is a moderate infestation of western spruce budworm in this zone.

Zone 1 is also characterized by a continuous fuel load of five to 20 inch DBH downed woody debris with an overall medium fire potential within forested portions. Ceanothus is present in all zones, which is a concern because the foliage contains volatile oils that may contribute to fire hazard and carry a fire once it is started. The potential rate of spread through ceanothus can be expected to increase as the growing season progresses from June 20 to September 10 (USDA Forest Service 2004b).

Zone 2 (4,600 to 6,000 feet) is dominated by a mix of Douglas-fir (40 percent) and grand fir (40 percent), with small percentages of subalpine fir (10 percent) and ponderosa pine (10 percent) present at higher and lower elevations, respectively. The Douglas-fir/grand fir stands tend to be dense and have a canopy closure greater than 85 percent, and a high soil moisture holding capacity. These stands also have a high amount of shrubs in the understory.

On northern aspects there is a continuous fuelbed comprised of medium to large diameter downed woody debris that is “jackstrawed” with high fuel loads and a medium to high fire potential rating. Eastern to southern aspects have open, park-like stands of mature ponderosa pine on slopes with eastern to southern aspects. These stands have lower density, little to no understory, and a discontinuous fuelbed with low fuel loads. The possibility of a lightning fire spreading through the duff is the largest fire hazard in these stands.

Western pine beetle and Douglas-fir beetle infestations are causing low to moderate mortality rates in Zone 2. There is also dwarf mistletoe present throughout this zone. Dwarf mistletoe is a parasite that induces a localized swelling of bark and wood and nearby buds and branches are often stimulated to grow excessively, resulting in abnormal clumps of branches called “brooms” or “witches’ brooms”. These brooms are highly flammable and can carry understory fires into the forest crown. However, brooming of branches within the project area tends to occur high enough off the ground that the potential for brooms to act as ladder fuels is reduced. Except for areas that have been opened by disturbance, this zone has virtually no natural regeneration. Litter depth is much deeper in zone 2, averaging two to three inches with a three to five inch deep humus layer.

Zone 3 (below 4,600 feet) is dominated by ponderosa pine (70 percent) and Douglas-fir (30 percent). The understory canopy is predominately Douglas-fir. Canopy closure ranges from 30 to 80 percent, with denser canopy occurring in Douglas-fir stands and more open canopies occurring in ponderosa pine stands. Shrubs are present in strips and in openings created by disturbances. Natural regeneration is low and appears to be generally limited to the openings. Portions of MU 2 were affected by a timber trespass that removed most of the high valued ponderosa pine. Consequently, there are portions of the area that have continuous standing and downed dead woody debris (80 plus tons/acre). The rest of the forested areas are predominantly mature trees with some reaching 150 feet tall and 200 plus years old.

Overall, lands within the project boundary fall into Fire Regime I and Condition Classes 2 and 3 (Dynamac 2003). Fire Regime I areas historically experienced fire with a zero to 35-year frequency. Low surface fires are the most common type of fires in this regime but may include fires of mixed severity, with generally less than 75 percent of the dominant overstory

vegetation replaced. Condition Class 2 fire regimes have been moderately altered from their historical range. A moderate risk of losing key ecosystem components has been identified on these lands. Condition Class 3 fire regimes have been extensively altered from their historic fire-return interval. The risk of losing key ecosystem components from fire is high. Fire frequencies have departed from historical ranges by multiple return intervals and vegetation composition, structure, and diversity have been extensively altered.

3.10.1.1 No Action Alternative

The proposed treatment areas are not in a healthy condition due to a history of fire suppression and existing high stand densities. This alternative would not provide management actions that would facilitate achieving a healthy ecosystem because long-term ecosystem health is linked to disturbance, including fire. Ecosystems have evolved in response to disturbance-recovery regimes. Recurrence of disturbance and recovery within ecosystems is an important mechanism for energy flow, nutrient cycling, and for maintaining age, species, genetic, and structural diversity (NIFC 2004). Continued fire suppression efforts under this alternative would further hamper this important process.

No fuels management would occur to reduce insect and disease infestations, tree density, or ladder fuels. With no vegetation management the successional pathway of species would continue along its current trend to non-fire resistant late successional or climax species. If wildfires are successfully suppressed as they occur, shade intolerant species presently found on the sites would eventually be replaced with shade tolerant species. Stand density would continue to increase, creating unnaturally high fuel loadings, and increasing the risk of broad scale, stand-replacing fire and WUI risk. Without prescribed burning or associated management activities that disturb the landscape, the extent and intensity of insects and pathogens would increase, resulting in a community that is less resilient to fire and other disturbances.

Historically, this area developed under a dominant regime of frequent lower intensity fires. If fire suppression efforts fail and high intensity fires occur, the shade-intolerant species may not have the seed source to regenerate naturally following a widespread fire. The post-fire area would progress very slowly from the grass/shrub stage to a forested landscape.

The existing conditions of the project area increase the potential for insect and disease infestations, especially western spruce budworm, mountain pine beetle, Douglas-fir beetle and dwarf mistletoe. The No Action alternative would not reduce this risk, and could actually increase the risk as stands continue to suffer from environmental stresses, such as drought and competition, that reduce tree vigor and ability to withstand insect and pathogen attack. As stand densities increase and more shade tolerant species continue to occupy the understory, the potential impacts to the forest from root diseases also increases.

3.10.1.2 Proposed Action Alternative

The direct and indirect effects of the Proposed Action alternative would result mainly from the harvest and fuels treatment activities described in Chapter 2 and design criteria described in Attachment A. These activities are primarily density reduction, removal of understory vegetation, and the re-introduction of low-intensity fire. Road maintenance on the northern

portion of Warm Springs Road could affect a small amount of vegetation in and adjacent to the existing roadway in areas where widening of the road bed is needed to meet BLM Road Standards.

The Proposed Action (Figure 3) would treat 1,348 acres and provide for diverse ecosystems by reducing competition stress from uncharacteristically high stand densities. Removal of much of the understory vegetation, reducing overall stand densities, and manipulating species composition toward mid-seral species that are more adapted to a frequent fire interval ecosystem would promote both health and sustainability of the landscape. It would also reduce the potential for large scale losses through fires uncharacteristic of the historic regime.

The Proposed Action would move treatment areas from Condition Classes 2 and 3 to Condition Class 1, which is within the historical range. Vegetation composition and structure would remain intact. Therefore, the risk of losing key ecosystem components from the occurrence of fire would remain relatively low.

MUs 1 and 2 - Selective harvest treatments in MUs 1 and 2 would target the following trees for removal: insect and disease infested trees; late seral species (grand fir and subalpine fir); and trees in the 12 to 28 inch diameter class. Treatments would encourage regeneration by opening the canopy and allowing light to reach the forest floor. For ponderosa pine dominated stands canopies would retain 50 to 70 percent canopy and grand fir/subalpine fir dominated stands would retain 60 to 80 percent canopy. The difference in canopy between the two species is because, in general, pines require greater openings in the canopy to encourage regeneration of shade-intolerant species. Infested trees within each treatment unit would be removed, reducing the threat to adjacent trees. Reducing the competition stress would increase the ability of the residual trees to withstand infestations.

Subalpine fir and grand fir have thin bark with resin blisters making them sensitive to fire and susceptible to suffer high mortality even from low intensity fires. Once a crown fire begins, it spreads easily because subalpine fir and grand fir have a tendency to grow in dense stands and have highly flammable foliage. The fuel structure in subalpine fir/grand fir dominated stands generally promotes highly destructive stand-destroying fires. Fuelbeds tend to be irregular, with over twice as much fuel accumulating under the canopies as between them. The needles are relatively small and fine and form a compact fuelbed in which fire spreads slowly. These concentrated, slow burning fuels frequently produce flames high enough to reach low, dead branches (FEIS 2004). Targeting subalpine fir and grand fir for removal would reduce the accumulation of fuels and ladder fuels thereby reducing the potential for crown fires and promote the regeneration of ponderosa pine and Douglas-fir that are fire tolerant species at maturity.

MUs 3 and 4 - These MUS represent the 507 acres proposed for a shaded fuelbreak that would buffer the Warm Springs Road. The area is the highest-risk zone in the project area due to the high volume of recreational use and proximity to private and state land. The shaded fuelbreak would be a defensible zone strategically located to fragment the continuity of fuels and reduce the potential for high intensity crown fires that could spread to private land and threaten WUI areas. Treatments would include tree felling, brush cutting, pruning,

tractor or hand piling of slash, brush, and debris, and covering and burning slash piles. The result of treatments would be an open, park-like stand and an environment that would allow the ground fuels to burn in a controllable manner. This zone could slow, and even stop, the spread of a wildland fire. There would be less fuel to carry the flames, which would provide firefighters with safe zones to take a stand against a wildfire, or retreat from flames if the need arises.

Seven of the 507 acres are located in a draw that slopes onto private lands (MU 4) (Figure 3). This would increase the shaded fuelbreak protection width to 2,592 feet in this location because the draw contains heavy brush, 30 to 60 foot tall ponderosa pine saplings that are infested with bark beetle, and high volumes of downed hazardous fuels, and is near the WUI of the Mountain Shadows Subdivision.

All MUs - Prescribed burning is proposed for all MUs. Prescribed fires would be used to reduce forest fuels and associated fire risk and also to help restore forest structure to historical conditions. Prescribed burning reduces the accumulated needles, ground fuels, branches, and slash piles on the forest floor. Fire would also induce “limbing up” or burning off the lower branches of pines, which would eventually die and fall off, effectively raising the crown height of the remaining living trees. This would make the trees more fire resistant to subsequent fires. In the event of a wildland fire, the intensity of the fire would be decreased, reducing damage and costs. Wildfire costs include resources to fight fires, as well as possible property damage in WUI areas. Lower intensity wildland fires would be much easier to contain and control.

3.10.1.3 Shaded Fuelbreak Alternative

The Shaded Fuelbreak alternative is the treatment described in the Proposed Action for MUs 3 and 4. Effects in these units would be the same as those described above for the Proposed Action. Effects from road maintenance on the northern portion of Warm Springs Road would also be the same as for the Proposed Action.

Although this treatment alone does not address nor improve forest health, it is the most critical and cost effective treatment for the reduction of fuels and the potential of a high intensity wildfire. The volume of human traffic on the Warm Springs Road makes this unit highly susceptible to human caused fires from cigarettes, chainsaws, engines, and other activities. Brush control, understory thinning, pruning, and prescribed understory burning would create a defensible zone with little fuel to carry a fire into adjacent stands, state and private lands, and WUI areas.

3.10.1.4 Cumulative Effects

Some of the adjoining state and private lands have undergone recent fuels reduction, harvesting and prescribed burning (Table 4). These projects in combination with the Proposed Action would lead to a greater reduction of fuels, and the hazards of high intensity wildfires, thereby protecting resources on Garden Mountain and in adjoining WUI areas. If reconstruction of the southern portion of Warm Springs Road occurs, it would affect vegetation in and adjacent to the existing roadway.

3.10.2 Threatened, Endangered, and Sensitive Plants

There are 26 BLM special status plants identified as potentially occurring in the FRFO. A list of these species is located in Attachment E. Slickspot peppergrass, which is proposed for listing as endangered (67 FR 46441), has been identified in the FRFO management area. Habitat for the slickspot peppergrass, as well as for the majority of the sensitive species on the FRFO list, is described as arid desert habitats dominated by sagebrush or other desert shrubs.

Suitable habitat exists in the project area for prostrate ceanothus, stalk-leaved monkey-flower, Douglas' clover, and plumed clover; however, there have been no documented occurrences of these species in the area. Prostrate ceanothus occurs in the understory of ponderosa pine/shrub communities. Douglas' clover and plumed clover occur in open ponderosa pine to Douglas-fir forests, in moist meadows and along stream courses. Stalk-leaved monkey-flower occurs in wet meadows in montane and alpine areas. A special status plant survey of the treatment areas was conducted and no special status plant species were observed (North Wind 2004c).

3.10.2.1 No Action

If the thinning activities do not occur within the project area the general health of the forest would continue to decline. The decline in forest health would increase the risk of high intensity fires that would remove the vegetation and habitat from the landscape. This would remove any BLM sensitive plants that may occur in the project area. By not thinning and reducing fuel loads within the project area there would be a continued closing of the canopy that would reduce the amount of light that reaches the forest floor making the project area unsuitable for any of the BLM sensitive plants that have the potential of occurring within the project area.

3.10.2.2 Proposed Action

During the initial fuels field survey performed in 2003, there were no individuals or communities of BLM sensitive plants observed in the areas proposed for treatment. An additional special status species survey was performed at the appropriate time for the identification of the species of concern. No areas were identified as containing BLM sensitive species (North Wind 2004c). If any special status plant species were identified during project implementation, those areas would be excluded from the treatment areas. Therefore the proposed activities are not anticipated to have an impact on any special status plant species.

3.10.2.3 Shaded Fuelbreak Alternative

Implementation of the Shaded Fuelbreak alternative would decrease the amount of acres that would be disturbed compared to the Proposed Action. By treating only the shaded fuelbreak areas there would be very little reduction in fuels and only a minimal increase in forest health, which would potentially increase the risk of fires. A survey was performed to identify the presence of any special status plant species. No species were found (North Wind 2004c). During project implementation, if any areas are identified as containing BLM sensitive plant species they would be excluded from the treatment areas. Therefore, this alternative would not have any impact on these species.

3.10.2.4 Cumulative Effects

If reconstruction of the southern portion of Warm Springs Road occurs, it would affect vegetation in and adjacent to the existing roadway. No sensitive species were identified during the survey for the Proposed Action. The continued use of the area for recreation and grazing would continue to impact vegetation within the project area. Other proposed fuels treatments and subdivision establishments would remove vegetation from adjacent areas. The treatment and removal of vegetation could possibly remove or impact species that are identified as BLM sensitive.

3.10.3 Noxious Weeds/Invasive Species

Invasive species are species that tend to invade an area and out compete and crowd out native species. Noxious weeds are plant species that have been designated "noxious" by law. These species are known to occur in disturbed sites throughout Idaho, and Idaho State law requires that noxious weeds be treated and eradicated by landowners and prevented where possible. Noxious weeds can have a detrimental impact on an ecosystem by altering soil stability causing an increase in runoff, increasing the salinity of the soils, thus retarding salt intolerant native species, and increasing stream flows, which in turn can increase sediment loads (Prather et al. 2002).

There are six Idaho State listed noxious weed species documented as occurring in Boise County. These species are: Canada thistle (*Cirsium arvense*), dalmatian toadflax (*Linaria genistifolia dalmatica*), hoary cress (*Cardaria draba*), leafy spurge (*Euphorbia esula*), musk thistle (*Carduus nutans*), and rush skeletonweed (*Chondrilla juncea*) (Prather et al. 2002). Thirteen additional noxious weeds are suspected to occur within Boise County but the presence of these species has not been confirmed:

- Common crupina (*Crupina vulgaris*)
- Diffuse knapweed (*Centaurea diffusa*)
- Dyer's woad (*Isatis tinctoria*)
- Field bindweed (*Convolvulus arvensis*)
- Jointed goatgrass (*Aegilops cylindrical*)
- Perennial pepperweed (*Lepidium latifolium*)
- Poison hemlock (*Conium maculatum*)
- Puncturevine (*Tribulus terrestris*)
- Purple loosestrife (*Lythrum salicaria*)
- Scotch thistle (*Onopordum acanthium*)
- Spotted knapweed (*Centaurea maculosa*)
- Yellow starthistle (*Centaurea solstitialis*)
- Yellow toadflax (*Linaria vulgaris*)

These species occur in a wide range of habitats including pastures, riparian areas, roadsides, cultivated fields, rangeland, and forested areas (Prather et al. 2002).

A formal survey for noxious weed species has not been completed for the project area, however, during the ground cover vegetation survey, rush skeletonweed and musk thistle

were observed along the Warm Springs Road and in the cutslopes associated with the road. Concentrations of rush skeletonweed were found along the Warm Springs Road in MU 3 near MU 4. There were no noxious weeds or invasive species observed in the stands proposed for thinning. Pre- and post-herbicide treatment would be implemented along access roads, landings, skid trails, and other disturbed areas to control noxious weed and invasive species establishment and proliferation. Herbicide treatments would not be applied within RHCAs.

3.10.3.1 No Action Alternative

The No Action alternative is not anticipated to directly increase the risk of spread of noxious weeds and invasive species beyond the rate of spread that currently exists within the project area. However if a large-scale fire occurs within the project area, it would leave soils exposed and susceptible to infestation of invasive species and noxious weeds.

If no road maintenance occurs on the northern portion of the Warm Springs Road, the road would continue to deteriorate. Over time the road would become increasingly difficult to travel and “alternate” routes could be created as vehiclists attempt to drive around impassable areas. The “main” road would be increasingly susceptible to wind and water erosion and the newly created alternate routes would also be subject to erosion. In the long term, indiscriminate vehicle use would increase surface disturbance and could lead to an increase in invasive species and noxious weeds.

3.10.3.2 Proposed Action Alternative

The species that are potentially present within the project area often become established in areas that have been disturbed. The risk of establishing a weed community increases with the ground disturbing activities associated with this project. The soil disturbance associated with the thinning and burning activities and road maintenance and construction would increase the potential for spread of invasive species and noxious weeds. Noxious weeds and invasive species may be introduced and spread, throughout the project area by equipment and supplies used on this project. Seeds from weeds could be transferred to the site from previous work locations that contained invasive species and noxious weeds.

Ongoing programs exist to identify locations of all noxious weeds as well as efforts to initiate management and/or eradication of these weeds in the State of Idaho. State law assumes cooperation by the federal agencies in controlling noxious weeds on federally managed lands (Idaho Code § 22-2476). The Federal Public Rangelands Improvement Act emphasizes such cooperation in order to improve “unsatisfactory condition” of the federally managed rangelands (43 U.S.C. §§ 1901-1908). The guidelines specified in the contract in addition to the design criteria in Attachment A would be followed during this project to control the spread of noxious weeds. With the measures outlined for the proposed project it is anticipated that there would be little spread or increase of existing individual noxious weeds within the project area.

3.10.3.3 Shaded Fuelbreak Alternative

Implementation of the Shaded Fuelbreak alternative is anticipated to have similar effects as the Proposed Action. However, there would be less potential for the spread of noxious weeds and invasive species deeper into the forested stands due to the exclusion of these areas

from treatment. Since less acreage would be treated in this alternative than the Proposed Action there is greater potential for more areas to be impacted by a large fire in the area. This would increase the extent of area that would be susceptible and suitable to the invasion of noxious weeds and invasive species.

3.10.3.4 Cumulative Effects

In addition to the Proposed Action, OHV use and grazing routinely impact vegetation and soil within the project area. Grazing in the area impacts riparian habitat due to the tendency of livestock to congregate around water. OHV use that deviates from designated trails on a routine basis has the tendency to remove vegetation and cause rutting and compacted soils. OHV use and grazing also pose a risk of spreading noxious weed and invasive species seeds throughout the project area. Seeds can attach to livestock and OHVs can transport seed from other locations as seeds collect in tires and the undercarriage of the vehicles.

Reconstruction of the southern portion of Warm Spring Road would result in soil disturbance that could lead to the spread of invasive species and/or noxious weeds. BMPs would be implemented in conjunction with the improvement to minimize any effects.

3.11 Additional Disclosures

Irreversible commitments are those that cannot be reversed, except in the extreme long-term, and irretrievable commitments are those that are lost for a period of time. There would not be any irreversible or irretrievable commitments of resources from the Proposed Action. No unavoidable adverse effects are anticipated from implementation of the project. Energy requirements and conservation measurements would not be affected. Any effects would be short-term in comparison to the impacts that would result from a high intensity fire.

4 - CONSULTATION AND COORDINATION

The following individuals, Federal, state and local agencies, Tribes, and non-BLM persons were consulted during the development of this EA:

4.1 BLM Interdisciplinary Team Members

Members of the BLM IDT are from the FRFO, Lower Snake River District, and the Owyhee Field Office (OFO).

Irene Saphra	FRFO Fuels Use Specialist/COR
Mark Rooney	Acting FRFO Fuels Use Specialist/COR
Mark Steiger	FRFO Botanist
Pat Kane	FRFO Weeds Specialist
Michele Jones	FRFO Forestry Technician
Jim Jones	FRFO Forester
Juanita Allen	Boise District Fire and Fuels Archaeologist
Jill Holderman	FRFO Wildlife Biologist
Bob Arnold	OFO Range Technician
Greg Moody	FRFO Fishery Biologist
Zig Napkora	Boise District Hydrologist

4.2 Federal, State and Local Agencies

The IDFG, IDL, and the Emmett Ranger District of the Boise National Forest were sent scoping notices regarding the project. The USFWS was contacted directly regarding the project. A Biological Assessment is being prepared in conjunction with this EA to address potential effect to threatened and endangered species. The Boise County Commissioners also received a scoping notice and Fred Lawson, the Boise County Commissioner for District 2, which encompasses the project area, was contacted regarding the project and an informational package was provided. The Boise County Commissioners responded to the scoping notice in favor of the proposed project. No other responses were received from these agencies.

4.3 Tribes

Consultation with the Tribes regarding the Proposed Action has taken place via their monthly Wings and Roots meeting.

4.4 Public Meetings

Two public meetings were held, in Boise and Crouch, to inform the public of the proposed action for the Garden Mountain Fuels Management Project. Scoping notices were sent to local homeowners associations, other agencies, and the interested public informing them of the meetings and requesting comments on the project. Public notices were published in the Idaho World Newspaper, a weekly publication in the Garden Valley/Crouch area, and the Idaho Statesman Newspaper in Boise. In addition flyers were posted in several locations in Crouch, such as the local restaurant, library, and health clinic, informing people of the meeting location and time.

At the meetings, the EA process was described including the background of events leading up to the proposed action. The proposed action was described and issues and concerns were solicited. Present at both meetings were Mark Rooney and Rosey Thomas of the BLM, and Elspeth Pevear and Kelly Green of North Wind, Inc.

Thirteen members of the public and one agency representative attended the public meeting, held at the Crouch Community Hall on March 15, 2004. The list of attendees is provided below. Where affiliations were provided, they are included in the list.

Vera Hunt
John Harrington (IDL)
Ron Richter
Jay Baker
Kelly Hagele
Scott Briggs
Alan Ward (Payette River Lumber)
Deanna Stevenson
Brian Elcox (Castle Mountain Fire and Safety)
Susan Elcox (Castle Mountain Fire and Safety)
Jere Callaway
Hal Netten
Henrietta Gunn
Jamie Anderson

A summary of the main points of the discussion at that meeting is included below. Design criteria were added to the Proposed Action to address these concerns.

- Inaccessibility of the road was mentioned as a concern. A portion of the Warm Springs Road is being considered for improvement as a separate action and may be used to facilitate log removal if it is completed before the Proposed Action implementation is completed. If the road improvement occurs, access to the area would be improved. However, funding and procurement of easements would be needed before the project could be initiated. Currently it is unknown whether or not this activity would actually occur.
- Timing of the project was discussed. The project is expected to take place over the next five to ten, years with some work beginning this year. The timing will depend on the funding and whether a market exists for the products. One person commented that the project needs to be expedited and five to ten years is too long.
- The economics of the project was discussed and whether any local people could do the work. It was stated that the lumber may be trucked to Oregon or McCall because there may not be a local operator that could handle the volume. It is likely that most of the products would go out of the area.
- Air quality was mentioned as an issue. Concerns about burning were discussed.

The meeting held in Boise on March 16, 2004 was attended by one member of the public, Tony Yeamans who represented the Warm Springs Creek Road Improvement Association, and voiced several concerns related to the hauling of timber out of the area.

- The hazard of dust from use of the road to remove timber was of concern.
- Safety was raised as a concern related to logging trucks traveling on the road.
- Noise from the trucks traveling on the road (chains and metal noises and jake brakes) was also a concern for local homeowners.
- Dust from other logging projects has impacted small businesses along the road.

Requirements are commonly put on contracts to control impacts, such as timing of the truck traffic, noise, dust abatement, and speed. The BLM stated that they would work with the Boise County Commissioners to see what could be done to ensure impacts are minimized. Design criteria were added to the Proposed Action to address these concerns (Attachment A).

In addition to the comments received at the public meetings, two written comments were received. One was from a private citizen who was overall supportive of the project. It was suggested that no activity occur two weeks before and during hunting season and no burning occur before hunting season. It was also stated that erosion control was a concern and installation of water dips rather than water bars was suggested. Another comment was received from the Boise County Commissioners. They stated in their letter that they were also supportive of the project.

A third public meeting to discuss the Predecisional EA was held June 29, 2004 at the Crouch Community Hall. Public notices were published announcing the opportunity to comment on the EA and notifying the public of the meeting. These notices were published in the Idaho World Newspaper, the Idaho Statesman Newspaper, the Star News in McCall, and the Long Valley Advocate in Cascade. The comment period on the EA ran from June 10 to July 8, 2004.

The people in attendance at the meeting were:

Fred Lawson (Boise County Commissioner)
Marla Lawson
Beth Lund (Forest Service)
Tony DeMasters (Forest Service)
Gordon Ravenscroft (Boise County Disaster Services)

Questions were raised about where the products from the sale would go. There was also a discussion about the Warm Springs Road renovation. It was stated that renovation would provide an important egress route for people in the Terrace Lakes Subdivision. No other issues were raised.

One written comment was received from the public during the comment period. The commenter was supportive of the overall project objectives and made the following points:

- It was stated that no activities should take place during the fall hunting season.
- The commenter suggested that a firebreak be evaluated around the Terrace Lakes Subdivision and adjacent cabin/private lands.
- It was stated that someone should be appointed as a liaison to work with the public and local governments while this project is ongoing.
- The commenter stated that all roads associated with this project should be "put to bed" when the project is completed with proper erosion control systems.
- Continued public meetings and mailings with updates regarding the project were suggested.
- It was suggested that added fire protection crews be stationed in the project area during the height of the fire season while the project is ongoing.

4.5 Additional Outreach

Information regarding various federal cost-shared programs available for non-industrial private lands was distributed at the public meetings and given to local establishments (restaurants, grocery store, laundry mat, etc.). The information encourages non-industrial private landowners to establish fuel mitigation and forest health treatments on their lands. Attempts were made to contact several private landowners with property adjacent to the project area in order to discuss opportunities for fuels reduction on private land but the attempts were unsuccessful.

4.6 Preparer

This document was prepared for the BLM by North Wind, Inc., Idaho Falls, Idaho.

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ATTACHMENT A
PROPOSED ACTION DETAILS AND DESIGN CRITERIA

Improvement Harvest (MUs 1 and 2):

The goal of an improvement harvest is to increase overall forest health. This would include removal of climax species (i.e., grand fir and subalpine fir), retention of seral species (i.e., Douglas-fir and ponderosa pine), creation of small openings in the canopy to encourage regeneration, and removal of infected or diseased trees. Harvesting would target: 1) trees that are insect or disease infected, 2) deformed, 3) dead or dying, or 4) climax species that are not fire adapted.

Treatments would: 1) remove trees infected with dwarf mistletoe, bark beetle, western spruce budworm, and heart rot, 2) harvest stands to a target basal area (BA) of 60 to 70 square feet per acre or approximately 25 x 25 foot spacing between stems, and 3) target trees for removal in the 12 to 28 inch diameter range to release suppressed species and retain large mature trees for wildlife, seed stock, and visual aesthetics.

BA is a measure of stand stocking, roughly equivalent to standing volume. Stand BA is the cross-sectional area of all the trees at breast height per acre of forest. Stand BA can be used to estimate stand volume and is a useful measure of the degree of competition in the stand. For the purposes of this plan, BA and tree spacing are used to define how much would be harvested and what residual stands would “look” like post-treatment. There would be variations in tree spacing because of natural variations. As a result, tree spacing is a rough approximation of post-treatment stand conditions.

MU 1 is a helicopter unit that totals 648 acres on steep slopes (>60 percent) with highly erodible, granitic soils and no road access (Figure 3). All of these units occur at elevations between 4,800 to 6,600 feet. In general, these units are dominated by grand fir, Douglas-fir and subalpine fir, with scatterings of ponderosa pine. They have the most extensive infestation of western spruce budworm in the project area, and the greatest number of seedlings waiting for release. There is an average of 1,000 TPA (6 x 6 foot spacing) and a BA of 223 square feet per acre. Harvest would be accomplished by helicopter logging because it eliminates the need for new roads, spurs, cable corridors or skid trails and protects sensitive terrain.

MU 2 is a ground-based logging unit that totals 193 acres on the eastern side of the Warm Springs Road (Figure 3). Slopes range from 25 to 35 percent. In general, these units are dominated by ponderosa pine and Douglas-fir with some grand fir. Tree sizes range from eight to 40 inches in diameter, with an average of 193 TPA (15 x 15 foot spacing) and a BA of 240 square feet per acre. Both these units occur at the lower elevations (3,800 to 4,400 feet) of the project area. Harvest would be accomplished through manual felling (chainsaw) and rubber tired, crawler tracked tractor skidding, cable yarding, or highlead yarding. A 0.2-acre landing would be constructed in this unit and a 500-foot long, 14-foot wide (travel surface) temporary spur road would be needed to access the landing through an easement on adjacent private land (T9N, R34E, S5).

Fuel Treatments (MUs 3 and 4):

MU 3 is a 500-acre shaded fuelbreak unit located along the entire length and on either side of the Warm Springs Road within the GMFMP area (Figure 3). In general, the dominant species are ponderosa pine, Douglas-fir, and grand fir. The shaded fuelbreak would be a 300 to 500 feet wide defensible zone strategically located to breakup the continuity of fuels and reduce the potential for high intensity crown fires that could spread to private land within the WUI. The result would be an open, park-like stand and an environment that would allow the ground fuels to burn in a controllable manner. Treatment for this unit is described below.

MU 4 is a 7-acre unit in an ephemeral (i.e., seasonally flowing) draw that slopes onto private lands (Figure 3). This unit would increase the shaded fuelbreak protection width to 2,592 feet in this location due to the fact that the draw contains heavy brush, unhealthy ponderosa pine saplings, and high volumes of downed hazardous fuels. The adjacent private land is comprised of dog-haired stands of 30 to 60 foot tall ponderosa pine that is infested with bark beetle and experiencing some mortality. A new residential subdivision, Mountain Shadows, is in the area. Treatment for this unit would be the same as for MU 3.

The entire shaded fuelbreak (MUs 3 and 4) totals 507 acres. To establish the shaded fuelbreak the following treatments would occur within the management units:

- Thin the understory to a target BA of 60 to 80 square feet per acre (25 x 25 foot spacing) (approximately 25 to 39 percent of original stand).
- Remove hazardous snags, in terms of fire danger and logging safety.
- Target trees that have been infested with insects or infected with diseases.
- Target grand fir and subalpine fir in the six to 12 inch diameter range.
- Retain the seral species (ponderosa pine and Douglas-fir) whenever practicable.
- Remove brush and slash and pile four to ten feet high before burning.
- Mechanically or hand pile slash in areas where thinning and removal of material is not sufficient to allow follow-up understory burning.
- Prune selected residual Douglas-fir and grand fir five to 12 feet.
- Reduce hazardous fuels and restore fire to the ecosystem with controlled understory burns within the shaded fuelbreak. Prescribed burning would take place during the late spring and fall when moisture levels are such that prescribed burns can be controlled, and would be limited to time periods when atmospheric conditions normally would allow dispersion of the smoke from the prescribed burn during each day of the burn.
- Maintenance treatments would be based on site evaluations occurring every three years.

Project Design Criteria and Best Management Practices Common to All Action Alternatives

In addition to agency standards and guidelines designed to mitigate impacts, a list of design criteria and BMPs, which are management requirements and constraints, applicable to all action alternatives was developed. BMPs are the primary mechanism to achieve water quality standards and ensure compliance with the Federal Clean Water Act of 1972, as amended (1977 and 1987). BMPs are applied as a whole management and planning system in relation to sound water quality goals, including both broad policy and site-specific

prescriptions that are a preventative rather than an enforcement system designed to accommodate site-specific conditions. BMPs are tailor-made to account for the complexity and physical and biological variability of the natural environment. These design criteria and BMPs were developed to ease some of the potential soil, water, and other impacts the various alternatives may cause and would be integral to project implementation. The list provided here is not meant to be all-inclusive. For example, the Sale Administrator would identify additional specific provisions that may be required based on site-specific and temporal conditions during project implementation.

The effectiveness of riparian zone buffers and BMPs applied to timber project and road-related activities has been extensively studied. Proper application of these design features would be expected to minimize the potential effects to resources in the project area, including sediment delivery.

Timber Harvest

- Use the logging system that best fits the topography, soil type, and season, minimizes sod/soil disturbance, and economically accomplishes silvicultural objectives.
- Use “whole tree yarding” and “yarding with tops attached,” to reduce slash and facilitate subsequent prescribed fire treatments as practicable.
- Trees left for future harvest must be of sufficient vigor and acceptable species to ensure continuous growing and harvesting. Protect “leave trees” from damage to enhance their survival and growth.
- Minimize the size and number of landings to accommodate safe, economical operation.
- Locate landings away from natural drainage systems and divert runoff to stable areas. Avoid locating landings that require skidding across drainage bottoms.
- When natural revegetation is inadequate to prevent accelerated erosion before the next growing season, apply seed or construct cross-ditches on landings. A ground cover of slash or mulch will retard erosion.
- Skid trails would have an average slope of less than or equal to 35 percent.
- Design and locate skid trails and skidding operations to minimize soil disturbance.
- Locate skid trails to avoid concentrating runoff and provide breaks in grade.
- Locate skid trails and landings away from natural drainage systems and divert runoff to stable areas.
- Rehabilitated skid trails would have waterbars spaced less than or equal to 80 feet apart.
- Skid trails for ground-based equipment would be designated to meet the Idaho Forest Practices Act.
- The ponderosa pine/Douglas-fir areas (MUs 2, 3, and 4) would retain a target post-harvest canopy cover of 50 to 70 percent.
- MU 1, which is dominated by grand fir, Douglas-fir, and subalpine fir, would have a target post-harvest canopy cover of 60 to 80 percent.
- Post-project ECA would not exceed 15 percent of the 6th field Pyle Creek Subwatershed.
- No skid trails would be located perpendicular to RHCAs within 500 feet.

Soils

- Mechanical treatment would be limited to slopes less than or equal to 35 percent. Hand treatment would be required on slopes greater than 35 percent.
- No operation of off-road ground-based equipment would be permitted during wet weather conditions. This applies to the ground-based equipment on connected projects, and road construction, reconstruction, and landing construction. This restriction may be waived if soils are dry or frozen.
- On slopes less than 35 percent, at least 50 percent of the ground surface would be covered by well-distributed organic cover, including slash. Subsequent prescribed fires would be planned and implemented to partially consume the small-diameter woody debris, and to burn in a “mosaic” pattern, leaving some areas unburned and other areas “lightly” burned.
- Leave greater than 50 percent well distributed organic cover on slopes greater than 35 percent. Subsequent prescribed fires would be planned and implemented to partially consume the small-diameter woody debris, and to burn in a “mosaic” pattern, leaving some areas unburned and other areas “lightly” burned.
- Lop and scatter logging slash to less than or equal to four inches in diameter and four feet in length to protect soils, reduce fuelbed height, and facilitate subsequent prescribed fire treatments in units, on log landings, and skid trails.
- Use brush blades on dozers when piling slash. Avoid use of dozers with angle blades.
- Leave low slash and small brush to slow surface runoff, protect soil, return soil nutrients, provide small mammal habitat, and shade for conifer seedlings.
- Understory burn selected stands with a cool prescribed fire to reduce slash and reintroduce fire as a natural process, as practicable.
- Burn accumulated slash on log landings.
- Scarify the soil only to the extent necessary to meet the reforestation objective of the site.
- Site preparation equipment that produces irregular surfaces is preferable.
- Carry out brush piling and scarification when soils are frozen or dry enough to minimize compaction and displacement.
- Minimize or eliminate vertical patterns (i.e., up and down the slope) during mechanical scarification. Carry out scarification on steep slopes in a manner that minimizes erosion.
- Ground-disturbing activities would be planned to limit the disturbance to the organic soil horizon. The use of ground-based operations (e.g. tractors and skidders) on slopes greater than 35 percent would be avoided because of the risk of damage to soil and water resources. Ground-disturbing activities would be restricted to non-saturated soil areas.
- Minimize disturbance from machinery by requiring handwork where machines would cause undue soil disturbance.
- Access to the work site is only allowed on existing open roads.
- Travel must cease when damage to the road surface would result or is occurring.
- Dozer piling on slopes less than or equal to 35 percent would be limited to excavator; rubber-tire skidder with grapple, or other low ground pressure/soil compacting/ ground disturbing equipment.
- Piling on slopes greater than 35 percent would be hand pile only.

- The landing, temporary spur road, and the skid trails would be rehabilitated after use. The rehabilitated areas would: 1) be recontoured to provide adequate drainage, 2) be scarified to a minimum depth of 18-inches (if needed to enhance infiltration), 3) have slash distributed to 30 percent of the area, and 4) be reseeded with a BLM approved seed mix.
- Water bars (cross ditches) would be installed at approximately 20-foot intervals where skid trails exceed 35 percent slope. Where logs are available immediately adjacent to the skid trails, logs six inches diameter or greater would be placed against the ground surface on a diagonal instead of cross ditches.
- Livestock grazing will be excluded from prescribed burn units for a time period previously agreed upon during consultation, or a time period which will allow the vegetation to regeneration to a stage that can withstand grazing effects sufficiently to achieve and maintain natural rates of surface erosion.
- Implement a temporary motor vehicle closure for MU 2 for a period of two years to allow recovery of ground cover.

Hydrology/Water Yield and Water Quality

- Avoid undercutting the cutslope at the edge of the road prism during blading and shaping of existing roads.
- Construct cross ditches in firelines.
- Avoid intense fires unless needed to meet silvicultural goals.
- Prescribed fires would not intentionally be lit within RHCAs. If fire does enter RHCAs, it would be allowed to “back down” on its own.
- Prepare and implement a Spill Prevention Control and Countermeasures Plan (40 CFR 112) that incorporates the rules and requirements of the Idaho Forest Practices Act Section 60, Use of Chemicals and Petroleum Products; Department of Transportation rules for fuels haul and temporary storage and IDEQ rules and regulations for fuels haul, storage and spill containment.
- Hazardous and deleterious materials must not be stored, disposed of, or accumulated adjacent to, or in the immediate vicinity of, state waters, unless adequate measures and controls are provided to ensure that these materials do not enter state waters (Idaho Administrative Procedures Act [IDAPA] 16.01.02.800).
- Locate storage containers at least 300 feet from surface water.
- Store adequate supplies of manufactured fuel absorbent material (granules, pads) at the site.
- Rehabilitate storage areas after use.
- Activate the Idaho Hazardous Materials Response Plan (call 800-632-8000) in the event of a hazardous materials release.
- Notify the IDEQ of any petroleum releases greater than 25 gallons on the land, or if a sheen is present on water (IDAPA 16.01.02.851.04.a, b).
- Notify the BLM immediately of any fuel spill on BLM lands.
- Construct an earthen dam or other stable barricade of sufficient size to contain and prevent a spill from spreading overland.
- Utilize booms and absorbent materials to contain and remove fuels from water.
- Dispose of spilled materials in a manner approved by IDEQ (IDAPA 16.01.02.850.04). Depending on the size and location of the spill, the contaminated

soils should be spread out and plowed into soils at a BLM approved site, or placed in disposal containers and removed to an approved site. Monitor implementation.

- Remove all logging machinery debris to proper disposal site (tires, chains, chokers, cable, filters, oil cans and miscellaneous discarded parts).
- All helicopter fueling operations require an approved transportation, storage, and emergency spill plan.
- Other heavy equipment fueling operations will consist of a slip-tank not greater than 250 gallons.
- Maintenance operations must have spill containment and cleanup provisions.
- No landing of helicopters or aircraft within RHCAs.
- Avoid sediment routing from skid trails and landings into streams.
- Overstory mortality due to prescribed fire shall not cause the ECA to exceed 15 percent in the subwatershed.
- No fire line construction perpendicular to the RHCA (up the slope) within 500 feet of any stream channel.
- Mortality due to prescribed fire shall not exceed ten to 30 percent of the remaining overstory trees in the project area.
- Hydrologist will ensure that the overstory mortality due to prescribed fire will not adversely alter the flow regimes (timing, magnitude, duration, and spatial distribution of peak, high, and low flows) at the subwatershed scale.
- Prevent sediment production and delivery to streams by using standard erosion and sediment control measures.

Cultural Resources

- In the event that inadvertent discoveries are made during project implementation, all activities would cease until the BLM archaeologist can evaluate the finding and determine whether or not activities could continue.
- If significant properties are discovered, consultation with the State Historic Preservation Officer (SHPO) would be conducted and clearance received prior to project implementation.

Air Quality

- All prescribed fire treatments would be conducted in accordance with the procedures outlined in the *Montana/Idaho State Airshed Group Operating Guide* (August 2003).
- The BLM would cooperate with other land managers and the State of Idaho to minimize air quality impacts from smoke on local communities and individuals.
- The BLM would obtain all necessary air pollutant emission permits and approvals from the State of Idaho prior to initiating a prescribed fire.
- The BLM would follow and implement the terms of any interagency MOUs.
- The BLM would apply management techniques to minimize smoke production and to enhance dispersion, including burning under optimum weather conditions, expanding the burning season, using backfires where applicable, burning small blocks, etc. These techniques are described in the Prescribed Fire Smoke Management Guide, published by the National Wildfire Coordinating Group (NFES No. 1279, PMS 420-1; 1985).

- The BLM would ensure that the general public is informed of the status of managed fires, including smoke management contingencies, through the local press.
- Mitigation measures would also be employed to address fugitive dust emissions. Mitigation measures that may be used to reduce fugitive road dust emissions within the project area include: the application of chemicals that increase the moisture retention of road surfaces, watering during high use periods or during road maintenance operations, and speed restrictions in sensitive areas.

Visual Quality

- To help achieve the visual quality objectives, project implementation would avoid straight control lines that would line up with viewing corridors, and would create burned area patch size and configurations that are not predictable patterns.
- The prescribed fire would create unburned islands.
- Irregular boundaries and feathering of boundaries would be used to help blend treatment areas into the surrounding “natural” landscape patterns.
- Slash and debris would need to be completely burned, cleared or chipped, and stumps cut flush in areas viewed as foreground from trails and recreation sites.

Fisheries and Aquatic Habitat

- Streamside buffer zones on either side of all non-fishbearing perennial and intermittent streams would be excluded from all project activities to meet or exceed INFISH requirements.
- INFISH regulations on buffer widths would be followed and buffer widths would be approved by the BLM fisheries biologist or watershed specialist.
- RHCAs would be designated to protect fisheries habitat, riparian habitat, and water quality within the project area as directed by INFISH (USDA 1995).
- Water for dust abatement would be drafted at a rate that would not decrease the wetted width of the channel.
- Water drafting sites would be approved by the BLM fisheries biologist. All drafting hoses would be required to have 3/32-inch mesh screens
- Any draft suction hose used would be equipped with a screen of 3/32 inch mesh or less and will have an intake flow of less than one foot per second to prevent entraining juvenile fish.
- Fish-bearing streams would not be dammed for dust abatement.
- Conduct vegetation management work during the normal dry season when soil is less likely to be damaged by compaction and/or erosion.
- Conduct road improvement, construction, and reconstruction activities when ground moisture conditions are optimal, as determined by appropriate resource specialists.
- Drafting water for dust abatement and road compacting will be restricted to an area identified by a fishery biologist and/or hydrologist to prevent “take” of bull trout.
- Ensure that the project does not prevent or retard attainment of INFISH riparian management objectives and is consistent with appropriate Biological Opinions.

Wildlife and Special Status Terrestrial Species

- Retain two hard snags per acre greater than 15 inch DBH and one hard snag greater than 20 inch DBH. Snags would be a minimum of 40 feet in height.
- Where the opportunity exists, ponderosa pine would be the preferred snag species followed by western larch and then Douglas-fir.
- All trees within 100 feet of caves or cave-like structures would be retained to protect potential western big-eared bat habitat.
- Retain four or more cull logs per acre greater than or equal to 20 feet long and greater than or equal to 12 inches DBH.
- Avoid harvesting trees containing nests or cavities.
- Attempts would be made to avoid burning during the nesting periods of sensitive bird species.
- Use native species for revegetation.
- No project related activities would take place within one mile of gray wolf rendezvous or den sites.
- No project related activities would take place within one mile of known Canada lynx denning sites or where kittens are present.

Special Status Plants

- Burn piles would be located away from any known sensitive plant sites.
- Any areas with sensitive plants would be excluded from spring burning.

Noxious Weeds and Invasive Species

- Herbicide treatments would not be applied within RHCAs.
- The herbicides that are approved for use on BLM public lands would be used to control noxious weeds and invasive species. Selection of an herbicide for site-specific application would depend on its chemical effectiveness on a particular weed species, success in previous similar applications, habitat types, soil types, and nearness of the weed infestation to water.
- Pre- and post-herbicide treatment would be implemented along access roads, landings, skid trails, and other disturbed areas to control noxious weeds and invasive species establishment and proliferation.
- Application methods would include liquid or granular forms of herbicides applied by ground-based application. Ground-based herbicide application would include broadcast or spot spraying. Broadcast spraying would involve herbicide treatment over a larger weed infested area as compared to spot spraying where herbicide is applied to individual plants or to small infestations. Both application methods could involve the use of a spray tank with pump located in the back of a pickup truck or an ATV, backpack sprayers, or pack animals to transport herbicides into more rugged terrain.
- Combinations of herbicides may be the most appropriate treatment where several species of noxious weeds occur together, or where the herbicides affect weeds differently.

- The best time to survey burn areas for weeds is when post-fire growth begins (just after the burn or the following fall) and as plants begin to grow in the first spring following the burn.
- All noxious weed and invasive species treatments would conform to agency policy and the Boise District Noxious Weed EA. The requirements for the District's noxious weed program were established by the Vegetation Treatment on BLM Lands Record of Decision (ROD) dated July 23, 1991 and supported by the Vegetation Treatment on BLM Lands Final Environmental Impact Statement (FEIS) of May 1991.
- All herbicide applications would follow federal label instructions, specifications, and precautions as well as applicable BLM policy. In instances where herbicide labels, federal, or state stipulations overlap, the more restrictive criteria would apply.
- No spraying of any herbicide would occur when wind velocity exceeds ten miles per hour, as per Idaho Department of Agriculture standards.
- Dyes (e.g., Hi-Light, Signal) may be used to obtain uniform coverage. This would help prevent under or over treatment/application and help with detection of drift. It would also reduce the risk of treating non-target species.
- Application of any herbicides to treat noxious and invasive weeds would be performed by or directly supervised by a certified applicator.
- Herbicide applications would be coordinated with permit holders within the project areas, as appropriate.
- All weed abatement procedures would be stipulated in the implementation contracts.
- All equipment, materials, personal vehicles, sanitary facilities, and staging areas would be confined to a limited number of specified locations to decrease the chance of incidental disturbance and spread of weeds.
- Prior to entering relatively weed free areas, vehicles and construction equipment would be cleaned (pressure wash or forced air) including radiator, air intakes on the equipment, and the underbody and tracks of the vehicles or construction equipment of all mud, dirt, and plant parts. These vehicles and equipment would also be cleaned before leaving the project area when operating in areas of weed infestations.
- Vehicle and equipment wash sites would be in a relatively flat area, away from live water to prevent weed seed from being transported downstream and prevent any antifreeze or oil, potentially washed off this equipment, from entering live water.

Reclamation

- Log landings and skid trails would be reclaimed through subsoiling, scarification, and grass seeding.
- The soil surfaces would be left with a rough, corrugated surface to help anchor seed.
- If the slopes are tracked, the tracks would be perpendicular to the slope contour.
- Use cross-ditches and grass seeding, and other design criteria and BMPs to reduce erosion on skid trails. Appropriate spacing between cross-ditches is determined by the soil type and slope of the skid trails. Timely implementation is important.
- Disturbed areas in the units and reclaimed landings and skid trails would be seeded with a mixture of BLM approved native grasses, forbs, and/or shrubs suitable for the site.

- Disturbed areas, in addition to log landings and skid trails, would be seeded with species approved by the BLM Botanist to meet erosion control needs and other management objectives such as wildlife habitat enhancement.
- Bare soils would be revegetated prior to wet weather conditions to reduce erosion.
- Seed would be evenly distributed at appropriate rates to ensure successful establishment.
- Livestock grazing will be excluded from prescribed burn units for a time period previously agreed upon during consultation, or a time period which will allow the vegetation to regeneration to a stage that can withstand grazing effects sufficiently to achieve and maintain natural rates of surface erosion. In no case shall either of the above time period be less than two years.

Community Relations and Public Safety

- Signs would be placed at appropriate intersections alerting motorists of the presence of log trucks.
- A fire mitigation specialist would be involved throughout the course of the project to serve as a liaison to work with the public and local governments.
- Throughout the course of the project additional information would be made available regarding the progress of the project and any future plans.
- In addition to this project, various fuel treatment projects that were recommended as part of the Boise County Fire Mitigation Plan may be implemented.
- Community representatives would be contacted to ensure opportunities for hazard reduction on adjacent private lands are being facilitated.
- If conditions warrant, certain restrictions for added fire protection, such as hoot owl (i.e., night) shifts or a ½ hour fire watch after equipment shutdown, would be implemented. All fire crews assigned to protect the area would be made aware of any activity that might be associated with the project.

ATTACHMENT B

SCHEDULE

It is anticipated that treatments would begin in 2005 and may take up to ten years to complete. Treatments would include improvement harvest in MUs 1 and 2 (841 acres) and fuels treatment harvests (shaded fuelbreak) in MUs 3 and 4 (507 acres).

Treatment of the shaded fuelbreak is the highest priority. The shaded fuelbreak would create a strategically located, defensible zone to break up the continuity of fuels and reduce the potential for high intensity crown fires that could spread to private land within WUI areas. Treatments would include tree felling, brush cutting, pruning, tractor or hand piling slash, brush, and debris, and covering and burning slash piles. All treatments would include post-treatment prescribed burning. The result would be an open, park-like stand and an environment that would allow ground fuels to burn in a controllable manner.

Over time, brush and saplings would re-grow in the treated areas; therefore the shaded fuelbreak (MUs 3 and 4) would require on-going maintenance to remain functional. Maintenance of the shaded fuelbreak could include all of the same activities included in the initial treatment. Maintenance treatments would be based on site evaluations that would occur approximately every three years. An appropriate resource manager knowledgeable in forestry, fuels, and the use of prescribed fire would perform site evaluations.

ATTACHMENT C
COST ANALYSIS

This attachment provides information about the costs associated with the Proposed Action. This is not intended to be a comprehensive analysis but rather the intention is to provide a general range of costs and values. The cost and economic benefits as well as the resource benefits of the Proposed Action must be measured against the potential for wildland fire and the costs that could be incurred due to suppression and emergency stabilization and rehabilitation treatments if the No Action alternative is selected. If a wildland fire were to occur in the Garden Mountain project area the suppression costs and damage would far exceed the cost of implementation of the Proposed Action.

Revenue generated from MUs 1and 2 could offset the cost of creation of the shaded fuelbreak (MUs 3 and 4). In the Proposed Action a total of 841 acres in MUs 1 and 2 would have treatments that include harvesting merchantable timber. The shaded fuelbreak would produce minimum revenue, however the cost of an uncontrolled, large scale wildfire far exceeds the cost of the shaded fuelbreak treatment. For example, a 2,006-acre wildfire burned in the Back Mountain Experimental Forest in Lassen National Forest in 2002. While this example is not near the project area, it is provided to illustrate the effectiveness and cost comparison of creation of a fuelbreak versus the cost of suppression. Four years prior to the fire a shaded fuelbreak had been constructed in that forest. The fire effects of the 2002 fire were dramatic in that it was predominantly a stand-replacing crown fire where most of the trees were killed by the fire. Once the fire burned into the shaded fuelbreak however, it dropped to the surface and became a low intensity ground fire that was more easily and quickly suppressed. The suppression cost of the wildfire was $3,462,204 or $1,726/acre. The cost of constructing the shaded fuelbreak was $204/acre.

At the present time hauling costs from Garden Valley, Idaho to La Grande, Oregon (approximately 200 miles) would range from between $135 to $160 per thousand board feet (MBF). This could fluctuate depending on cost of fuel. Up to 4.5 MBF to 5.5 MBF of logs can be hauled at one time depending on the type of truck used. Haul costs to La Grande are representative of the distance to potential mills that would be available to handle the volume of lumber that would be produced by the Proposed Action. The Payette Lumber Mill in the Garden Valley/Crouch area may receive some of the products but it is not large enough to handle the entire volume.

Current stumpage prices (price paid for timber in the woods) are dynamic and fluctuate depending on the current market value. On June 1, 2004, stumpage prices by species were as follows:

Species	Price Per MBF
Douglas-fir	$180 to 300
Ponderosa pine	$170 to 250
Grand fir	$170 to 250
Subalpine fir	$100 to 150

An estimated 8,580 MBF would be available under the Proposed Action. At current markets, total stumpage value of the Proposed Action would be between $858,000 and $2,574,000, not including the cost of harvesting or hauling.

The Proposed Action would reduce the risk of high intensity wildfire in the project area and the potential costs of future suppression and rehabilitation treatments. In addition, the Proposed Action would reduce the threats to life, property, and natural resources that would result in the event of high intensity wildfire. The Proposed Action could contribute to the socio-economic well being of the local community by providing jobs, requiring services, and producing wood products.

Implementation of the No Action alternative would increase the risk of high intensity, large scale wildfire occurring in the WUI, loss of natural and cultural resources, and increased risk to human life and property. The potential for large scale, high intensity fire would also increase the potential for large fire suppression and rehabilitation expenditures.

ATTACHMENT D. BLM SPECIAL STATUS ANIMALS

BLM special status wildlife species that may occur in the project area and their habitat associations.

Common Name	Scientific Name	Sagebrush /grassland	Riparian	Aspen	Mt. Brush	Conifer	Other	Habitat Occurs within the project area
Birds								
Bald Eagle	*Haliaeetus leucocephalus*						Open waters large river systems	N
Yellow-billed Cuckoo	*Coccyzus americanus*		X					N
American White Pelican	*Pelecanus erythrorhynchos*						Open waters	N
Greater Sage-grouse	*Centrocercus urophasianus*	X	X		X			N
Flammulated Owl	*Otus flammeolus*					X		Y
Calliope Hummingbird	*Stellula calliope*			X		X		Y
Lewis' Woodpecker	*Melanerpes lewis*				X	X		Y
Williamsons Sapsucker	*Sphyrapicus thyroideus*					X		Y
Willow Flycatcher	*Empidonax trailii*		X				Pastures	N
Hammond's Flycatcher	*Empidonax hammondii*			X		X		Y
Olive-sided Flycatcher	*Contopus borealis*		X			X		Y
Loggerhead Shrike	*Lanius ludovicianus*	X			X			N
Sage Sparrow	*Amphispiza belli*	X						N
Brewer's Sparrow	*Spizella breweri*	X						N
Upland Sandpiper	*Bartramia longicauda*						Prairies/ farmland	N
White-headed Woodpecker	*Picoides albolarvatus*					X		Y
Black-throated Sparrow	*Amphispiza bilineata*	X			X			N
Mammals								
Northern Idaho Ground Squirrel	*Spermophilus brunneus brunneus*						Forest meadows	N
Southern Idaho Ground Squirrel	*Spermophilus brunneus endemicus*	X						N

Common Name	Scientific Name	Sagebrush /grassland	Riparian	Aspen	Mt. Brush	Conifer	Other	Habitat Occurs within the project area
Gray Wolf	*Canus lupus*	X		X	X	X		Y
Canada Lynx	*Lynx canadensis*		X			X		Y
Pygmy Rabbit	*Brachylagus idahoensis*	X						N
Fringed Myotis	*Myotis thysanodes*		X	X		X		Y
Spotted Bat	*Euderma maculatum*		X	X		X		Y
Townsend's Big-eared Bat	*Plecotus townsendii*	X	X	X	X	X		Y
Fisher	*Martes pennanti*		X			X		Y
Wolverine	*Gulo gulo luscus*					X		Y
Amphibians								
Northern Leopard Frog	*Rana pipiens*		X					N
Idaho Giant Salamander	*Dicamptodon aterrimus*		X				Mountain streams	N
Western Toad	*Bufo boreas* - (Northern Rocky Mountain Group only)	X	X	X	X	X		Y
Woodhouse Toad	*Bufo woodhousii*		X	X		X		Y
Reptiles								
Mojave Black-collared Lizard	*Crotaphytus bicinctores*		X				Desert	N
Longnose Snake	*Rhinocheilus lecontei*						Desert	N
Western Ground Snake	*Sonora semiannulata*						Arid habitat	N
Common Garter Snake	*Thamnophis sirtalis*		X					N
Fish								
Bull Trout	*Salvelinus confluentus*						X	N
Redband Trout	*Oncorhynchus mykiss gibbsi*						X	N
Invertebrates								
Bliss Rapids Snail	*Taylorconcha serpenticola*						X	N
Idaho Springsnail	*Pyrgulopsis idahoensis*						X	N

ATTACHMENT E. BLM SPECIAL STATUS PLANT SPECIES

Rare plant species known or suspected to occur in the Garden Valley area.

Common Name	Scientific Name	Present within project area	Status	Habitat/Community Type	Elevation (ft)	Determination
Slickspot peppergrass	*Lepidium papilliferum*	N	PE	Bare slickspot soils within Wyoming sagebrush habitat.		NI
Aase's onion	*Allium aaseae*	N	Type 2	Open, relatively barren, xeric, gentle to very steep, sandy slopes, generally with a southerly aspect	8,858-16,732	NI
Packard's milkvetch	*Astragalus cusickii* var. *packardiae*	N	Type 2	Sandy slopes and ridges with needle-and-thread grass, Indian ricegrass and bitterbrush mostly on south facing exposures.	2132-2788	NI
Mulford's milkvetch	*Astragalus mulfordiae*	N	Type 2	Sparsely vegetated light colored soils. Usually associated with Wyoming sagebrush.	2,788	NI
Indian Valley sedge	*Carex aboriginum*	N	Type 2	Dry gumbo or gravelly soils.		NI
Packard's buckwheat	*Eriogonum shockleyi* var. *packardiae*	N	Type 2	Gravelly benches on lake sediments in shadscale, mixed desert shrub and sagebrush communities.	2,493-4,265	NI
Stalk-leaved monkey-flower	*Mimulus patulus*	P	Type 2	Moist areas in montane to alpine areas.		
Malheur princesplume	*Stanleya confertiflora*	N	Type 2	Dry plains on somewhat sparsely vegetated clay soils.	2,401-5,003	NI
Woven-spore lichen	*Texosporium sancti-jacobi*	N	Type 2	On well decomposed humas, flat or north facing slopes in especially old clumps of Sandberg's bluegrass, on Wyoming sagebrush-Thurber needle grass-bluebunch wheatgrass sites.	2,887-3,280	NI
Douglas' clover	*Trifolium douglasii*	P	Type 2	Open Ponderosa pine to Douglas fir forests, in moist meadows and along stream courses.		MI
Plumed clover	*Trifolium plumosum* var. *amplifolium*	P	Type 2	Open Ponderosa pine to Douglas fir forests, in moist meadows and along stream courses		MI
Mourning milkvetch	*Astragalus atratus* var. *inseptus*	N	Type 3	Sagebrush/grass communities in thin soil of stony basalt flats where moist in spring.	below 4,921	NI
Prostrate ceanothus (Mahala	*Ceanothus prostratus*	P	Type 3	Ponderosa pine/shrub community		NI

Common Name	Scientific Name	Present within project area	Status	Habitat/Community Type	Elevation (ft)	Determination
mat)						
Silver-skin lichen	*Dermatocarpon lorenzianum*	N	Type 3	Dry desert areas in sandy or volcanic soils		NI
Chatterbox orchid	*Epipactis gigantea*	N	Type 3	Minerotrophic seeps and springs	5,905-16,404	NI
Calcareous buckwheat	*Eriogonum ochrocephalum var. calcareum*	N	Type 3	Rolling clay hills with four-wing saltbrush.	2,801	NI
Cronquist's stickseed (Cronquist's forget-me-not)	*Hackelia cronquistii*	N	Type 3	Sandy or loamy soils of sagebrush-bunchgrass slopes mostly on north exposures.	2,296-2,624	NI
Snake River goldenweed	*Haplopappus radiatus=Pyrrocoma radiata*	N	Type 3	Loam soils on steep rocky hillsides in big sagebrush, bluebunch wheatgrass, arrowleaf balsamroot and Idaho fescue communities.	2,132-4,921	NI
Davis peppergrass	*Lepidium davisii*	N	Type 3	Mostly barren hard bottom playas, but sometimes with a few shadscale and silver sage plants, surrounded by Wyoming big sage, four-wing saltbush and sandberg bluegrass habitat.	2,903-5,905	NI
Squaw (Indian) apple	*Peraphyllum ramosissimum*	N	Type 3	On heavy clay soils, often as small inclusions in sagebrush-bunchgrass or mountain brush communities.	3,280-4,921	NI
Turtleback	*Psathyrotes annua*	N	Type 3	Salt desert shrub communities, usually on sandy well drained soils	2,395-3,937	NI
American wood sage	*Teucrium canadense var. occidentale*	N	Type 3	Streambanks and moist bottomlands.	2,624-3,937	NI
Earth lichen	*Catapyrenium congestum*	N	Type 4	Dry desert areas in sandy or volcanic soils,		NI
Desert pincushion	*Chaenactis stevioides*	N	Type 4	Dry desert areas in sandy or volcanic soils,		NI
White eatonella	*Eatonella nivea*	N	Type 4	Dry desert areas in sandy or volcanic soils, often with sagebrush.	2,500-6,233	NI
White-margined wax plant	*Glyptopleura marginata*	N	Type 4	Dry sandy-gravelly or loose ash soils in shadscale, greasewood, rabbitbrush, spiny hopsage, winterfat, and sagebrush communities.	2,624-3,937	NI

Category: S = Sensitive; **S1**: Critically imperiled because of extreme rarity or because some factor of its biology makes it especially vulnerable to extinction; **S2**: Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction; **S3**: Rare or uncommon but not imperiled.

Sensitive Species Determination: NI = No Impact; **BI** = Beneficial Impact; **MI** = May impact individuals or habitat but not likely to cause trend toward federal listing or reduce viability for the population or species; **LI** = Likely to impact individuals or habitat with the consequence that the action may contribute towards federal listing or result in reduced viability for the population or species**.**

ATTACHMENT F. WEPP HILLSLOPE MODEL ASSUMPTIONS AND RESULTS

WEPP Model Results for Wildfire and Prescribed Burning

MU	Return Interval*	Wildfire					Prescribed Fire				
		Runoff (inches)	Erosion (tons/acre)	Sediment Delivery (tons/acre)	Unit Acres	Total Sediment Delivery Potential (tons)	Runoff (inches)	Erosion (tons/acre)	Sediment Delivery (tons/acre)	Unit Acres	Total Sediment Delivery Potential (tons)
1	50 year	1.8	32.6	32.5	648	21,060	0.1	3.2	0.6	648	389
2	50 year	1.2	16.9	16.9	193	3,262	0.1	1.2	0.2	193	39
3	50 year	1.8	15.8	15.8	500	7,900	0.1	1.3	0.3	500	150
4	50 year	1.8	12.6	12.6	7	88	0.1	1.3	0.3	7	2
1	25 year	0.8	16.5	16.3	648	10,562	0	0.6	0.1	648	65
2	25 year	0.9	7.3	7.3	193	1,409	0.1	0.8	0.2	193	39
3	25 year	1.0	8.0	8.0	500	4,000	0.1	0.9	0.3	500	150
4	25 year	1.0	6.6	6.6	7	46	0.1	0.7	0.3	7	2
1	10 year	9.0	9.3	9.0	648	5,832	0	0.2	0	648	0
2	10 year	0.4	3.9	3.9	193	753	0	0.1	0	193	0
3	10 year	0.6	5.5	5.5	500	2,750	0	0.1	0	500	0
4	10 year	0.6	4.3	4.3	7	30	0	0.1	0.1	7	1
1	5 year	7.0	7.2	6.5	648	4,212	0	0.1	0	648	0
2	5 year	0.2	2.7	2.7	193	521	0	0	0	139	0
3	5 year	0.4	3.1	3.1	500	1,550	0	0	0	500	0
4	5 year	0.5	2.5	2.5	7	18	0	0	0	7	0
1	2.5 year	3.2	3.2	3.2	648	2,074	0	0	0	648	0
2	2.5 year	0.1	0.5	0.5	193	97	0	0	0	193	0

WEPP Model Results for Wildfire and Prescribed Burning

MU	Return Interval*	Wildfire					Prescribed Fire				
		Runoff (inches)	Erosion (tons/acre)	Sediment Delivery (tons/acre)	Unit Acres	Total Sediment Delivery Potential (tons)	Runoff (inches)	Erosion (tons/acre)	Sediment Delivery (tons/acre)	Unit Acres	Total Sediment Delivery Potential (tons)
3	2.5 year	0.2	1.1	1.1	500	550	0	0	0	500	0
4	2.5 year	0.2	1.1	1.1	7	8	0	0	0	7	0
1	Average	0.2	3.8	3.7	648	2,398	0	0.1	0	648	0
2	Average	0.1	1.4	1.4	193	270	0	0.1	0	193	0
3	Average	0.2	1.7	1.7	500	850	0	0.1	0	500	0
4	Average	0.2	1.5	1.5	7	11	0	0.1	0	7	0

*Based on 50 years of climate data.

WEPP Model Results for Mechanical Thinning and Skid Trails

MU	Return Interval*	Mechanical Thinning Only / No Skid Trails					Skid Trails				
		Runoff (inches)	Erosion (tons/acre)	Sediment Delivery (tons/acre)	Unit Acres	Total Sediment Delivery Potential (tons)	Runoff (inches)	Erosion (tons/acre)	Sediment Delivery (tons/acre)	Acres of Skid Trails	Total Sediment Delivery Potential (tons)
1	50 year	0	0.13	0.08	648	52	NA	NA	NA	NA	NA
2	50 year	0	0.09	0.09	193	17	0.15	9.1	4.5	2	9
3 &4	50 year	0	0.12	0.12	78	9	NA	NA	NA	NA	NA
1	25 year	0	0.07	0.07	648	45	NA	NA	NA	NA	NA
2	25 year	0	0.02	0.02	193	4	0.10	4.64	2.29	2	5
3&4	25 year	0	0.03	0.03	78	2	NA	NA	NA	NA	NA
1	10 year	0	0	0	648	0	NA	NA	NA	NA	NA
2	10 year	0	0	0	193	0	0.01	0.72	0.34	2	1
3&4	10 year	0	0	0	78	0	NA	NA	NA	NA	NA
1	2.5 year	0	0	0	648	52	NA	NA	NA	NA	NA
2	2.5 year	0	0	0	193	17	0	0	0	0	0
3&4	2.5 year	0	0	0	78	60	NA	NA	NA	NA	NA
1	Average	0	0	0	648	0	NA	NA	NA	NA	NA
2	Average	0	0	0	193	0	0.01	0.17	0.17	193	33
3&4	Average	0	0	0	78	0	NA	NA	NA	NA	NA

*Based on 50 years of climate data.

ATTACHMENT G. WEPP CROSS DRAIN MODEL INPUT SCREEN AND OUTPUT SUMMARY

WEPP Cross Drain Input Screen (from USDA Forest Service WEPP web site: http://forest.moscowfsl.wsu.edu/fswepp/)

WEPP X-Drain
Cross-Drain Spacing -- Sediment Yield Program

Climate Station	Soil Type	Buffer Gradient (%)	Buffer Length (ft)
ID, Moscow	Clay loam	4	0
ID, Montpelier	Silt loam	10	33
ID, May Ranger Station	Sandy loam	25	160
ID, Fenn	Graveled loam	60	330
ID, Deadwood Dam	Graveled sand		660

Road width 14 feet

WEPP Road Input Screen (from USDA Forest Service WEPP web site)

WEPP Road
Forest Road Erosion Predictor

Climate Station	Soil Texture
*CORVALLIS ST COL OR +	clay loam
*CORVALLIS ST COL OR +	silt loam
*Upper Alsea +	sandy loam
*DEADWOOD DAM ID +	loam
Custom Climate	Rock (%) 20

Road Design			Gradient (%)	Length (ft)	Width (ft)

Insloped, bare ditch
Insloped, vegetated or rocked ditch
Outsloped, rutted
Outsloped, unrutted

Road	4	200	14
Fill	50	15	
Buffer	25	130	

Road surface: ◉ Native ○ Graveled ○ Paved

Traffic level: ○ High ◉ Low ○ None

Years to simulate: 50

ATTACHMENT G. CONTINUED
Average Annual Sediment Yield (lb)

WEPP Cross Drain Model Input and Ouput Data

Climate station: Deadwood Dam, ID **Soil type:** sandy loam **Road width:** 14 ft

Average annual precip	Elevation	Latitude	Longitude	Period of record
(in)	(ft)	(°N)	(°W)	(years
32	5377	44.32	115.63	47

Values in *italics* represent the cross drain spacing used in the WEPP ROAD Model for those road segments with similar road and buffer parameters (See Attachment H).

Buffer length: 660 ft Buffer gradient: 25%

Road Gradient	Cross drain spacing				
	30 ft	100 ft	200 ft	400 ft	*800 ft*
2%	0	0	0	0	*0.66*
4%	0	0	0	0	*0.85*
8%	0	0	0	0	*1.13*
16%	0	0	0	0	*1.51*

Buffer length: 160 ft Buffer gradient: 60%

Road Gradient	Cross drain spacing				
	30 ft	*100 ft*	200 ft	400 ft	800 ft
2%	0.66	*3.2*	19.85	106.59	403.13
4%	0.85	*4.05*	26.53	172.92	584.05
8%	1.13	*6.68*	36.5	235.67	771.27
16%	1.51	*9.22*	46.95	253.73	902.6

Buffer length: 330 ft Buffer gradient: 25%

Road Gradient	Cross drain spacing				
	30 ft	100 ft	200 ft	*400 ft*	800 ft
2%	0	0	0	*0.85*	54.94
4%	0	0	0	*1.03*	61.06
8%	0	0	0	*1.69*	69.53
16%	0	0	0	*2.16*	79.87

Buffer length: 33 ft Buffer gradient: 25%

Road Gradient	Cross drain spacing				
	30 ft	100 ft	200 ft	400 ft	800 ft
2%	*1.98*	23.24	86.55	261.26	685.18
4%	*2.63*	32.46	117.22	361.74	1042.78
8%	*3.48*	41.02	145.26	492.79	1678.1
16%	*3.86*	47.23	178.94	674.46	2610.81

Buffer length: 330 ft Buffer gradient: 60%

Road Gradient	Cross drain spacing				
	30 ft	100 ft	*200 ft*	400 ft	800 ft
2%	0.66	1.79	*4.52*	25.68	173.86
4%	0.66	1.88	*5.27*	34.9	254.58
8%	0.66	2.07	*6.02*	51.09	307.92
16%	0.66	2.16	*6.77*	57.67	358.73

Buffer length: 33 ft Buffer gradient: 60%

Road Gradient	Cross drain spacing				
	30 ft	100 ft	200 ft	400 ft	800 ft
2%	*3.86*	29.54	107.82	308.77	837.88
4%	*5.17*	47.13	184.68	558.27	1555.05
8%	*8*	70.56	269.16	830.63	2425.95
16%	*11.57*	100.38	350.07	1081.92	3440.69

Buffer length: 160 ft Buffer gradient: 25%

Road Gradient	Cross drain spacing				
	30 ft	100 ft	*200 ft*	400 ft	800 ft
2%	0	0	*1.32*	38.38	174.24
4%	0	0	*1.6*	48.55	234.07
8%	0	0	*1.98*	55.22	276.5
16%	0	0	*2.54*	65.67	355.9

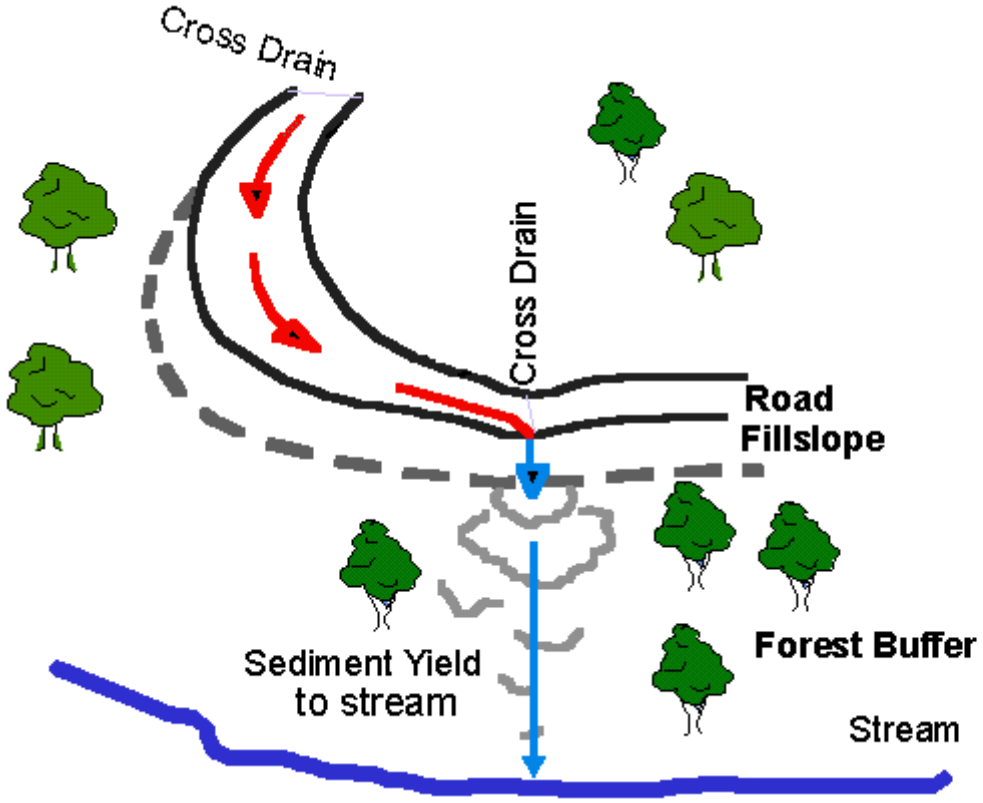
ATTACHMENT H. WEPP ROAD MODEL ASSUMPTIONS AND RESULTS

The USDA Forest Service WEPP ROAD Model was used to estimate the amount of sediment delivered to streams from road surfaces. Model assumptions and documentation is available from the website http://forest.moscowfsl.wsu.edu/fswepp/.

WEPP Road Input Variables:

Variable	Description	Data Range
Road Length	Horizontal length of road segment between successive drainage locations	3-1000 ft
Road Gradient	Decimal percent slope of the water flow path along the road surface	0.3-40 %
Road Width	Depends on road design	1-300 ft
Fill Length	Horizontal length of fill slope	1-300 ft
Fill Gradient	Decimal percent slope of the fill slope surface	0.3-150 %
Buffer Length	Horizontal length of the buffer	1-1000 ft
Buffer Gradient	Decimal percent slope of the buffer surface	0.3-100 %

Relationship of road, fill slope, forest buffer, and stream buffer for WEPP cross drain sediment model (Diagram from USDA FS WEPP web site).



ATTACHMENT H. CONTINUED
Modified climate data for WEPP ROAD Model

Climate	**DEADWOOD DAM ID modified**	
	sandy loam soil -- 50 year run	
	average annual precipitation 28 inches	
Site Location	44.14°N	116.02°E
	Elev (feet)	4600
Modified Climate	Deadwood Dam, ID	
	44.12°N	116.11°E
	Elev (ft)	4566
	Precip (“)	27.1
Original Climate	Deadwood Dam, ID	
	44.32°N	115.83°W
	Elev (ft)	5380
	Precip (“)	31.1

Summary of WEPP Output.

	lb/mi	ac/mi	t/ac
Current Condition	1059	1.2	0.44
During Treatment	593	1.7	0.25
Post Treatment	500	1.7	0.21

WEPP Road has four choices for road design: 1) ib - insloped to a bare ditch (to approximate new construction or recently maintained ditches), 2) iv - insloped to a ditch that has become vegetated or is armored with rock, 3) on - outsloped with no ruts, 4) or - outsloped and rutted (ruts deeper than 0.5 inch). A crowned road can be modeled using a combination of these conditions. The existing road does not fit neatly into one of these categories, as it is flat, with flow paths occurring down shallow wheel-rut depressions or in shallow gullies. The outsloped and rutted design criteria was used to approximate the existing condition. The road surface selection for the model was nl (native surface with a low traffic level) or nh (native surface with a high traffic level).

ATTACHMENT H. CONTINUED. WEPP ROAD Model Input and Output (gray shading) Data Summary

Design	Road surface	Road gradient (%)	Road length (ft)	Road width (ft)	Fill gradient (%)	Fill length (ft)	Buffer gradient (%)	Buffer length (ft)	Rock fragment (%)	Avg Annual Rainfall Runoff (in)	Avg Annual Snowfall Runoff (in)	Aveg Annual Sed leaving road (lb)	Aveg Annual Sed leaving buffer (lb)	Comments
Existing Condition														
or	nl	5	120	10	45	50	35	150	30	0	0	13	6	WS01A existing
or	nl	5	400	10	45	50	35	400	30	0	0	128	26	WS01B existing
or	nl	5	680	10	45	50	35	800	30	0	0	389	35	WS01C existing
or	nl	5	650	10	45	50	35	800	30	0	0	353	33	WS01D existing
or	nl	7	500	10	80	50	55	200	30	0	0.1	351	167	WS02A existing
or	nl	7	600	10	80	50	55	500	30	0	0	502	84	WS02B existing
or	nl	5	700	10	65	50	55	150	30	0	0.2	405	282	WS03A existing
or	nl	5	500	10	65	50	55	400	30	0	0	195	69	WS03B existing
or	nl	5	700	10	50	50	40	200	30	0	0.1	402	197	WS04B existing
or	nl	2	500	10	70	50	60	50	30	0.1	0.3	183	155	WS05A existing
or	nl	7	300	10	70	50	60	75	30	0.1	0.1	197	108	WS06A existing
or	nl	7	300	10	70	50	60	400	30	0	0	143	31	WS06B existing
During construction and log haul														
ib	nh	5	200	10	45	50	35	150	30	0	0	130	34	WS01A year 0
ib	nh	5	400	10	45	50	35	400	30	0	0	538	33	WS01B year 0
ib	nh	5	800	10	45	50	35	800	30	0	0	1,820	46	WS01C year 0
ib	nh	7	100	10	80	50	55	200	30	0	0	67	13	WS02A year 0
ib	nh	7	300	10	80	50	55	500	30	0	0	504	26	WS02B year 0
ib	nh	5	200	10	65	50	55	150	30	0	0	129	48	WS03A year 0
ib	nh	5	200	10	65	50	55	400	30	0	0	133	17	WS03B year 0
ib	nh	5	100	10	50	50	40	200	30	0	0	37	8	WS04B year 0
ib	nh	2	50	10	70	50	60	50	30	0	0	14	7	WS05A year 0
ib	nh	7	75	10	70	50	60	75	30	0	0	36	14	WS06A year 0
ib	nh	7	200	10	70	50	60	400	30	0	0	229	20	WS06B year 0
Post Treatment (after log haul)														
ib	nl	5	200	10	45	50	35	150	30	0	0	66	25	WS01A post treat
ib	nl	5	400	10	45	50	35	400	30	0	0	256	28	WS01B post treat
ib	nl	5	800	10	45	50	35	800	30	0	0	623	46	WS01C post treat
ib	nl	7	100	10	80	50	55	200	30	0	0	51	10	WS02A post treat
ib	nl	7	300	10	80	50	55	500	30	0	0	285	25	WS02B post treat
ib	nl	5	200	10	65	50	55	150	30	0	0	104	37	WS03A post treat
ib	nl	5	200	10	65	50	55	400	30	0	0	106	15	WS03B post treat
ib	nl	5	100	10	50	50	40	200	30	0	0	27	7	WS04B post treat
ib	nl	2	50	10	70	50	60	50	30	0	0	12	6	WS05A post treat
ib	nl	7	75	10	70	50	60	75	30	0	0	30	11	WS06A post treat
ib	nl	7	200	10	70	50	60	400	30	0	0	139	17	WS06B post treat

United States Department of Interior
Bureau of Land Management, Four Rivers Field Office

Garden Mountain Fuels Management Project

Finding of No Significant Impact

Finding of No Significant Impact: It has been determined that EA No. ID-096-2004-055 adequately analyzes the impacts of the Proposed Action and indicates a Finding of No Significant Impact (FONSI) on the quality of the human environment. Based on the analysis of potential environmental impacts contained in the EA, it has been determined that impacts are not expected to be significant and an Environmental Impact Statement (EIS) is not required.

Both context and intensity, as discussed in 40 CFR 1508.27, have been considered in this FONSI. Context connotes that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. This project is a site-specific action that by itself does not have international, national, region wide, or statewide importance. Significance varies with the setting… in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. In the EA the intensity of effects was evaluated within a local (i.e., project area) context.

The Garden Mountain project is located within the BLM FRFO area and lies northwest of the communities of Garden Valley and Crouch. No Endangered Species Act listed plant or animal species or cultural resources are known to occur in the project area. The land within the project area is BLM-managed land surrounded by State- and privately-owned lands. The surrounding private ownership includes expanding residential sites, mainly in the form of new subdivisions, and the communities of Crouch and Garden Valley, which are National Fire Plan designated Communities-at-Risk (Federal Register Vol. 66, No. 160, August 17, 2001).

From its inception, the project was designed to preclude adverse environmental effects. While the appearance of the forest and vegetation within the project area will be changed as a result of the decision, the characteristic landscape and the overall scenic quality of the area will not be adversely affected. Because the treatment would occur over a number of years rather than all at once, the short term visual effects would be minimized while accomplishing the short and long term fuel reduction objectives. In the longer term, the forest stands will begin to appear more as they were before the adoption of the effective fire suppression efforts. The forest stands will be more vigorous, healthy, and resilient. They will be less susceptible to severe wildfire because the project will change vegetation/fuel properties (density and structure) in a manner that will reduce the potential for high intensity wildfire. Property and resource values will be more defensible when wildfire occurs. A severe wildfire of any extent would result in a loss of resource and property values in the project area.

Intensity refers to the severity of the impact. The following discussion is organized around the ten significance criteria described in the National Environmental Policy Act (NEPA) regulations (40 CFR 1508.27). Potential adverse effects of implementing the Proposed Action were analyzed and found to be not significant in both context and intensity.

1. *Whether impacts that may be both beneficial and adverse have been considered.*

Both beneficial and adverse effects have been considered when making a determination of significance. The EA contains a complete discussion of effects on pages 26-75. The adverse effects are short-term in nature and will not impair land productivity. The long-term effects are considered to be beneficial, especially to the overall health of the forest and wildlife habitat, and will result in decreased large scale fire potential. While there will be beneficial effects, this action does not rely on those effects to balance potentially significant adverse environmental effects. The beneficial effects of the action do not bias the finding of no significant environmental effects. Potential adverse effects have been substantially or fully reduced through project design (Attachment A). For example, potential water quality effects have been reduced by including buffer zones on both sides of all perennial and intermittent streams in the project area. INFISH recommended buffer widths will be applied and pre-approved by the BLM fisheries biologist or watershed specialist and no work will occur within these zones.

2. *The degree of effect on public health or safety.*

The project will reduce the risk of large, high severity wildland fire on approximately 1,348 acres (EA pages 5, 8, 14, and 15 and Attachment A). These efforts will improve the potential for successful suppression of a wildland fire within the project area and increase firefighter and public safety (Attachment A of the EA). The project will have a beneficial effect on public health and safety within the wildland urban interface areas by reducing current and expected risks of a large wildland fire through the reduction of existing fuels. The loss of property and resource and social/recreational values associated with wildland fire will also be reduced. During prescribed burning there will be some short-term effects to air quality that could affect health of individuals in the community. Burning will be conducted at favorable times to ensure safe burning and to minimize adverse effects in accordance with applicable air quality regulations (EA pages 56 and 57 and Attachment A).

3. *The degree of effect on unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.*

The project area is not in proximity to and/or will not affect any known historic sites, parklands, prime or unique farmlands, floodplains, environmental justice issues, known hazardous wastes, Native American religious concerns, wetlands, Wild and Scenic Rivers, or ecologically critical areas. A cultural resource survey was conducted and no resources were identified in the project area (EA pages 49-51). Protection measures will be put in place if any historic properties are discovered within the project area during

project implementation (Attachment A). Non-treatment areas for the project include riparian habitat conservation area buffers adjacent to streams in the project area. Additional protective measures are identified in Attachment A of the EA.

4. *The degree to which effects on the quality of the human environment are likely to be highly controversial.*

Based on review of the public comments and the project analysis, we do not find any highly controversial effects to the human environment. There is no scientific controversy over the effects of the proposal. Overall, the public was in support of the Proposed Action and design criteria have been added to address the concerns that were raised by the public (see above discussion under "Rationale for Decision" and Attachment A). Fuels management actions have been occurring for a number of years and the effects of this project are similar in nature to those of other vegetation treatment and fuel hazard reduction projects that have been implemented.

5. *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*

Similar projects have exhibited the desired change in wildfire behavior by reducing fire intensity and rate of spread. The risks associated with the project are recognized, familiar and acceptable. The analysis is based on the best use of available data on fire behavior and previous experience with this type of fuel reduction project. Vegetation and fuel reduction treatments have been implemented for many years in the vegetation types typical of the project area and effects of those projects have been analyzed. Therefore, the effects are not unique nor do they pose unknown risks. Practices that the agency has successfully used before will be effective in holding environmental effects at or below expectations (see Attachment A of the EA for a discussion of best management practices (BMPs) and design criteria).

6. *The degree to which the action may establish a precedent for future actions with significant impacts.*

A decision to implement the fuel reduction project does not establish any future precedent for other actions that may have a significant effect. These types of fuels reduction activities have been occurring for a number of years. There has been no indication that a precedent for future actions with significant effects will be established. Future actions will be evaluated through the NEPA process and will stand on their own as to environmental effects and project feasibility.

7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into smaller parts.*

Cumulative effects were analyzed for each resource (EA pages 38, 39, 40, 41, 44, 48, 49, 51, 52, 54, 57, 58, 61, 63, 67, 71, 73, and 75). The United States Forest Service, Idaho Department of Lands, Boise Cascade Corporation, and private individuals own land near the project area. Recent or reasonably foreseeable actions include State and private

timber harvest for commercial and fuel mitigation purposes, subdivision development, road projects, and prescribed burning (EA page 38). Fuel modifications are currently occurring in a nearby subdivision on private land to lessen damage from high intensity fires. Some adjoining IDL lands have undergone recent harvesting and prescribed burning. Boise Cascade has sold two parcels near the project area (one for subdivision development and one for logging). The slopes and soil types in the adjacent private and State lands have similar properties as the project area but may be less erodible due to more moderate slopes.

Warm Springs Road has experienced severe degradation and erosion and currently it is partially passable by pickup truck or ATV only. The main sources of sediment are the running surface of the road, two cutslope failures, and two fillslope failures. Overall, under the current condition, the road, drainage ditches, cutslopes, and fillslopes do not appear to be delivering large amounts of sediment downstream. The actual amount of sediment being transported to perennial stream channels appears to be low (EA page 39).

If the southern portion of Warm Springs Road is reconstructed in the future to meet BLM Road Standards (EA pages 16-18), direct effects to soils would be expected and soil erosion could increase in the short term. Road building on this soil and landtype is potentially a major source of sediment and the disturbance could lead to an increase in noxious weeds and invasive species. Ultimately site productivity, water yield, water quality, and aquatic habitat could be affected. If the road is improved, decomposed granitic material would be exposed. Sediment yields would increase in the short term and would gradually diminish as ditch lines, cutslopes and fillslopes become revegetated. Erosion control devices would be utilized as necessary to minimize erosion and sediment movement associated with the road project.

The premise of the Proposed Action alternative is that it would significantly decrease the likelihood of high intensity wildland fire. The cumulative impact of using thinning and prescribed fire to return the historic fire regime to the project area would be positive in the long term because it would reduce fuel loads and lower the risks of large and/or severe wildland fires which could destroy resources over large areas. Significant cumulative effects are not expected due to project specific design criteria and implementation of standard BMPs.

8. *The degree to which the action may adversely affect sites, structures, districts, highways, or objects listed or eligible for listing in the National Register of Historic Places or cause loss or destruction of significant scientific, cultural, or historical resources.*

The Proposed Action will not have a significant adverse effect on sites that are listed in, or are eligible to be listed in, the National Register of Historic Places because none are known in the project area. A cultural resource inventory was conducted and no sites were identified (EA pages 49-51). Design criteria are included in the Proposed Action in the event that any sites are discovered during implementation (EA Attachment A).

9. ***The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.***

In compliance with Endangered Species Act requirements, a BA of this project's impacts on threatened and endangered species was completed. The determination in the BA is that the Proposed Action would have "no effect" on gray wolf, Canada lynx, and bald eagle and "may affect, not likely to adversely affect" bull trout.

10. ***Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.***

The Proposed Action meets Federal, State, and local laws for the protection of the environment, including the Cascade RMP, and meets disclosure requirements of the National Environmental Policy Act (EA page 5). Local governments were informed of the proposal during scoping and the public comment period (EA pages 6, 76, 77, 78, and 79).

/s/ Rosemary Thomas	02/01/06
Four Rivers Field Office Manager	Date

United States Department of Interior
Bureau of Land Management, Four Rivers Field Office

Garden Mountain Fuels Management Project

Decision Record

Proposed Action: The Boise District Bureau of Land Management (BLM), Four Rivers Field Office (FRFO), is proposing to improve forest health and reduce fuels and associated fire hazards on approximately 1,348 acres of BLM-administered lands in the Garden Mountain area. The Garden Mountain project is located northwest of the communities of Garden Valley and Crouch, approximately 40 miles northeast of Boise, Idaho in Boise County, in portions of T9N, R4E, Sections 5-8, and 17-19.

The purpose of the proposal is to reduce fuels and restore the historic fire regime in the Garden Mountain project area. This proposal is needed to: 1) reduce the risk of a stand-replacing crown fire to resources and communities around Garden Mountain; 2) improve suppression success by creating fuelbreaks that would protect lives and public and private property; and 3) improve forest health conditions.

The Proposed Action is designed to meet forest health objectives and reduce the threat of wildland fire from spreading to adjacent private land and vice versa. Selective harvesting for forest health and shaded fuelbreaks (defensible zones) followed by prescribed fire are the primary treatment types proposed. Activities such as shaded fuelbreaks, selective timber harvests, and slash piling and burning have been designed to reduce fuel hazards near roads, interface areas, and private land. These activities would help to create areas of defensible space in the case of wildfires, as well as restore the historic fire regime typical of the area.

The Proposed Action description in the Garden Mountain Fuels Management Project Environmental Assessment (EA), which was completed to examine the potential effects from implementation of the Proposed Action, identifies specific actions and treatment locations that would meet the purpose and need for this project (EA pages 10-18). Four specific management units (MUs) and treatment prescriptions are identified in the Proposed Action and discussed in detail in Attachment A of the EA. The EA is available at the FRFO. Maintenance and improvement of the northern portion of Warm Springs Road would be necessary to allow access for trucks in and out of the project area. In addition, maintenance of this road was authorized in EA No. 94017, Road and Trail Maintenance. The work is described on page 17 of the EA. A 500-foot long, 14-foot wide temporary spur road would be constructed to access MU 2 through an easement on adjacent private land (T9N, R4E, S5 SENE).

Decision: The decision is to implement the Proposed Action, which authorizes fuels reductions in the Garden Mountain project area.

Rationale for Decision: The EA determined that the Proposed Action would not result in any undue or unnecessary environmental degradation and is in compliance with the Cascade Resource Management Plan (RMP). Project design criteria that are described in Attachment A of the EA will serve to minimize potential impacts to resources. Applicable criteria will be included as

stipulations in the implementation contract in order to ensure that impacts are minimized or avoided. The EA addresses the required critical elements of the human environment; there are no floodplains, wetlands, Areas of Critical Environmental Concern (ACECs), environmental justice issues, Wild and Scenic Rivers, known hazardous wastes, Native American religious concerns, prime or unique farmlands, or wilderness areas within the project area (pages 25-26). In addition to the EA, a biological assessment (BA) was completed, which addressed the potential for impacts to federally listed threatened and endangered species from the Proposed Action. Consultation with the U.S. Fish and Wildlife Service (FWS) has occurred and a determination of "may affect, not likely to adversely affect" was developed for the threatened and endangered species. Archeological and special status plant surveys have been conducted; no resources were identified in the project area and therefore no impacts to those resources are anticipated.

The project proposal and invitations to attend two public meetings were mailed to Federal, State, and local agencies, organizations, and the interested public on February 27, 2004, initiating a 30-day comment period. Two public meetings were held in March 2004, one at the Crouch Community Hall and one at the BLM FRFO in Boise. The public meetings were advertised in the Idaho World and the Idaho Statesman newspapers, and flyers advertising the meetings were distributed to local businesses in the Crouch/Garden Valley area. Thirteen individuals attended the public meeting in Garden Valley and one person attended the meeting in Boise.

Overall, public comments received were supportive of the Proposed Action. Because of concerns about dust, noise, and safety concerns, design criteria were added to the Proposed Action and restrictions will be placed in the implementation contract – such as time of operations, road dust abatement treatments, and speed restrictions – to avoid potential impacts. Another concern was related to burning and smoke emissions; design criteria were again added to the Proposed Action stating the BLM would apply management techniques to minimize smoke production and to enhance dispersion, including burning under optimum weather conditions, expanding the burning season, using ignition patterns that reduce prolonged emissions where applicable, burning small blocks, etc. In addition, the BLM would ensure that the general public is informed of the status of managed fires, including smoke management contingencies, through the local press (Attachment A pages A-6, A-7, and A-10). A summary of these public meetings and a list of concerns are included in the EA (pages 76-78).

A third public meeting to discuss the Draft EA was held June 29, 2004, at the Crouch Community Hall. Public notices were published announcing the opportunity to comment on the EA and notifying the public of the meeting. These notices were published in the Idaho World Newspaper, the Idaho Statesman Newspaper, the Star News in McCall, and the Long Valley Advocate in Cascade. The comment period on the EA ran from June 10 to July 8, 2004. Five people attended the meeting and one written comment was received during the comment period. Concerns discussed are summarized in the EA (pages 78-79). Design criteria added to the Proposed Action to address all of the concerns identified by the public are listed in Attachment A of the EA. All comments received throughout the analysis were considered in this decision. Overall, the general public was in support of the project. Therefore, the decision has been made to implement the project.

The premise of the Proposed Action alternative is that it would significantly decrease the likelihood of high intensity crown wildfire. The cumulative impact of using thinning and prescribed fire to return the historic fire regime to the project area would be positive in the long term because it

would reduce fuel loads and lower the risks of large, high-intensity fires which could destroy resources over large areas. Implementation of the Proposed Action will help reduce the probability of a large-scale, high-intensity wildfire, sustain a healthy forest, and reduce the opportunity for the epidemic spread of insects and disease. Alternative 3 – the Shaded Fuelbreak alternative – is a subset of the Proposed Action and would reduce the risk of wildfire in the wildland urban interface area, but would not improve forest health (pages 19-20).

Under the No Action alternative the potential for a high-intensity, stand replacing crown fire in the Garden Mountain Fuels Management project area would remain high and would continue to increase over time due to accumulating fuel loads (pages 9-10). Presumably, wildland fires would be larger and burn hotter under the No Action alternative than the Proposed Action, and as a result multiple resources would be indirectly affected. Wildlife habitat could be destroyed for as long as 80 to 100 years, and mid to late seral dependent wildlife could lose habitat for 80 to 200 years. Habitat and mechanisms for noxious weeds and invasive species introduction and proliferation would be created. A high-intensity fire would affect soil productivity and increase soil erosion by reducing vegetative ground cover. Water quality would be impacted from increased sedimentation, which would in turn impair beneficial uses and affect proposed bull trout critical habitat and IDEQ 303(d) water quality limited stream segments. Air quality would be impacted for the duration of the fire and until the smoke could disperse from the area. Visual resources would be affected until revegetation occurred. Other alternatives were also considered in the EA and dismissed from further consideration (page 9). Of all the alternatives considered, it was determined that the Proposed Action best met the project's purpose and need.

Any short-term erosion and potential water quality impacts associated with the Proposed Action have to be weighed against the risk of potential high intensity fire that could result from implementation of the No Action alternative. By thinning portions of the landscape, restoring the understory of grasses, shrubs, and forbs, and re-introducing the natural role of fire, natural processes and functions are being restored in the project area. In the event of a wildfire, the project area is expected to burn with much less intensity and will be easier to suppress or manage.

Appeals: This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR 4. If an appeal is filed, the motive of appeal must be filed in this office within thirty days of the date of this decision. The appellant has the burden of showing that the decision appealed from is in error. If you wish to file a petition pursuant to regulations found in 43 CFR 4.21(a)(2) for a stay of the effectiveness of this decision during the time your appeal is being reviewed by the Board, you need to submit it concurrently with your appeal, and it must address the Standards and Procedures for obtaining a stay identified in 43 CFR 4.21(b). Copies of the notice of appeal and petition for stay must also be submitted to the Interior Board of Land Appeals and to the appropriate office of the Solicitor at the same time the documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted. If an appeal is not received on this project, the project can be implemented five days after the close of the 30-day appeal period.

/s/ Rosemary Thomas — 02/01/06

Four Rivers Field Office Manager — **Date**