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Department of
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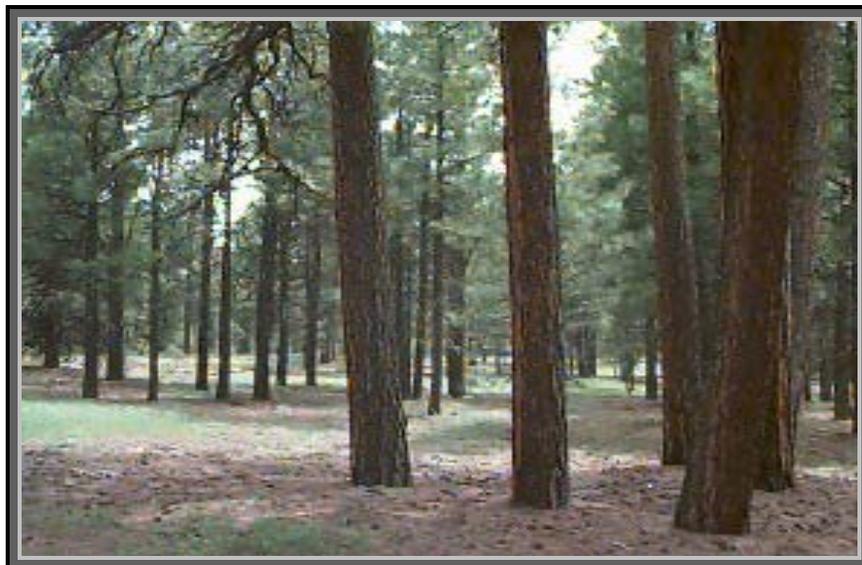
Forest
Service

March 2004

Toolbox Fire Recovery Project

Final Environmental Impact Statement

Summary





File Code: 1950

Date: March 15, 2004

Dear Reader:

Enclosed is your copy of the Final Environmental Impact Statement for the Toolbox Fire Recovery Project. This Final Environmental Impact Statement (FEIS) describes the effects of implementing six alternatives for the recovery of National Forest System lands that burned in the Toolbox Complex Fires of 2002 on the Fremont-Winema National Forests in south central Oregon. The fires burned approximately 49,500 acres of National Forest on the Silver Lake Ranger District, 8,000 acres of Bureau of Land Management land, and 27,500 acres of private land.

The purpose of the project is to, as quickly as feasible, create sustainable forest, stream, and riparian habitats within the project area that meet the desired conditions established by the Fremont N.F. Land and Resource Management Plan (LRMP), as amended. In accordance with that Plan, the desired forest condition is one with late and old structural conditions (LOS) that are closer to the Historic Range of Variability (HRV).

The preferred alternative (Alternative G) would implement specific combinations of actions to promote the development of future sustainable late and old structural forest, on approximately 20,800 acres. This combination of actions includes salvage removal of fire and insect killed trees with follow-up fuels reduction, site preparation and planting. Considered separately, Alternative G would implement salvage harvest on approximately 10,230 acres, fuel treatments on about 20,200 acres, and conifer planting on about 20,200 acres. (The total number of acres to be treated with any combination of these activities remains at 20,800 acres.)

Snag retention, both in blocks of identified optimal or suitable snag and down wood habitat, and within harvest units and other treatment units are an integral part of the design of all alternatives. Additional projects in Alternative G include placement of large woody debris (9.6 miles of stream) and deciduous planting for riparian improvement (7 acres), aspen enhancement (690 acres), road reconstruction (re-surfacing of 4.0 miles), road decommissioning (72 miles) and closure (10 miles) and precommercial thinning of existing plantations (2,200 acres). A site-specific Forest Plan amendment pertaining to mule deer habitat in portions of the project area is a component of Alternative G.

In the other action alternatives (C, D, E, and H), salvage harvest is proposed on between approximately 6,309 and 10,230 acres, with varying amounts of the other project elements listed above.

A final decision regarding which combination of actions to implement will consider how fully the project purpose and need is met by each of the alternatives, and the manner in which each alternative responds to the key issues raised and public comments received during the analysis. The Record of Decision (ROD) will explain my decision. The Notice of Rights to Appeal is discussed in the ROD. The Record of Decision will be sent to you under separate cover within the next five weeks.

Copies of the FEIS are available upon request from Silver Lake Ranger District, P.O. Box 129, Silver Lake, Oregon, 97638 (541-576-2107), or from the Internet at:

<http://www.fs.fed.us/r6/winema/management/analyses/toolbox/index.shtml>

I want to thank those of you who took time to review and submit comments on the Draft Environmental Impact Statement. I appreciate your interest in the management of the Fremont-Winema National Forests.

Sincerely

KAREN SHIMAMOTO

Forest Supervisor

Enclosure



TOOLBOX FIRE RECOVERY PROJECT

Environmental Impact Statement

United States Department of Agriculture – Forest Service
Pacific Northwest Region - Fremont-Winema National Forests

Lead Agency: USDA Forest Service
Fremont-Winema National Forests

Responsible Official: Karen Shimamoto
Forest supervisor
Fremont-Winema National Forests
1300 South G Street
Lakeview, OR 97630

For Further Information Contact: Rick Elston, IDT Leader
Silver Lake Ranger District
P.O. Box 129
Silver Lake, OR 97638
(541)-576-7569

Abstract:

This Final Environmental Impact Statement (FEIS) describes the effects of implementing six alternatives for the recovery of National Forest System lands that burned in the Toolbox Complex Fires of 2002 on the Fremont-Winema National Forests in south central Oregon. The fires burned approximately 49,500 acres of National Forest on the Silver Lake Ranger District, 8,000 acres of Bureau of Land Management land, and 27,500 acres of private land. The purpose of the project is to, as quickly as feasible, create sustainable forest, stream, and riparian habitats within the project area that meet the desired conditions established by the Fremont N.F. Land and Resource Management Plan (LRMP), as amended. In accordance with that Plan, the desired forest condition is one with late and old structural conditions (LOS) that are closer to the Historic Range of Variability (HRV). The preferred alternative (Alternative G) would implement specific combinations of actions to promote the development of future sustainable late and old structural forest, on approximately 20,800 acres. This combination of actions includes salvage removal of fire and insect killed trees with follow-up fuels reduction, site preparation and planting. Considered separately, Alternative G would implement salvage harvest on approximately 10,230 acres, fuel treatments on about 20,200 acres, and conifer planting on about 20,200 acres. Snag retention, both in blocks of identified optimal or suitable snag and down wood habitat, and within harvest units and other treatment units are an integral part of the design of all alternatives. Additional projects in Alternative G include placement of large woody debris (9.6 miles of stream) and deciduous planting for riparian improvement (7 acres), aspen enhancement (690 acres), road reconstruction (re-surfacing of 4.0 miles), road decommissioning (72 miles) and closure (10 miles) and precommercial thinning of existing plantations (2,200 acres). A site-specific Forest Plan amendment pertaining to mule deer habitat in portions of the project area is a component of Alternative G.

In the remaining action alternatives, salvage harvest is proposed on between approximately 6,309 and 10,230 acres, with varying amounts of the other project elements listed above.

The Key Issues identified during scoping focused on changes in motorized access, economic efficiency and economic opportunities, effects on soils, watersheds, and aquatic habitat, effects on wildlife habitat (in particular snag and down wood dependent species and mule deer habitat) and recovery using a limited-intervention approach vs. recovery using a full range of active management practices, including commercial salvage.

TOOLBOX FIRE RECOVERY PROJECT

ENVIRONMENTAL IMPACT STATEMENT - SUMMARY

Introduction

This document is a summary of the Toolbox Fire Recovery Project Final Environmental Impact Statement (FEIS). The FEIS considers the effects of various alternatives to promote the recovery of the Toolbox Fire Complex area that was burned by wildfire in July and August 2002.

For further information (including a copy of the full FEIS), contact:

Rick Elston, IDT Leader
Silver Lake Ranger District
P.O. Box 129
Silver Lake, OR 97638
(541)-576-7569

The full FEIS is also available at: <http://www.fs.fed.us/r6/winema/management/analyses/toolbox/>

Background

Historically, frequent, low intensity wildland fire was a natural phenomenon in eastern Oregon ecosystems. Suppression of these fires became the norm beginning with European settlement of the West and the establishment of National Forests. Nearly a century of effective fire suppression has been a primary factor in the development of much denser forests than occurred historically. Two years of below-normal precipitation and weather patterns favorable for fire contributed to extensive wildland fires in the western United States in 2002. During the summer of 2002, eastern Oregon and the Fremont-Winema National Forests were among areas experiencing uncharacteristic, high intensity, stand replacing fires. On July 12, 2002 a lightning storm ignited 67 fires on the Fremont-Winema National Forests. Two of these fires, the **Toolbox Fire** and the **Silver Fire** became the primary fires within the Toolbox Complex (see map on next page). Results included:

- Approximately 85,000 acres burned; including about 49,500 acres of National Forest land, 8,000 acres of Bureau of Land Management land, and 27,500 acres of private land.
- 10 homes were threatened and eight to ten residents were either evacuated or prepared to evacuate.
- Two historical buildings burned – the Fremont Point Cabin and an historical mining cabin.

In the fall of 2002 the Forest Service and the Burned Area Emergency Rehabilitation team (BAER) accomplished emergency recovery work, focusing on stabilizing soils and preventing erosion in areas most severely burned.

The Project Area

The Toolbox Fire Recovery Project area totals approximately 47,200 acres of Fremont National Forest lands within: T 29 S, R 13-16 E, T 30 S, R 13-16 E, and T 31 S, R 13-15 E, Willamette Meridian. The project area is defined as National Forest System lands, within the Toolbox Complex, within:

Silver Creek Watershed –

(The following subwatersheds)

- Middle Silver Creek
- West Fork Silver Creek
- Upper Silver Creek
- Thompson Reservoir
- Benny Creek

Silver Lake Watershed –

(The following subwatersheds)

- Upper Duncan Creek
- East Duncan Creek
- Lower Duncan Creek

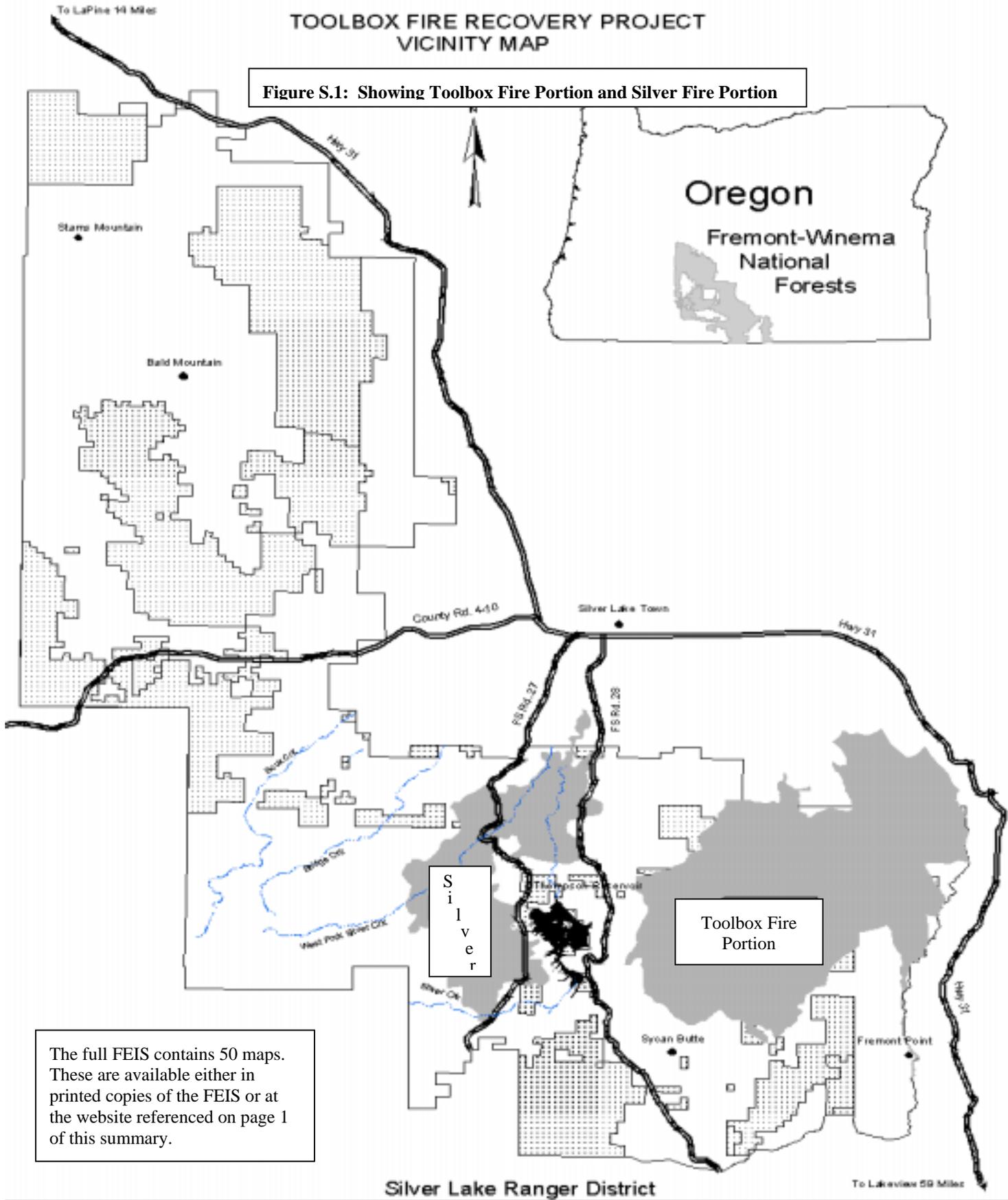


Figure S.1: Showing Toolbox Fire Portion and Silver Fire Portion

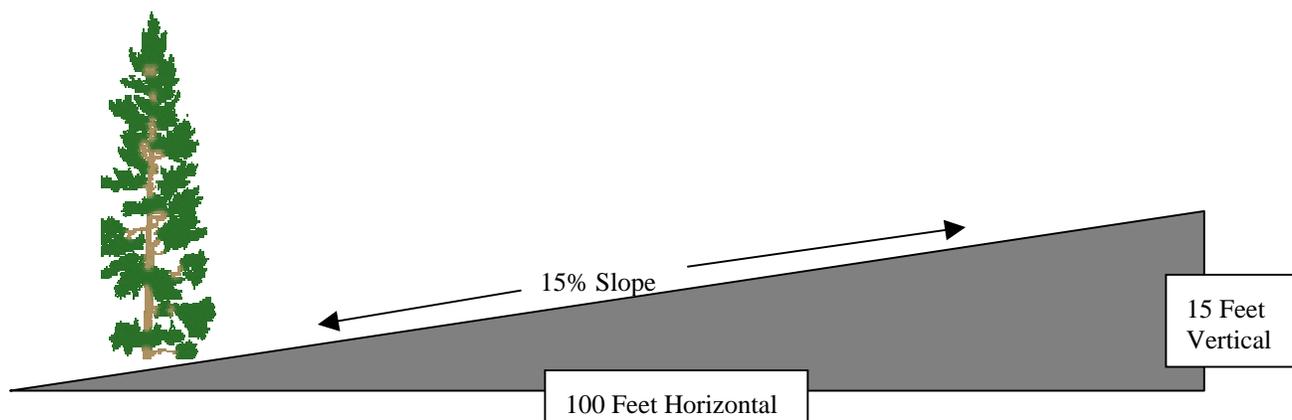
The full FEIS contains 50 maps. These are available either in printed copies of the FEIS or at the website referenced on page 1 of this summary.

The project area is bounded on the east by the north-south trending fault block feature known as Winter Rim. An unburned strip varying between 3 and 7 miles wide occupies a north-south corridor between the Silver Fire (the western portion of the project area) and the Toolbox Fire (the eastern portion of the project area). Within this unburned corridor are locally familiar landmarks such as Thompson Reservoir, East Bay Campground, and Hager Mountain.

The terrain within the project area is almost universally of gentle slope. About 86 percent of the area has slopes under 15 percent. Only about 3 percent of the area has slopes over 30 percent.

For reference, a 15 percent sideslope applies to ground that has 15 feet of vertical rise or fall for every 100 feet of horizontal distance (see below):

Figure S.2: Example of 15 Percent Sideslope



Elevations in the project area range from approximately 4,450 feet to 7,200 feet (top of Winter Ridge).

Purpose of and Need for Action

The Fremont-Winema National Forest has developed project proposals, analyzed in an EIS, to support the purposes of this project. The purposes of this project are to:

- As quickly as feasible, create sustainable forest, stream, and riparian habitats within the project area that meet the desired conditions established by the Fremont N.F. Land and Resource Management Plan (LRMP).
- Provide the highest production of commercial timber and jobs consistent with the first purpose above.
- Retain the most snag and down wood habitat consistent with the first purpose above.
- Retain the most mule deer habitat effectiveness consistent with the first purpose above.
- Retain the most roaded access consistent with the first purpose above.

It is expected that the projects would be implemented between 2004 and 2011. The underlying needs for action derive from the differences between current resource conditions and desired, sustainable, resource conditions as discussed in the LRMP, as amended. There are six underlying needs for the project:

It is expected that the projects would be implemented between 2004 and 2009. The need for the proposed action derives from the differences between current or expected resource conditions and desired resource conditions. Desired conditions are based on Forest Plan direction and management objectives. The proposed action is designed to move current resource conditions closer to the desired conditions. There are six underlying needs for the project:

- *The need for wildlife habitat within the project area, including snags and down wood, and live forest.* The LRMP directs retention of certain levels of these habitat components. The objective of this direction is to ensure sale

activities are designed to retain or develop habitat to provide for the needs of snag and down wood dependent species, old growth dependent species, threatened, endangered, and sensitive (TES) species, and mule deer.

A component of the need for wildlife habitat is the need for fewer roads within the project area. The LRMP provides direction to reduce overall road densities to 2.5 miles of road per square mile of land. While roads provide desired access for many purposes, such as recreation, fuel-wood gathering and timber harvest, they can increase human disturbance of wildlife such as big game. Current overall road density on Forest Service lands within the project area is 3.68 road miles per square mile of land.

- *The need for lower surface fuel loadings within the project area.* The LRMP establishes the objective of creating a healthy forest condition, including protection from the damage caused by uncharacteristic wildfire. With lower fuel loads, future fire behavior would be more similar to the low-intensity wildfires that previously characterized fire patterns in the low-elevation forests in this area. Lower fuel loads would reduce the risk of adverse effects to vegetation and soils that can result from long-residence heat caused when heavy down fuels burn. Lower fuel loads would also allow expanded use of prescribed fire, which is a relatively economic way to maintain healthy forest conditions and develop open park-like stands.
- *The need for high-quality fish and riparian habitat within the project area.* The LRMP establishes an objective of managing all waterbodies (Management Area 15) to maintain or improve water quality, fish habitat, recreation opportunities, and riparian habitat for dependent wildlife species. The Toolbox Fire complex burned twenty-eight linear miles of riparian areas along perennial fish-bearing streams or their intermittent tributaries. In some streams this resulted in less functional riparian zones because of loss of large woody debris or riparian vegetation, or increases in sediment and/or water temperature. Road 2917413, adjacent to Silver Creek, has inadequate drainage and when saturated with moisture, allows the introduction of sediment into Silver Creek, adding to the sediment increases created by the fire and, potentially, salvage logging. Installing a cross-drain culvert on Road 2917413 would eliminate this additional sediment source.

Another component of the need for high-quality fish and riparian habitat is the need for fewer roads within the project area. While roads provide desired access for many purposes, such as recreation, fuel-wood gathering, and timber harvest, they can also interrupt groundwater flows and introduce unhealthy amounts of sediments into streams.

Aspen and willow trees provide important components of riparian habitat. In some parts of the project area, aspen has quickly regenerated since the 2002 fires and will need interim protection from browsing by livestock or big game until it grows larger. Before the fires, some parts of the riparian habitat within the project area had already lost many of their deciduous trees because of conifer encroachment and competition. The 2002 fires removed much of the conifer encroachment, and the opportunity exists to re-establish the deciduous component on these sites through planting.

- *The need for endemic, rather than epidemic, populations of bark beetles within the project area.* The LRMP establishes the objective of creating a healthy forest condition, including protection from the damage caused by insects. Trees killed by the 2002 fire, as well as those weakened by the fires and presently dying, provide breeding habitat for bark beetles and allow them to proliferate. Epidemic beetle populations can attack and kill green trees in much larger numbers than when beetle populations remain at endemic levels.
- *The need for forest stands with structural conditions closer to the Historic Range of Variability (HRV) within the project area.* The LRMP, as amended, provides direction to move forest stands toward these conditions, including the development of large diameter, open canopy structure and open park-like stands. For eastside low-elevation forests, such conditions offer the best likelihood of sustainability over the long term. Before Euro-American settlement, forests within the project area were maintained in this healthy, sustainable condition by repeated low-intensity fires. These fires killed most small trees and a few larger trees without destroying the structure of the forest, kept fuel loads at relatively low levels, and maintained open, park-like conditions.

Developing a forest with structural conditions closer to HRV requires fuel loads low enough to safely re-introduce fire as a periodic disturbance agent. The 2002 fires created forest conditions inside the project area that are very different from the HRV. Compared to the HRV for the area, there are now many more standing dead trees (of all sizes) and far fewer live large, old trees. Also, the project area will contain much higher fuel loads than were present historically as the dead trees begin to fall.

In this project area, some of the actions that could contribute to the need for forest stands with structural conditions closer to HRV, as well as the need for fuels reduction, would require a **site-specific Forest Plan amendment** for mule deer habitat outside of winter range. The LRMP provides direction to maintain certain levels of cover for mule deer on winter, summer and transition ranges, as well as certain levels of overall habitat effectiveness. As described in Chapter 2 of the EIS, some action alternatives (C – the proposed action, and G – the preferred alternative) include fuels treatment proposals that address the need for structural forest conditions closer to HRV. These proposed treatments would result in a net decrease of cover for mule deer in summer or transition range in certain Duncan Creek subwatersheds. A Forest Plan amendment specific to these subwatersheds is needed if either of these alternatives is adopted (without changes to the proposed fuels treatments) to retain consistency with the LRMP.

Green stands (including plantations) within the project area currently exhibit densities that are outside the HRV and will not promote the development of open, park-like stands. At the same time, the 2002 fires created large areas of moderate to high tree mortality. These areas are not likely to re-grow large ponderosa pines (the large, open canopy structure directed by the LRMP) for hundreds of years without artificial reforestation, since most of the seed trees perished.

- *The need for commercial timber production within the project area.* The LRMP directs or authorizes the production of timber, including salvage timber, from many of the management allocations within the project area, within standards and guidelines established to meet a variety of other resource objectives. There is currently a short-term opportunity to capture value from the trees killed in the fire and a long-term opportunity to develop a sustainable forest that will yield future commercial volume in accordance with management direction. In some parts of the project area there is a need for some road reconstruction and some temporary road development so the dead trees can be removed safely and economically.

Prior to about 1900, a pattern of frequent low intensity disturbance from fire was present in this area, as well as throughout much of the interior West (Everett, 1993, Agee 1993, Miller 2002). This pattern was a primary factor in maintaining a relatively stable or sustainable forest condition, particularly in ponderosa pine forests. ***Sustainability, as used in this document, refers to the ability of forested systems to withstand or resist rapid and widespread structural change due to fire, insects, and disease.*** The pattern of frequent low intensity disturbance has been interrupted for the past 80 to 100 years, primarily by fire suppression, though other factors have also contributed. The interruption has led to a succession of conditions that, rather than contributing to forest sustainability, allow the occurrence of extreme events, such as stand replacement fires.

An initial non-sustainable condition that resulted from the interruption of natural fire processes was green forest densities that exceeded historical densities by a significant factor. A good example of this is the commonly occurring forested areas that have 200 – 600 or more trees per acre, made up of tree size classes ranging from 0-1” diameter breast height (dbh) up to 36” (and greater) dbh. Historically, such a forest, in the ponderosa pine type, was more likely composed primarily of single-storied stands containing 10 to 25 large trees and occasional patches of seedling/sapling sized trees which, due to frequent low intensity fires did not live to maturity, above an open grassy/forb/shrub area.

A specific aspect of green forest density that bears explanation is the concept of “ladder fuels.” The typical present day ponderosa pine stand contains trees of all age classes. This condition is called “multi-storied.” These stories create a ladder-like structure that, in certain burning conditions, allows fire to move from the ground to the tree crowns. When a fire start does occur in today’s typical ponderosa pine forest, the overall stand density and the presence of ladder fuels can lead to fire behavior that is unlike the fires that occurred under historical stand conditions. Rather than a low intensity ground fire that provides needed stand maintenance, a much hotter, stand-replacing surface and crown fire can occur. That is what happened in July 2002 in many parts of the Toolbox Fire Complex. Over one-half of the forested acres within the fire perimeter had greater than 50 percent of the trees killed, including many thousands of trees that were at least 200 years old. These older trees had likely experienced an estimated 5 to 12 “cycles” of low intensity, stand-tending fire, either directly beneath them or in their near vicinity, during the first half of their lives. Yet the fire of July 2002 was of a nature that such trees were killed. The July 2002 fires also resulted in areas of widespread mortality at a “stand” level. Stand replacement fires in these low-elevation, predominately ponderosa pine forests had not been the historical norm prior to the past 100 years. Ponderosa pine has not evolved to reforest an area (“natural regeneration”) more than 100 to 200 feet from the parent tree.

The future conditions that would result from the Toolbox Fire Complex, in the absence of some form of active management, are expected to be a further continuation of an unstable or non-sustainable scenario. Since tree densities were

very high before the 2002 fires and these fires killed many trees, the current amount of standing dead trees is well above historic norms. The future condition that would unfold over several decades, in the absence of active management, includes several elements that would be a continuation of non-historical, non-sustainable conditions:

- Due to extensive areas of tree mortality, the amount of area without a ponderosa pine seed source is greater than would have occurred historically.
- Where a seed source is present and natural regeneration does occur, it would often be overabundant. Historically, periodic low-intensity fires would have thinned these areas when the regeneration was young and kept tree densities low. Now however, following a stand replacing surface and crown fire, the fuel loadings that would be created when the standing dead trees fall over would have the practical effect of eliminating from consideration the use of prescribed fire. Prescribed fire is considered an important, cost-effective tool in moving young ponderosa pine stands toward sustainable older stands. Areas of heavy fuel loading (either from large down fuels or concentrations of smaller fuels) present unacceptable risks in terms of control of prescribed fire, if they are left in place.
- In addition, if untreated these future fuel conditions would be well above not only historical conditions but also above surface fuel loadings just prior to the 2002 fires. In the event of a fire start over the next several decades, such conditions would contribute to another round of high intensity fire outside of the historical pattern of low intensity stand-tending fires. In an environment of heavy fuels close to the ground comprised of both large down trees and concentrations of smaller trees, the potential for soil damage would be higher than the amount of damage that occurred during the 2002 fires, where the primary excess fuel loading was in the form of dense stands of standing green trees.

The movement toward sustainable conditions is the focal point of the word “recovery” as it is used in the name of this project – the “Toolbox Fire Recovery Project.”

Changes Between the Draft EIS and the Final EIS

Chapter 1 of the FEIS presents a brief history of the evolution of the Proposed Action followed by a moderately detailed description of that action. Based on internal review, the DEIS discussion of this topic was determined to be confusing. As a result, Alternative C, the proposed action introduced in this summary, and detailed in Chapter 2, is addressed consistently throughout the document as “the Proposed Action”. The need for the project has remained consistent between DEIS and FEIS; however, clarification has been added to some of the need statements themselves.

Information used in designing the alternatives that were presented in the DEIS was generated from a mix of extensive field reconnaissance, use of ortho-photos and complete post-fire aerial photo series, use of Global Positioning System (GPS) technology, and various resource-specific databases. As noted in the DEIS, ongoing field verification during the summer of 2003, including additional use of GPS, was expected to result in adjustments in acreages or possibly other elements, such as mitigations. Another source of adjustment between the DEIS and FEIS is as a result of additional public involvement that occurred following issuance of the Draft Environmental Impact Statement (DEIS).

The following are the primary changes that were made to the alternatives (for further details see Chapter 2 alternative descriptions):

- In all alternatives considered, acres of treatment and details of treatment were refined based on additional field evaluations and information gathered following issuance of the Draft EIS. The acreage of some activities remained essentially the same, while the acres of proposed commercial salvage harvest were reduced between 1 percent and 29 percent (depending on alternative). A corresponding reduction in the amount of proposed classified road reconstruction and proposed temporary road has occurred between the DEIS and FEIS.
- Adjustments between the DEIS and FEIS have resulted in only 16 acres of salvage proposed within Category 1 RHCAs in all action alternatives (all of that within roadside hazard and maintenance corridors). This is a reduction of up to 55 percent (as in the case of Alternative C). Proposed harvest in Category 3 and 4 RHCAs has also been reduced between the DEIS and FEIS.
- In all action alternatives (except E), those areas that were previously proposed for commercial salvage and were dropped as commercial salvage would still receive fuels treatment actions if their predicted fuel loading, based on percent mortality and stand characteristics, would exceed 20 tons per acre.

- Mitigation measures have been refined and strengthened based on further interdisciplinary review and DEIS comments.

Effects analyses, as presented in the resource sections of Chapter 3, have been revised to reflect the above adjustments.

The Proposed Action

In November 2002, the Fremont National Forest issued a proposed action in response to the purpose and need for the project. It was determined, once 2002 field reconnaissance and an initial effects analysis was completed, that there was a need to spatially adjust the commercial salvage proposals contained in that proposed action, typically by reducing their size, in order to provide specific resource protections or to achieve better compliance with Forest Plan Standards and Guidelines. Prior to the adjustments, the proposal was given the title “Alternative B”). These adjustments resulted in Alternative C (a modified proposed action), as presented in the DEIS. Due to factors discussed above, Alternative C, as presented in the FEIS, has been further adjusted. Alternative C, with these adjustments, is the proposed action in the FEIS. The findings of the two watershed assessments prepared during the past seven years, the 2002 post-fire inventory, and the additional information gathered in 2003 were used to develop the Toolbox Fire Recovery Project proposed action, as well the alternatives. Each proposed action for recovery is based on Fremont National Forest Land and Resource Management Plan (as amended) objectives, desired conditions, and standards and guidelines.

The proposed action includes:

- Commercial salvage on approximately 10,230 acres in the Silver Creek, Silver Lake, and Summer Lake Watersheds, including some areas salvaged within Riparian Habitat Conservation Areas (RHCAs), within specific protective guidelines. Within commercial salvage units, ponderosa pine, lodgepole pine, or white fir trees with less than 20 percent bright green crown (as opposed to dull or fading) would be considered eligible for salvage harvest, with no diameter limits, **if not reserved for retention for habitat or other resource reasons**. In addition to the above criteria, in mixed conifer stands, white fir trees less than 21” diameter breast height (dbh) would be considered eligible for salvage harvest if bole char is visible for 30 percent or greater of the circumference of the bole or root collar. White fir trees have a much thinner bark than ponderosa pine and are highly susceptible to cambium death from heat damage.
- Snag retention guidelines based on the most recent credible science.
- Precommercial thinning on approximately 2,200 acres of existing plantations.
- Reforestation (planting) of tree seedlings on approximately 20,240 acres. Approximately 15,300 acres would receive site preparation prior to planting.
- Fuels treatments and reductions within harvest units, including removing marketable timber through salvage harvest -using whole tree yarding (WTY) and yarding with tops-attached-to-last-log (YTA), landing pile burning ladder fuel reduction through thinning, mastication and underburning. Outside harvest units, fuels treatments and reductions would include ladder fuel reduction through thinning, mastication and underburning. (See Chapter 2 for a complete description of these activities)
- Approximately 3,500 acres of prescribed fire outside of salvage area.
- Road management, including approximately 142 miles of road decommissioning or closure to promote watershed recovery.
- Temporary road development, including the re-opening and use of approximately 11 miles of existing unclassified road and construction of approximately 15 miles of new temporary road.
- Road reconstruction (resurfacing) of about 4 miles of existing classified roads.
- Watershed (riparian or soil) protection and restoration projects:
 1. Approximately 690 acres of aspen stand protection, through either falling dead trees or fencing.
 2. Placement of large woody debris or other in-stream structures to meet Riparian Management Objectives in approximately 9.6 miles of perennial fish bearing stream.

3. Approximately 7 acres of riparian area deciduous plantings.
 4. Road 2917413 Drainage Improvement (installing a cross drain culvert)
- Site-specific Forest Plan amendment for mule deer habitat outside of winter range.

The Preferred Alternative

Alternative G is identified in the FEIS as the preferred alternative (see Chapter 2).

Forest Plan Management Areas and Forest Plan Direction

Since the project area lies entirely within the boundaries of the Fremont National Forest, the relevant general management direction is found in the Fremont Land and Resource Management Plan (LRMP or “Forest Plan”), as amended. The primary amendments to the LRMP are: Regional Forester’s Eastside Forest Plans Amendments #1 (1994) and #2 (1995), which provide direction for retention and promotion of Late/Old structural (LOS) forest characteristics, and the Inland Native Fish Strategy (INFISH, 1995), which provides interim direction to protect habitat and populations of resident native fish. The Forest Plan specifies Forest-wide and Management Area goals, objectives, and standards that define desired conditions and provide for land uses and resource outputs. It contains Forest-Wide Standards and Guidelines (S and Gs). In addition, S and Gs for specific areas (termed “Management Areas” or MAs) are stipulated in the LRMP. A more complete description of Management Areas and associated Standards and Guidelines is included in the FEIS and in the LRMP. The following summary presents a discussion of most Management Areas, leaving out those that cover only minor acreage within the project.

MA 1: Mule Deer Winter Range (approximately 5 percent of the project area)

The Forest Plan states, “Food, cover, and human disturbance will be managed on mule deer winter range to provide the habitat needed to meet the Oregon Department of Fish and Wildlife and Klamath Tribes herd management objectives” (LRMP, 132). Emphasis is on improving forage and thermal cover, and, where site capabilities allow, maintaining 40 to 50 percent thermal cover and at least 80 percent of potential habitat effectiveness for mule deer. Forest Plan guidelines state that habitat improvement (in mule deer winter range) can include prescribed burning and mechanical ground and vegetative disturbance after evaluation of effects on habitat and nontarget species (Fremont National Forest LRMP, 132).

MA 2: Threatened and Endangered Species Habitat (approximately 4 percent of the project area)

This includes both peregrine falcon habitat and bald eagle management areas (BEMAs). BEMAs are managed to provide an abundance of mature/over mature trees for nesting/roosting platforms, a minimum disturbance from people, and an abundance of food. Peregrine falcon habitat areas are to be managed to retain their natural character and a high degree of solitude and an adequate food base. Timber harvest that is consistent with those objectives is allowed.

MA 5: Timber and Range Production (approximately 74 percent of the project area)

These acres are allocated for commercial production of sawtimber and forage for domestic livestock and must meet LRMP Standards and Guidelines for all resources. The LRMP initially established an objective in MA 5 of creating a healthy forest condition characterized by a variety of age classes, through control of stocking levels, species mix, and protection from insects, disease, and other damage.

The Regional Forester’s Eastside Forest Plans Amendments #1 and #2 modified the objectives for MA 5. While MA 5 is still to be managed for the commercial production of sawtimber and forage for domestic livestock, the amendments have shifted the focus toward retaining and promoting Late/Old structural (LOS) characteristics, including direction to *move forest stands toward structural conditions that are within the Historic Range of Variability (HRV)*. Historic Range of Variability refers to structural forest conditions that are based on pre-settlement conditions. Moving forest stands toward the Historic Range of Variability is desirable because such conditions provide the most sustainability in long term.

The following direction from the Regional Forester’s amendments specifically applies:

- No net loss of LOS components
- Outside of LOS the intent is to maintain and/or enhance LOS components by adhering to the following standards:
 - Maintain all live trees greater than or equal to 21” dbh (diameter breast high).

- Manipulate vegetative structure that does not meet late and old structural (LOS) conditions in a manner that moves it toward these conditions as appropriate to meet HRV (Historical Range of Variability).
- Maintain open park-like stand conditions where this condition occurred historically. Manipulate vegetation in a manner to encourage the development and maintenance of large diameter, open canopy structure.
- Maintain connectivity and reduce fragmentation of LOS stands, by maintaining or enhancing the current level of connectivity between LOS stands and old growth habitats.

The Wildlife Standards of the Regional Forester’s amendments contain direction for all sale activities, including salvage, for the maintenance of snags and down logs. These standards and guidelines for snags and downed wood are designed to provide the amount of snags and downed wood required for 100 percent of potential population levels of primary cavity excavators, to be determined using the best available science on species requirement. For the Toolbox Fire Recovery Project analysis, recent science, represented by “*DecAid*” (or the “Decayed Wood Advisor for Managing Snags, Partially Dead Trees, and Down Wood for Biodiversity in Washington and Oregon” (Mellen, 2002), is used to examine effects on snag and down wood-dependent species.

MA 15: Fish and Wildlife Habitat/Water Quality (approximately 13 percent of the project area)

The aquatic and riparian zones of all drainages and water bodies, and their immediately adjacent uplands will be managed to meet the objectives of (MA 15). MA 15 will be managed to maintain or improve water quality, fish habitat, recreation opportunities, and riparian habitat for dependent wildlife species. MA 15 includes streams of all classes, as well as ephemeral draws, seeps and springs, and moist or wet lodgepole pine sites. The Forest Plan amendment for the Inland Native Fish Strategy (INFISH, 1995) amended the standards and guidelines by creating Riparian Habitat Conservation Areas (RHCA). All project actions must be in compliance with INFISH.

Riparian Habitat Conservation Areas, as defined in INFISH, are portions of watersheds where riparian dependent resources receive primary emphasis and management activities are subject to specific standards and guidelines. INFISH Standards and Guidelines for Timber Management (TM-1) prohibits timber harvest within RHCA, except as follows:

- Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting in RHCA only where present and future large woody debris needs are met and where cutting would not retard or prevent attainment of other Riparian Management Objectives (RMOs) and where adverse effects can be avoided to inland native fish.

The 6,355 acres of MA 15 within the project area include the Riparian Habitat Conservation Areas of approximately 1,378 acres of Category 1 (perennial-fish bearing streams). All fish bearing streams are within the Silver Fire portion.

Standard RHCA widths are as follows:

(Category 1 RHCA) Perennial Fish Bearing Streams

- The area on either side of the stream extending from edges of active stream channel to the top of the inner gorge, or the outer edges of the 100-year floodplain, or the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet, including both sides of the stream channel), which ever is greatest.

(Category 2 RHCA) – None in project area

(Category 3 RHCA) Ponds, lakes, reservoirs, and wetlands greater than 1 acre

- The body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil intermittent stream channel or wetland and the area to the outer edges of the riparian vegetation or to a distance equal to the height of one site potential tree, or 150 feet slope distance from the edge of the wetland, which ever is greatest.

(Category 4 RHCA) Intermittent streams and wetlands less than 1 acre

- The intermittent stream channel and the area to the top of the inner gorge
- The intermittent stream channel or wetland and the area to the outer edges of the riparian vegetation.

- The area to the edge of the channel, wetland to a distance equal to the height of one-half site potential tree, or 50 feet slope distance, whichever is greatest.

Current and Desired Conditions/Proposed Actions in Relation to Purpose and Need

Need for: Wildlife Habitat including Snags and Down Wood, and Live Forest

Snag and Down Wood Habitat - Many wildlife species rely on snags and down logs for nesting, roosting, denning, and feeding. Prior to the 2002 fires, most of the landscape across the subwatersheds in this analysis was deficient in snags and down dead wood in the amounts prescribed in the LRMP. This situation changed dramatically as a result of the 2002 fires. The Toolbox and Silver Fires created optimal habitat for black-backed woodpeckers in areas of high pre-fire canopy closure made up of dense stands of smaller trees. There were several sightings of black-backed woodpeckers within the project area during post-fire field reconnaissance. The fires also created optimal habitat for Lewis' woodpeckers in areas with abundant large ponderosa pine. Post-fire field inventories identified approximately 2,687 acres that would provide optimal blocks of habitat for snag and down wood nesters, and several thousand acres that would provide suitable habitat.

Snag retention is designed to provide the amount of snags and downed wood required for 100 percent of potential population levels of primary cavity excavators. In the long term (10 to 30 years), snags are expected to fall and cavity-nesting habitat would not be available. Retention of snags for snag and down wood dependent species would be achieved through two strategies: 1) Retention of specifically identified areas of habitat being prescribed as "no-salvage" areas; 2) Retention prescriptions within proposed commercial salvage units, as well as within fuels treatment or site preparation areas. In addition, other areas of non-salvage, including those related to cultural resource protection, riparian protection, etc. contribute to habitat for snag and down wood dependent species.

Mule Deer - The project area lies within mule deer winter, transition, and summer ranges. Due to the severity of the fire, the area has been reduced to a condition of little cover, but grass and forb forage response is expected to greatly increase. This increase has already been observed in summer 2003. Currently, plantations, riparian areas, and dense stands that burned with light intensity continue to provide hiding, thermal, and fawning cover. LRMP standards and guidelines call for 30 percent cover in both summer and transition range and 40 to 50 percent in winter range. In several subwatersheds, current levels of big game cover are well below standards and guidelines in all ranges. One factor that decreases mule deer habitat quality, through a decrease in security, is the presence of open roads. For this reason, the LRMP calls for a 2.5 mile per square mile open road density in summer and transition range, and a 1.0 mile per square mile open road density within winter range. Current open road densities exceed these levels.

The conifer planting contained in the proposed action would contribute to the overall vegetative make-up of future cover areas in winter range. The fuels reduction strategy in MA 1 is designed to promote the long-term maintenance of cover by decreasing the likelihood that future fires in the area would result in large area losses of cover. The approximate 3,500 acres of prescribed fire outside of salvage area that is included in the proposed action specifically omitted any areas in which activity might, even in the short term, negatively impact mule deer winter range. In areas of transition and summer range, which are primarily MA 5, conifer planting would contribute to the overall vegetative make-up of future cover areas. Road management proposals to close or decommission roads would bring road densities down to (or in some locations, at a minimum, toward) levels directed by the LRMP.

Threatened, Endangered and Sensitive (TES) Species – Three Bald Eagle Management Areas (BEMAs) were affected to some degree by the Toolbox and Silver Fires. The Silver Creek and the Thompson Reservoir eagle nests are located approximately 1.5 miles from the project area boundary, and the Dead Indian Rim eagle nest is located within the project area boundary. The Silver Creek and Thompson Reservoir BEMAs were mostly unaffected by the fires and the nest stands did not burn. The majority of the Dead Indian Rim BEMA burned in a mosaic pattern. The historical and most recent nest tree was severely burned by the fire. All three nests were monitored during the spring of 2003 and all of the pairs have successfully returned to the BEMA and have been documented incubating. In both bald eagle and peregrine falcon habitat, the LRMP directs that timber management be used as a tool to enhance and perpetuate habitat requirements. Though there are no peregrine falcon nests located within the project area, portions of a Peregrine Falcon Management Area and a Peregrine Falcon Consideration Area are within the burned area. The majority of both areas burned at high intensities during July 2002.

All actions are designed to maintain existing habitat and enhance and perpetuate future habitat through fuels reduction and reforestation. Actions that would take place under the project proposal will all be designed to eliminate any direct effects to

nesting activity, primarily through the use of timing restrictions (See Chapter 2, Mitigation and Resource Protection Measures). The overall project activity has a primary emphasis on the long-term recovery of sustainable LOS conditions. In particular, the reforestation and fuels reductions proposals would enhance and perpetuate future development of both bald eagle and peregrine falcon habitat. Road management proposals to close or decommission roads within MA 2 would result in reduced road densities in both bald eagle and peregrine falcon habitat. This is in keeping with Forest Plan direction for MA 2, and would improve the quality of these habitats.

Old Growth Dependent Species - Approximately 2 percent of the project area is within Management Areas 3/14 (Old-Growth Dependent Species Habitat). Within the Toolbox and Silver Fires, sixteen Management Area 3 and 14 old growth stands were affected to some degree by the fire, totaling 1,191 acres. When events such as wildfire have affected a designated old growth stand to the point that it is no longer considered suitable habitat, the Forest Plan directs that a new old-growth stand should be delineated to replace the original habitat. Each individual old growth stand was assessed on the ground to determine if the stand remains functional habitat for the species for which it is designated. If it was determined during post-fire surveys that the stand remains functional, no harvest was planned within the old growth area. If determined that the stand is non-functional, a new old growth stand was delineated.

Other Habitat Maintenance or Recovery – It is expected that aspen will respond favorably from the fires, regardless of post-fire management strategy. However, the proposal for aspen enhancement, through either falling dead trees or fencing, should protect aspen and help maintain the habitat created by natural responses to the fire. Proposed deciduous planting and large woody debris placement would benefit riparian and aquatic habitat.

Need for: Lower Surface Fuel Loadings

In general, fire-killed trees occur across the landscape over tens of thousands of acres that burned during the 2002 fire, including large areas where more than 50 percent of the trees were killed. Mortality mapping, based on September 2002 conditions, on forested National Forest System lands, within the Toolbox Fire Recovery Project area, indicates the following:

- 0-25 percent of the trees killed (low mortality) – 6,463 acres
- 26-50 percent of the trees killed (moderate mortality) – 9,292 acres
- 51-85 percent of the trees killed (high mortality) – 5, 215 acres
- 86-100 percent of the trees killed (very high mortality) – 12,216 acres

Fuel load calculations based on information gathered following the 2002 fires show the existing woody surface fuel loads on some sites approaching 10 tons per acre (with almost all of the trees killed during the fire still standing). Projected fuel loads (once the standing dead trees fall) could reach up to 100 tons per acres in some areas of high and very high mortality (Hall, 2003). In a report specific to the expected vegetative responses in the Toolbox Fire Complex, Fred Hall indicates that fuel loadings are expected to reach their maximum in about 10 to 15 years. In contrast to light or fine fuels, heavy large fuels accumulations have a long “burnout time,” meaning they continue burning for long periods. Should fire occur in this heavy fuel, all live trees would be killed and the soil surface sterilized to a degree that would inhibit regeneration (Hall 2003, 8).

Pre-suppression era fire history was characterized by a pattern of frequent low intensity disturbance from fire. Historically, these short return intervals resulted in relatively low fuel loads and significantly less ladder fuels. This pattern was a primary contributor to a sustainable condition. The objective in burned areas is to reduce fuels so that they more closely mimic historic dead and down woody fuel loads. The proposals for this project include several elements designed to assist in fuels reduction: removal of standing dead trees, follow-up treatments of the slash generated by such removal, fuels treatments in burned areas outside of commercial salvage units and the application of prescribed fire.

Removal of the dead standing material during salvage and follow-up fuels treatments, as included in the proposal, is designed to reduce future surface fuel loadings. While large woody fuels have little influence on the spread and intensity of a fire start, they can contribute to development of large fires and high fire severity. Fire persistence, resistance to control, and burnout time (which affects soil heating) are significantly influenced by loading, size, and decay state of large woody fuel (Brown, 2003). The objective is to reduce fuels to the point that they would no longer contribute to fire behavior that makes future successful suppression (using typically available forces) unlikely. Fires that are not controllable using typically available forces, and that occur during a period of multiple fire starts, contribute significantly to the likelihood of a large, intense wildfire. Such fires, as opposed to more frequent low-intensity fires, are outside the range of the historical low-intensity “stand-tending” fires. They are instead stand replacement fires. In an environment with heavy fuel loadings

close to the ground, such fires have the potential to burn with a severity of fire that could result in detrimental effects on soil. "High burn severity would primarily occur where large woody material was lying on or near the soil surface." (Brown, 2003).

Prescribed fire has been included in the proposals as an additional means of reducing fuel. In general, prescribed fire is proposed outside of salvage units in areas that experienced low mortality during the 2002 wildfires and areas that could effectively be "blocked up" in at least 100-acre parcels. The application of prescribed fire would break up the continuity of the fuels in the overall project area and would maintain the area treated in an appropriate fuels condition (Fuel Model 8 or 9).

Need for: High-quality Fish and Riparian Habitat

The Toolbox Fire complex significantly impacted four fish bearing streams: Silver Creek, West Fork Silver Creek, North Fork Silver Creek, and Guyer Creek. In addition, non-fish bearing, intermittent streams were also impacted within the fire boundary and include Strawberry Creek, Indian Creek, Benny Creek, Hawk Creek, Graham Creek, Duncan Creek, East Duncan Creek, McCall Creek, and Willow Creek.

Very high vegetative mortality was documented along 7.4 miles of fish bearing streams, moderate and high mortality along 9.8 miles, and low mortality along 5.7 miles. The loss of vegetative ground cover and soil organics can lead to increased surface erosion via various avenues (splash, rill/sheet, frost heaving, etc.). Although high intensity fires such as the Toolbox Complex can be detrimental to a watershed, the overall impacts of lower intensity fires, such as occurred historically, are generally positive, including a short-term reduction of surface fuel loads. If the fires are of a low enough intensity that substantial overstory mortality has not occurred, these reductions in surface fuel loading can have a persistent beneficial effect.

The Inland Native Fish Strategy (INFISH) (USDA 1995) amended the Forest Plan to establish the creation of riparian habitat conservation areas (RHCA) with the objectives and desired conditions that include:

- Meeting state water quality standards by applying soil and water conservation practices.
- Protecting riparian areas to prevent adverse effects on stream channel stability and fish habitat.
- Reducing sediment from existing open roads.
- Adding woody debris to certain severely burned stream segments to improve fish hiding cover and increase habitat complexity.
- Planting appropriate tree species in certain burned riparian areas to improve aquatic and riparian habitat.

Currently the open road density within the project area on National Forest System lands is 3.68 miles of road per square mile of land base. The direction in the Forest Plan is to "not exceed 2.5 miles per square mile of open road." For the Toolbox Fire Recovery Project, a Roads Analysis process, as directed by Forest Service Manual 7700 - Transportation Analysis (7712.1 - Roads Analysis), was completed in 2002-2003 and was used to generate road management strategies. The information used during the Roads Analysis process was developed with field inventories of the roads within the project area, including any unclassified roads that were encountered. The field inventories noted several characteristics of the road. Most notably, the conditions of the road in relation to any erosional potential were inventoried. The Roads Analysis process resulted in recommendations regarding each road that ranged from leaving the road open at its current maintenance level, increasing the maintenance level, closing the road, or decommissioning the road. In this document, road closure refers to a simple form of closure such as blocking the entrance of a road with an earth berm. Decommissioning is a form of road closure that treats the roadbed itself through breaking up the compacted surface, encouraging re-vegetation and/or re-contouring the road prism.

Proposed salvage, post-salvage fuels reduction, and conifer planting are in response to the need to reduce the intensity of future fire in the riparian zones, while promoting the recovery of healthy forest conditions that would contribute to long-term attainment of Riparian Management Objectives. Other project activities such as placement of large woody debris and riparian area deciduous plantings are in direct response to the immediate need to attain Riparian Management Objectives.

Need for: Endemic, rather than Epidemic, Populations of Bark Beetles

Bark beetle activity, primarily mountain pine beetle, had been increasing within the project boundary for several years before the 2002 fires. Just prior to the outbreak of the fires, evidence of the previous year's (2001) beetle-caused mortality was becoming visible in the form of trees with red needles. The mortality appeared significantly more extensive than that

noted for the year before (2000). However, the fires occurred before the mortality was completely inventoried, so its true extent is unknown. It is unlikely that bark beetle populations were adversely affected by the fire because the fire burned with such variable intensity and left many “reservoirs” of beetle habitat in the unburned areas.

There now are fewer green trees, so beetle attacks may be more concentrated on the residual green trees. This in turn can produce more mortality in the trees that managed to survive the fire itself. Fire-killed trees, which provide opportunities for bark beetle activity, occurred across the landscape to varying degrees as a result of the fire. Additional mortality from residual effects of the fire is expected to occur in ponderosa pine stand types in the next few years, and in the white fir component of mixed conifer stands within the next five years. The potential for bark beetle attacks on fire-weakened trees is another factor expected to influence tree mortality in the next several years.

The LRMP directs that Integrated Pest Management (IPM) strategies will be used to manage insect infestations within the constraints of law and regulation and to meet Forest management objectives. IPM strategies include manual, mechanical, biological, chemical, and prescribed fire means, as well as regulatory means. The LRMP, as amended, establishes an objective of creating a healthy forest condition through control of stocking levels, species mix, and protection from insects, disease, and other damage. The most effective means of reducing the potential for impacts from insect infestation is to implement commercial and pre-commercial thinning in remaining green stands. Another strategy is to remove trees that have recently died, or are of low vigor, as a means of removing centers of potential breeding activity. The proposed action does not include green stand treatments (other than 2,500 acres of existing plantation thinning); however, the application of the standard of salvaging trees with trees with less than 20 percent bright green crown should accomplish removal of some bark beetles. These trees would be very low vigor and very susceptible to attack and colonization. Bark beetles reproduce best in the poorest vigor trees, just before they die. While much of the expected increase in bark beetle activity within the burned area would likely occur before the removal of dead material through commercial salvage and follow-up fuels treatment, these actions would each contribute to lessening the amount of dead material that could provide additional breeding habitat.

Need for: Forest Stands with Structural Conditions closer to the Historic Range of Variability

The LRMP, as amended, establishes an objective of creating a healthy forest condition through control of stocking levels, species mix, and protection from insects, disease, and other damage while moving forest stands toward structural conditions that are within the Historic Range of Variability (HRV). Historic Range of Variability refers to the dynamic structural forest conditions based on pre-settlement conditions. The 2002 fire occurred within a forest characterized by a high tree density and a multi-storied structure that was outside of HRV. This condition was a primary contributing factor to the stand replacing fire behavior that occurred in parts of the Toolbox Complex. The Silver Creek Watershed analysis (1997) used 1947 Timber Type maps to determine that 78 percent of the forested areas within the watershed were historically in single story late and old (LOS) structural condition. General characteristics of most of the forested acres in the Toolbox project area before the advent of regular fire suppression and commercial logging activity include the following:

- The stand types were primarily ponderosa pine. They were part of an ecological system that maintained a continuous canopy of mature ponderosa pine, with variations in density, but in a generally open stand condition. During this period of relatively low stand density (10 to 35 trees per acre), individual tree vigor was sufficient to produce enough seed crops to perpetuate the stand.
- These low density, open, park-like stand conditions were maintained by frequent (8 to 20 years) low-intensity fires. Such fires occasionally killed a large tree, but more importantly killed most of the young tree reproduction, burned down branches and trees, and burned off the tops of brush and grasses. This kept fuel loads relatively low.

Of the forest types within the Toolbox Complex, ponderosa pine is the species that both dominated the area historically (before fire suppression) and that is best adapted to the climate and soil types in this locale. Natural regeneration of ponderosa pine occurs in infrequent pulses and primarily in areas with abundant seed trees. The fire behavior demonstrated in the higher vegetative mortality areas of the Toolbox and Silver Fires was outside the range of historical fire behavior for the ponderosa pine type in this area. These fires killed seed trees across relatively large areas compared to the low-intensity fires more characteristic of this region. Ponderosa pine is very slow to re-establish in areas of complete mortality greater than a few acres in size, because of its relatively heavy seed.

Successful long-term development of a sustainable forest depends on reforestation; on facilitating the eventual return of characteristic fire (i.e. frequent, low-intensity, stand-tending fire) to areas that were historically fire-dependent; and on

maintaining stand conditions and fuels conditions that do not contribute to future fires with large-scale stand replacement mortality.

Planting with ponderosa pine seedlings is proposed on approximately 20,240 acres, including areas proposed for salvage harvest and other areas (many in existing plantations) that experienced loss of stocking due to fire. In some plantations, loss of stocking due to fire occurred in only a part of the plantation. The need for reforestation ranges from complete re-planting in areas of heaviest mortality, to partial planting in areas that were lightly burned and could become fully stocked by “spacing off” from existing green trees. To account for this variance, some areas would be fully planted (all acres planted at desired spacing), some would be planted somewhat more lightly and some would only be “spot planted.” No reforestation is proposed within harvest units within Category 1 RHCAs.

The other important component of developing a long-term sustainable forest is low intensity stand-tending fire. This requires maintaining stand conditions and fuels conditions that do not contribute to stand replacement fire. In this regard, prescribed fire is an important tool that would be expected to be used in the relatively near future within areas that are reforested and could be used immediately in areas that burned lightly enough that reforestation is not needed.

By altering the existing and projected fuel loads within the project area, the intensity of future fires in the area would be significantly reduced, thereby improving the sustainability of remaining live stands. Proposed actions to reduce fuels include commercial salvage with whole tree yarding and yarding with tops attached (2,475 acres); commercial salvage with additional post-salvage fuels treatment (7,755 acres); fuels treatment in burned forested areas outside of commercial salvage units (2,661 acres), and prescribed fire in lightly burned or unburned areas (3,572 acres).

By using whole tree yarding and yarding with tops attached to (to the ‘highest” or “last” log), the salvage operation itself (removal of merchantable dead trees) is the initial step of fuels reduction. Fuels treatment in addition to whole tree yarding and leaving tops attached would be used within most salvage units to further reduce fuels created by the fire and by salvage activity. Such additional fuels treatments would occur following salvage activity, with the primary treatment options likely to be landing pile burning, ladder fuel reduction thinning, mastication and underburning.

Approximately 2,661 acres that were initially proposed for commercial salvage (in the DEIS), but were dropped as commercial salvage (in the FEIS), would still receive fuels treatment actions, with the most likely methods being ladder fuel reduction thinning, mastication, and underburning. Based on percent mortality and stand characteristics, without treatment the predicted fuel loadings in these areas would exceed 20 tons per acre in the future.

Additionally, outside of harvest units, approximately 3,500 acres would be treated with prescribed fire. These treatments are one component of the project actions aimed at developing a sustainable forest that is maintainable by the re-introduction of fire. Areas of mule deer winter range were not included in the proposal, in order to maintain existing levels of cover. However, proposals on transition and summer range, depending on specific design, may result in a reduction of cover for mule deer in transition and summer ranges, in some areas (some subwatersheds). In this case they would require a site-specific amendment to the Forest Plan (1989) for mule deer cover and mule deer habitat effectiveness standards. This will be analyzed and determined, by alternative.

The precommercial thinning (2,500 acres of existing plantations) would be a step, consistent with LRMP direction, in moving these young stands toward structural conditions that are within the Historic Range of Variability (HRV). Future steps, such as the application of prescribed fire, would need to be taken in order to continue movement to sustainable conditions.

Need for: Commercial Timber Production

Authority to address situations involving salvage of insect-infested, dead, damaged, or down timber and to remove associated trees for stand improvement is found in the National Forest Management Act of 1976, sec. 14(h) (16 U.S.C. 472a(h)). Forest Service Manual (FSM) 2435.04i directs that it is the responsibility of the District Ranger to identify timber stand areas having threatened or actual tree mortality and initiate actions to aggressively address potential salvage situations.

The Fremont National Forest Land and Resource Management Plan (LRMP) (1989), includes Forest-wide management goals to:

- Provide sawtimber and other wood products (including firewood for personal or commercial use) to help sustain a viable local economy.
- Strive for economically efficient management.

The LRMP also includes Forest-wide management objectives to offer affordable sales. In addition, Forest-wide standards supplement national and regional policies, standards, and guidelines found in Forest Service manuals and handbooks relevant to timber harvesting include:

- Providing well-designed timber sales to be affordable under average market condition at time of sale.
- Increasing the use of available wood fiber consistent with management objectives and economic principles.

Actions taken as part of the salvage harvest must comply with all aspects of the Fremont National Forest Land and Resource Management Plan (1989, as amended), including protection of wildlife habitat and consideration of existing resource characteristics. The burned timber within the Toolbox Complex presents an opportunity to respond to the direction described above.

The proposed action includes salvage harvest on approximately 10,230 acres, producing an estimated 36.1 million board feet. As a general rule of thumb, in ponderosa pine stands, trees with less than 20 percent bright green crown would be considered for salvage harvest. Predicting whether conifers damaged by wildfire will live or die is not an exact science. However, it is important to establish criteria for when to consider a tree as dead and to anticipate likely mortality conditions to effectively plan treatments and design elements such as salvage harvest, reforestation, fuels reduction, wildlife leave areas, and riparian area rehabilitation. The challenge is to predict with a high degree of confidence which trees have sustained enough damage to make mortality very likely within 1 to 3 years following the fire.

Most of the proposed timber salvage units would be harvested using ground-based logging systems. Access for salvage would include the use of classified, temporary, and unclassified roads.

Connected actions in association with salvage include road reconstruction, temporary road (including both the re-opening of existing roads and temporary construction on new locations) treatment of slash, water barring, and erosion control measures such as scattering of slash on skid trails. Salvaged trees would supply raw materials to local or regional industry and ultimately wood products used by the public.

The economic impact of potential timber sales would benefit local forest workers as well as local retail and service businesses. The greatest impact would, however, be limited to the period during which logging operations are active. That period is expected to be one year, although some work may go on for up to five years.

Scoping, Public Involvement and Identification of Issues

Under the terms of the 1999 “Memorandum of Agreement between The Klamath Tribes and the U.S. Forest Service” (U.S. Forest Service and Klamath Tribes 1999), the Toolbox Fire Recovery Project was initially introduced to Klamath Tribal representatives at the August 2002 “pre-SOPA meeting” in Chiloquin, Oregon (SOPA is the acronym for “Schedule of Proposed Actions”). Cultural resource inventory crews, jointly composed of personnel from the Klamath Tribes and the Fremont-Winema National Forests, performed field reconnaissance during the fall of 2002, as well as during the summer of 2003. Specific concerns that were raised through the sum of all consultation with The Klamath Tribes pertained to road management considerations within former Klamath Reservation lands, cultural resource protection, and mule deer habitat (particularly winter and transition range).

General public scoping was initiated with a “Notice of Intent to prepare an Environmental Impact Statement” in the Federal Register on November 1, 2002. News releases were published in area newspapers in November and December 2002. The proposed action was mailed to the public and other agencies for comment on November 12, 2002. A total of 214 individuals or organizations received scoping packets. All press releases, as well as the Toolbox Fire Recovery Project proposed action and the SOPA, were placed on the Fremont-Winema National Forests public website at: <http://www.fs.fed.us/r6/winema/management/analyses/toolbox/index.shtml>

Open Houses held in Christmas Valley and La Pine, Oregon on May 12 and 13, 2003 were used to introduce the alternatives to the public and provide participants with the opportunity to ask questions and submit comments. As a result of the initial scoping process, written comments, letters, electronic mail responses, or phone calls were received from 15 individuals, agencies, businesses, and organizations.

The DEIS was made available to the public beginning in late September – early October 2003. Copies of the complete DEIS were mailed on September 25, 2003 to those who had previously requested it. Notices informing the public of the

DEIS availability were published in the Federal Register and area newspapers. The DEIS and all supporting specialists reports were posted on the Forest website, by mid-September 2003, for public review. A 45-day comment period for the Toolbox Fire Recovery Project Draft Environmental Impact Statement (DEIS) was provided for interested and affected members of the public, including appropriate local, state, and federal government agencies and Tribes. This comment period lasted from October 4, 2003 until November 17, 2003. During the DEIS comment period, additional public outreach occurred. A public workshop was held in Silver Lake on November 6, 2003. During this period, the Forest Service received a broad range of comments from several sectors of the public. Some comments resulted in a clarification of the alternative descriptions, treatments, or the environmental consequences discussed in the DEIS.

During the 45-day comment period the Klamath Tribal Director for Natural Resources, the Tribal Wildlife Biologist, the Fremont Winema Forest Supervisor, and members of her staff met to discuss the comments that the Klamath Tribes were preparing for submittal. The purpose of the meeting was to expand upon some of the points that were being drafted into the Tribal comment letter and exchange ideas on both the Toolbox project and overall management of the National Forest.

The Forest Service received 18 pieces of mail during the comment period. All comments received were reviewed. Substantive comments received the focus during this comment analysis. Substantive comments are defined by 36 CFR part 215, 215.2 (Definitions) as “Comments that are within the scope of the proposed action, have a direct relationship to the proposed action, and include supporting reasons for the Responsible Official to consider” (Federal Register June 4, 2003).

DEIS comments were read by the ID Team, other staff, and the Responsible Official. All comments were included in the content analysis process, which was designed to compile, categorize, and capture the full range of public viewpoints and concerns. Content analysis ensures that every comment is considered at some point in the decision process. Content analysis is described more completely and comments and responses can be found in Appendix G (FEIS Volume 2).

Identification of Issues

Issues are points of discussion, debate, or dispute about environmental effects that may occur as a result of the proposed action or an alternative. Issues provide focus and influence alternative development, including development of mitigation measures to address these *potential* environmental effects, particularly potential negative effects. **Key Issues** are those used to develop the alternatives and design activities to carry out the action alternatives.

Key Issues

Changes in Motorized Access

Proposed road management activities (closure and decommissioning) would reduce public access for recreation and personal use fuelwood gathering and reduce opportunities for members of the Klamath Tribes to hunt or gather Treaty Right resources within former Klamath Reservation boundaries, using motorized vehicles.

Economic Efficiency and Economic Opportunities

Some commenters felt the cost effectiveness of the project would be reduced by including restoration proposals other than commercial salvage, and by including helicopter yarding for a portion of the commercial salvage.

Effects on Soils, Watersheds, and Aquatic Habitat

The proposed salvage and connected actions, including temporary road construction, could potentially have adverse effects on watershed and riparian function and cumulatively contribute to adverse effects on soils.

Effects on Wildlife Habitat

Habitat for snag and down wood dependent species could be negatively impacted by commercial salvage operations through the removal snags. Fuels reduction could negatively impact mule deer habitat by reducing cover.

Recovery using a limited-intervention approach vs. Recovery using a full range of active management practices, including commercial salvage

This issue embodies divergent public input on which overall approach to recovery best accomplishes actual recovery and restoration. Some commenters believe that recovery and restoration would be better achieved through an approach that did not include the proposal to commercially salvage fire damaged trees. Others believe recovery and restoration would be better achieved through an approach that allows for commercial harvest of salvage-eligible, fire-damaged trees.

Tables presented near the end of this summary display comparisons between the alternatives in terms of the key issues, using **issue indicators**. The tables are intended to provide a quick comparison between alternatives.

Alternatives

Alternative A – No Action.

Alternative B – Original Proposed Action (not fully developed and analyzed)

Alternative C – Proposed Action. Alternative C places an emphasis on providing wood products while contributing to the long-term development of LOS.

Alternative C.....At A Glance

Commercial Salvage (Total Acres of Harvest)	10,230 acres
Commercial Salvage in Riparian Habitat Conservation Areas (subsets of above)	
Within Roadside Hazard and Maintenance Corridor	138 acres
Outside Roadside Hazard and Maintenance Corridor	186 acres
Snag Retention (% of Optimal or Suitable Nesting Habitat retained in no-salvage/no treatment)	
• Optimal black-backed nesting habitat	91%
• Optimal Lewis’ woodpecker nesting habitat	76%
• Suitable black-backed nesting habitat	57%
• Suitable Lewis’ woodpecker nesting habitat	40%
Precommercial Thinning (Acres)	2,214 acres
Reforestation (Total Planting Acres)	20,241 acres
Fuels Treatments and Reductions (Acres of Fuels Reduction):	
• In ground-based units, additional to yard-tops-attached or whole-tree-yard	7,755 acres
• Additional fuels reductions outside of units	2,661 acres
• Prescribed Fire, outside of salvage units	3,572 acres
Road Management (Percent of 271 Miles of Existing Road):	
• Left Open (129.1 miles)	48%
• Decommissioned (69.0 miles)	25%
• Closed (72.9 miles)	27%
Temporary Roads (Miles: Re-open Existing / New) - Minimum width roads, ave. ¼ mile in length, used only for a short duration and decommissioned following use	11.0 miles / 15.0 miles
Road Reconstruction (Miles of Re-surfacing)	4.0 miles
Does Alternative Propose the Following Soil and Riparian Protection and Restoration Projects? (Yes or No):	
• Aspen Enhancement	Yes
• Placement of Large Woody Debris	Yes
• Deciduous Planting	Yes
• Road 2917413 Drainage Improvement	Yes

Alte approach” vs. “active management approach” than the other action alternatives. It includes the greatest amount of road

decommissioning or closure of any of the action alternatives. It retains some commercial salvage, focused in roadside treatment areas and areas where fuel loading is predicted to be very high within 15 years, if no action is taken. While addressing that element of purpose and need (commercial timber production), it contains substantially lesser amounts of activity that could potentially contribute to short-term degradation of water quality or adverse cumulative watershed effects (logging, temporary road construction, fuels treatment, prescribed fire), than the other action alternatives

Alternative D.....At A Glance

Commercial Salvage (Total Acres of Harvest)	6,309 acres
Commercial Salvage in Riparian Habitat Conservation Areas (subsets of above)	
Within Roadside Hazard and Maintenance Corridor	138 acres
Outside Roadside Hazard and Maintenance Corridor	0 acres
Snag Retention (% of Optimal or Suitable Nesting Habitat retained in no-salvage/no treatment)	
• Optimal black-backed nesting habitat	94%
• Optimal Lewis' woodpecker nesting habitat	81%
• Suitable black-backed nesting habitat	74%
• Suitable Lewis' woodpecker nesting habitat	56%
Precommercial Thinning (Acres)	2,214 acres
Reforestation (Total Planting Acres)	16,878 acres
Fuels Treatments and Reductions (Acres of Fuels Reduction):	
• In ground-based units, additional to yard-tops-attached or whole-tree-yard	5,435 acres
• Additional fuels reductions outside of units	1,883 acres
• Prescribed Fire, outside of salvage units	2,450 acres
Road Management (Percent of 271 Miles of Existing Road):	
• Left Open (123.9 miles)	46%
• Decommissioned (71.6 miles)	26%
• Closed (75.5 miles)	28%
Temporary Roads (Miles: Re-open Existing / New) - Minimum width roads, ave. ¼ mile in length, used only for a short duration and decommissioned following use	4.1 miles / 0.0 miles
Road Reconstruction (Miles of Re-surfacing)	3.6 miles
Does Alternative Propose the Following Soil and Riparian Protection and Restoration Projects? (Yes or No):	
• Aspen Enhancement	Yes
• Placement of Large Woody Debris	Yes
• Deciduous Planting	Yes
• Road 2917413 Drainage Improvement	Yes

Alternative E – Alternative E places an emphasis on economic efficiency in regard to commercial salvage and other restoration activities.

Alternative E.....At A Glance

Commercial Salvage (Total Acres of Harvest)	8,931 acres
Commercial Salvage in Riparian Habitat Conservation Areas (subsets of above)	
Within Roadside Hazard and Maintenance Corridor	138 acres
Outside Roadside Hazard and Maintenance Corridor	99 acres
Snag Retention (% of Optimal or Suitable Nesting Habitat retained in no-salvage/no treatment)	
• Optimal black-backed nesting habitat	91%
• Optimal Lewis’ woodpecker nesting habitat	83%
• Suitable black-backed nesting habitat	74%
• Suitable Lewis’ woodpecker nesting habitat	53%
Precommercial Thinning (Acres)	none
Reforestation (Total Planting Acres)	17,333 acres
Fuels Treatments and Reductions (Acres of Fuels Reduction):	
• In ground-based units, additional to yard-tops-attached or whole-tree-yard	5,749 acres
• Additional fuels reductions outside of units	none
• Prescribed Fire, outside of salvage units	none
Road Management (Percent of 271 Miles of Existing Road):	
• Left Open (188.9 miles)	70%
• Decommissioned (14.6 miles)	5%
• Closed (67.4 miles)	25%
Temporary Roads (Miles: Re-open Existing / New) - Minimum width roads, ave. ¼ mile in length, used only for a short duration and decommissioned following use	10 miles / 12 miles
Road Reconstruction (Miles of Re-surfacing)	4.0 miles
Does Alternative Propose the Following Soil and Riparian Protection and Restoration Projects? (Yes or No):	
• Aspen Enhancement	No
• Placement of Large Woody Debris	Yes
• Deciduous Planting	No
• Road 2917413 Drainage Improvement	No

Alternative F – See “Alternatives Considered But Not Given Detailed Study” later in this Summary

Alternative G (Preferred) – Alternative G is the Forest Service Preferred Alternative. A *Preferred Alternative* is the set of actions, which the agency believes would best fulfill its statutory mission and responsibilities, considering environmental, social, economic, and other factors disclosed in an environmental impact statement. Alternative G places an emphasis on using active management to achieve post-fire recovery, particularly in response to the purpose and need to develop forest stands with structural conditions closer to HRV, while providing some commercial timber production. It focuses on fuels reduction and long-term fire suppression effectiveness (a direct contributor to promoting forest stands with structural conditions closer to HRV).

Alternative G.....At A Glance

Commercial Salvage (Total Acres of Harvest)	10,230 acres
Commercial Salvage in Riparian Habitat Conservation Areas (subsets of above)	
Within Roadside Hazard and Maintenance Corridor	138 acres
Outside Roadside Hazard and Maintenance Corridor	186 acres
Snag Retention (% of Optimal or Suitable Nesting Habitat retained in no-salvage/no treatment)	
• Optimal black-backed nesting habitat	68%
• Optimal Lewis’ woodpecker nesting habitat	76%
• Suitable black-backed nesting habitat	57%
• Suitable Lewis’ woodpecker nesting habitat	40%
Precommercial Thinning (Acres)	2,214 acres
Reforestation (Total Planting Acres)	20,241 acres
Fuels Treatments and Reductions (Acres of Fuels Reduction):	
• In ground-based units, additional to yard-tops-attached or whole-tree-yard	8,488 acres
• Additional fuels reductions outside of units	8,158 acres
• Prescribed Fire, outside of salvage units	3,572 acres
Road Management (Percent of 271 Miles of Existing Road):	
• Left Open (188.9 miles)	70%
• Decommissioned (71.6 miles)	26%
• Closed (10.4 miles)	4%
Temporary Roads (Miles: Re-open Existing / New) - Minimum width roads, ave. ¼ mile in length, used only for a short duration and decommissioned following use	11.0 miles / 15.0 miles
Road Reconstruction (Miles of Re-surfacing)	4.0 miles
Does Alternative Propose the Following Soil and Riparian Protection and Restoration Projects? (Yes or No):	
• Aspen Enhancement	Yes
• Placement of Large Woody Debris	Yes
• Deciduous Planting	Yes
• Road 2917413 Drainage Improvement	Yes

Alternative H – Alternative H focuses on wildlife habitats and on contributing to developing forest stands with structural conditions closer to HRV, while providing some commercial timber.

Alternative H.....At A Glance

Commercial Salvage (Total Acres of Harvest)	9,515 acres
Commercial Salvage in Riparian Habitat Conservation Areas (subsets of above)	
Within Roadside Hazard and Maintenance Corridor	138 acres
Outside Roadside Hazard and Maintenance Corridor	0 acres
Snag Retention (% of Optimal or Suitable Nesting Habitat retained in no-salvage/no treatment)	
• Optimal black-backed nesting habitat	95%
• Optimal Lewis' woodpecker nesting habitat	87%
• Suitable black-backed nesting habitat	62%
• Suitable Lewis' woodpecker nesting habitat	48%
Precommercial Thinning (Acres)	2,214 acres
Reforestation (Total Planting Acres)	19,586 acres
Fuels Treatments and Reductions (Acres of Fuels Reduction):	
• In ground-based units, additional to yard-tops-attached or whole-tree-yard	7,102 acres
• Additional fuels reductions outside of units	2,075 acres
• Prescribed Fire, outside of salvage units	2,450 acres
Road Management (Percent of 271 Miles of Existing Road):	
• Left Open (126.5 miles)	47%
• Decommissioned (71.6 miles)	26%
• Closed (72.9 miles)	27%
Temporary Roads (Miles: Re-open Existing / New) - Minimum width roads, ave. ¼ mile in length, used only for a short duration and decommissioned following use	9.0 miles / 13.0 miles
Road Reconstruction (Miles of Re-surfacing)	4.0 miles
Does Alternative Propose the Following Soil and Riparian Protection and Restoration Projects? (Yes or No):	
• Aspen Enhancement	Yes
• Placement of Large Woody Debris	Yes
• Deciduous Planting	Yes
• Road 2917413 Drainage Improvement	Yes

Forest Plan Amendment (Alternatives C and G)

Following the July 2002 fires, mule deer cover and habitat effectiveness in the project area is currently below Forest Plan standards and guidelines. Proposed prescribed burning in these alternatives is expected to result in reduction of cover for mule deer in transition and summer ranges in some areas (some subwatersheds). The purpose of the prescribed burning is to promote the long-term development and maintenance of LOS forest conditions in some areas where the July 2002 fires did not result in stand replacement fire. In order to achieve a greater level of benefit related to that purpose than

Alternatives D, E, or H would provide, a site-specific Forest Plan amendment is required. Since mule deer cover and habitat effectiveness is currently below standards and guidelines, and the prescribed burning would further lower mule deer cover, this alternative would require a site-specific amendment to the Forest Plan (1989). Specifically, Forest Plan Standards for **mule deer cover** would be amended to the levels identified in this alternative, within the project area, for:

- Summer range in the East Duncan, Lower Duncan, and Upper Duncan Creek subwatersheds
- Transition range in the East Duncan Creek subwatershed

Forest Plan Standards for mule deer **habitat effectiveness** would be amended, within this project area, for:

- Summer range in the Lower Duncan Creek subwatershed

Specifically, the Forest Plan Standards would be amended to allow the following small reductions in cover or habitat effectiveness:

- Summer range **Cover** in the East Duncan: Reduction of cover on 231 acres that would reduce cover from 11.0 percent to 9.4 percent
- Summer range **Cover** in Lower Duncan: Reduction of cover on 96 acres that would reduce cover from 5.4 percent to 4.4 percent
- Summer range **Cover** in Upper Duncan Creek: Reduction of cover on 100 acres that would reduce cover from 19.8 percent to 19.6 percent
- Transition range **Cover** in the East Duncan: Reduction of cover on 33 acres that would reduce cover from 5.9 percent to 5.6 percent
- Summer Range **Habitat Effectiveness** in Lower Duncan: Reduction from 1.8 percent to 1.7 percent

Mitigation and Resource Protection Measures

Mitigation and Resource Protection Measures that apply to all action alternatives are detailed in the FEIS (Chapter 2). They include protective measures pertaining to Wildlife, Recreation, Aquatics and Soils, Sensitive Plants and Noxious Weeds, Range, Scenery, Cultural Resources and Air Quality. In addition, Appendix C of the FEIS contains Mitigation Details, Timber Best Management Practices, Road Best Management Practices and the Fremont National Forest Soil Productivity Guidelines.

Monitoring

A monitoring plan is provided in Appendix D of the FEIS. This monitoring is incorporated as an integral feature of Alternatives C, D, E, G, and H.

Alternatives Considered But Not Fully Analyzed

During initial public scoping and initial alternative development, several suggested alternatives were considered for detailed study. The following section briefly describes these alternative concepts and the reasons they are not given detailed study.

Alternative B (Originally Scoped Proposed Action) – previously discussed

Alternative F (Restoration-only/Passive Approach) - A “no commercial logging” alternative emphasizing a passive approach to restoration based on “Beschta Report” recommendations was suggested in a scoping response. During alternative development, Alternative F was the working title given to such an alternative. Its conceptual parameters included none or a very limited amount of salvage (salvage only hazardous trees adjacent to main Forest roads), small diameter fuels treatment only in areas where subsequent fuel loadings would present the very highest risk of subsequent high intensity wildfire, prescribed fire limited to areas where no pre-treatment would be required, planting of ponderosa pine seedlings limited to those areas where the minimal amount of salvage triggered the requirement to reforest, no plantation thinning, and a full array of road decommissioning and other soil and water protection and restoration projects. This alternative was considered, but not analyzed in detail because it would not meet purpose and need in regard to surface

fuel loading, forest stands with structural conditions closer to HRV or commercial timber production. A more complete discussion is included in Chapter 2 of the FEIS.

Comparison of Alternatives

This section presents tables that briefly summarize and compare the alternatives by activities considered and displays effects in regard to key issues, as measured by the issue indicators. For more detail, refer to Chapters 2 and 3 of the FEIS.

Table S.1: Comparisons of Activities and Key Issue-Related Effects

KEY ISSUE and Indicators		Alt.	Alt.	Alt.	Alt.	Alt.	Alt.
<i>Changes in Motorized Access</i>		A	C	D	E	G	H
Access and Road Management (Project Area, as a whole)	Leave Open (Miles)	271.0	129.1	123.9	188.9	188.9	126.5
	Close and Decommission (Miles)	0	141.9	147.1	82.0	82.0	144.5
	Open Rd. Density (Miles/Sq. Mi.)	3.7	1.8	1.7	2.6	2.6	1.7
Access and Road Mgmt. (Former Klamath Reservation)	Leave Open (Miles)	12.4	12.4	7.4	9.7	9.7	9.7
	Close and Decommission (Miles)	0	0	5.0	2.7	2.7	2.7
	Open Rd. Density (Miles/Sq. Mi.)	3.8	3.8	2.3	3.0	3.0	3.0
<i>Economic Efficiency and Opportunity</i>		A	C	D	E	G	H
Commercial Salvage	Total Volume Million Board-Foot (MMBF) / Acres	0	36.1	21.5	31.6	36.1	33.4
		0	10,230	6,309	8,931	10,230	9,515
Logging Systems	Ground-Based (% of Volume)	N/A	97.8%	96.7%	97.5%	97.8%	100%
	Helicopter (% of Volume)	N/A	2.2%	3.3%	2.5%	2.2%	0%
Temporary Roads (miles) – Minimum width roads, averaging ¼ mile in length, used only for a short duration and decommissioned following use.		0	26.0	4.1	22.0	26.0	22.0
Net Timber Value	\$ per mbf	N/A	\$59.84	\$59.74	\$58.68	\$59.84	\$60.16
	Total (million \$)	0	2.2	1.3	1.9	2.2	2.0
Job Support	Direct Jobs	0	271	161	237	271	251
	Total Jobs, incl Indirect	0	406	242	356	406	376
Present Net Value	Current Projects @ 4% Disc. Rate (million \$)	0	-8.0	-6.7	-5.8	-8.9	-7.1
<i>Effects on Soils, Watersheds and Aquatic Habitat</i>		A	C	D	E	G	H
Effect on Functionality of Uplands (Restore – R; Maintain –M; Degrade – D)		R/M/D	R/M/D	R/M/D	R/M/D	R/M/D	R/M/D
<div style="border: 1px solid black; padding: 5px;"> The numbers to the right represent the number of subwatersheds within the analysis area (from amongst 8 sub-watersheds), that would be Restored; Maintained; or Degraded, in relation to the listed parameter, by the given Alternative – listed in that order: R/M/D – See Chapter 3 Cumulative Watershed Effects, by sub-watershed for details. </div>	Roads	0/2/6	6/2/0	6/2/0	0/8/0	0/8/0	6/2/0
	Canopy	0/8/0	0/8/0	0/8/0	0/8/0	0/8/0	0/8/0
	Soil	0/8/0	0/8/0	0/8/0	0/8/0	0/8/0	0/8/0

Table S.1: Comparisons of Activities and Key Issue-Related Effects (continued)

KEY ISSUE and Indicators	Alt. A	Alt. C	Alt. D	Alt. E	Alt. G	Alt. H
<i>Effects on Soils, Watersheds and Aquatic Habitat (continued)</i>						
Effect on Functionality of <u>Riparian Vegetation and Bank Stability</u> (Restore – R; Maintain –M; Degrade – D)	R/M/D	R/M/D	R/M/D	R/M/D	R/M/D	R/M/D
The numbers to the right represent the number of subwatersheds within the analysis area (from amongst the 8 subwatersheds), that would be Restored ; Maintained ; or Degraded , by the given Alternative – listed in that order: R/M/D	0/8/0	0/8/0	0/8/0	0/8/0	0/8/0	0/8/0
Effect on Functionality of <u>Channel Conditions</u> (Restore – R; Maintain –M; Degrade – D)	R/M/D	R/M/D	R/M/D	R/M/D	R/M/D	R/M/D
The numbers represent the number of subwatersheds within the area (from amongst the 8 subwatersheds) that would be Restored ; Maintained ; or Degraded , in relation to the parameter.						
Pool Freq.	0/8/0	0/8/0	0/8/0	0/8/0	0/8/0	0/8/0
Large Wood	0/7/0	3/4/0	3/4/0	3/4/0	3/4/0	3/4/0
Temperature	0/4/0	0/4/0	0/4/0	0/4/0	0/4/0	0/4/0
Fine Sediment	0/1/0	0/1/0	0/1/0	0/1/0	0/1/0	0/1/0
<i>Note: Temp., Fine Sediment & Passage are Unavailable for some Subwatersheds; particularly those w/o Perennial Streams</i>						
Fish Passage	0/4/0	0/4/0	0/4/0	0/4/0	0/4/0	0/4/0
Soil Fertility (Restoration of “Gap” Architecture – Acres on which actions would reduce “Lignifications”; See FEIS Chapter 3)	0	10,230	6,309	8,931	10,230	9,515
Sediment Risk Long-Term Reduction from Enhancement Projects (Tons/Year)	0	0.7	0.7	0.6	0.6	0.7
Reductions in Drainage Density (and therefore reductions in risk of sediment delivery) (Mi/Sq. Mi)	0	0.77	0.80	0.44	0.44	0.78
Amount of Sediment* produced (short-term) in 4 units with “slight” potential for sediment transport (Tons/Acre)	0	0.05	0.05	0.05	0.05	0.05
(Tons/Year)	0	29.9	4.5	4.5	29.9	27.9

*Sediment level is for “Checkpoint 3”, skid trail use in year of harvest (see FEIS Chapter 3, Soils). Under consideration are the four units in the project area with identified sediment transport potential (Toolbox Units 130, 131, 133 & 133). At the next “checkpoint” following harvest (full live ground cover) sediment would drop to 0 tons/acre and 0 tons/year. The BAER Report found that background erosion rates were .01-.05 tons/ac and post-fire rates were .06-.09 tons/ac.

Table S.1: Comparisons of Activities and Key Issue-Related Effects (continued)

KEY ISSUE and Indicators		Alt. A	Alt. C	Alt. D	Alt. E	Alt. G	Alt. H	
<i>Effects on Soils, Watersheds and Aquatic Habitat (continued)</i>								
Compaction	Would Proposed Activities Produce Detrimental Soil Conditions in Excess of Regional Standards (20%)?	No	No	No	No	No	No	
Soil and Riparian Protection and Restoration Projects	LWD Placement (Miles)	0	9.6	9.6	9.6	9.6	9.6	
	Aspen Enhancement (Acres)	0	690	690	0	690	690	
	Deciduous Planting (Acres)	0	7	7	0	7	7	
	Improve Rd 2917413 Drainage?	No	Yes	Yes	No	Yes	Yes	
Aquatic Habitat	<u>Attainment</u> of INFISH Riparian Management Objectives – Yes or No?	Yes	Yes	Yes	Yes	Yes	Yes	
<i>Effects on Wildlife Habitat</i>		A	C	D	E	G	H	
Snag & Down Wood Habitat Retained	Optimal/Suitable Black-backed WP (Acres)	1,789/ 4,090	1,620/ 2,350	1,689/ 3,086	1,634/ 2,965	1,218/ 2,350	1,699/ 2,579	
	Optimal/Suitable Lewis' WP (Acres) (<i>See Ch. 3 for additional details</i>)	900/ 4,938	683/ 1,974	733/ 2,754	743/ 2,641	683/ 1,974	785/ 2,348	
Mule Deer Habitat Effectiveness	Winter Range (H.E. %)	5.4	10.0	10.0	7.7	7.7	10.0	
	Transition Range (H.E. %)	6.3	8.0	8.0	7.3	7.3	8.0	
	Summer Range (H.E. %)	34.0	40.3	41.5	38.6	38.6	40.3	
<i>Recovery of Sustainable LOS</i>		A	C	D	E	G	H	
Fuel Treatment & Fire Behavior	Additional fuels treatment (in units, post-harvest); or in areas outside units (Acres)		0	10,416	7,318	5,749	16,646	9,177
	Resistance to Control in Areas of Treatment (see above row)	Rate of Spread (Chains/Hr)	2 to 6*	1 to 3	1 to 3	1 to 3	1 to 3	1 to 3
		Flame Length (Ft)	2.8-5.8*	1.5 - 1.8	1.5 - 1.8	1.5 - 1.8	1.5 - 1.8	1.5 - 1.8
	* Fuel Model 12. A fire start would likely be beyond the capabilities of initial attack with typically available forces. If the start occurred during a significant "lightning bust", it is possible that a large, intense stand replacement wildfire would result. Alternative A would not affect the chances for a fire start to occur, but the un-manipulated fuel succession that would result would produce persistently elevated fuel loadings, characterized as Fuel Model 12 (in many areas). These fuels conditions would pose a threat to the development and sustainability of LOS conditions.							
Rx Fire Outside Harvest Units - (Acres) Prescribed fire would break up the continuity of the fuels and move the areas treated into a more fire resistant condition		0	3,572	2,450	0	3,572	2,450	
Development of LOS - Acres with combinations of treatment (fuels reduction-site prep-planting) that would most likely result in future sustainable LOS stands		0	14,652	11,190	8,950	20,882	13,320	

Scope of the Project, Analysis and Decision Framework

The scope of the project and the decision to be made are limited to: commercial salvage; snag retention; precommercial thinning; reforestation; fuels treatments and reductions, including prescribed fire; road management; watershed, riparian and wildlife habitat improvement activities; a site-specific Forest Plan amendment; and mitigation and monitoring within areas burned by the Toolbox Complex of 2002. Chapter 2 includes details on the designs of these actions. The project is limited to National Forest System lands within the project area. Connected actions to be included in the decision include: temporary road development and classified road reconstruction.

The proposed actions do not represent a comprehensive access management plan that includes actions outside the project area. The access restrictions considered in this analysis result from the proposed roadwork to improve watershed conditions in specific drainages or are needed to comply with the Forest Plan standard for habitat effectiveness in identified areas.

The analysis of effects in this document includes cumulative effects of other activities (past, present, and reasonably foreseeable future). These include a variety of past events and management activities, including the fires of 2002, past timber harvesting, and road construction. The past events and activities are reflected in the descriptions of the affected environment in Chapter 3, and summarized in Appendix A. Relevant and applicable past, present, and reasonably foreseeable activities on private, state, and other federal lands are also considered in the analysis of cumulative effects. This analysis assumes that the majority of fire-killed timber on private lands has been or will be salvage harvested.

The range of alternatives considered in this analysis is based on key issues and is influenced by public and other agency comments. Given the issues raised in comments, the number of potential combinations and permutations of alternative strategies, activities, prescriptions, and locations of activities present a potential for several possible alternatives. The alternatives considered in this analysis represent a reasonable range of approaches to burned area recovery that are responsive to the stated purpose and need.

The actions proposed in the document are not intended to serve as a general management plan for the area. If the Responsible Official selects an action alternative as a result of the analysis, implementation of the activities specifically identified will begin as soon as possible and without further NEPA documentation. The Responsible Official could also modify a selected alternative to address issues at the time of decision. Additional information about what is within and not within the scope of this proposed action and analysis is provided in the description of the issues and alternatives, including “Alternatives Considered But Not Given Detailed Study” in Chapter 2.

The Responsible Official for this proposal is the Forest Supervisor of the Fremont-Winema National Forests. Based on the analysis in the Final EIS, the Responsible Official will make the following decisions and document them in a Record of Decision:

- The extent, if any, of commercial salvage, fuel reduction, reforestation, watershed, riparian and wildlife habitat improvement activities, access management, and classified road reconstruction to be implemented, and, if implemented, where and how these activities would be conducted.
- Resource protection measures, including mitigation (See “Mitigation and Resource Protection Measures” in Chapter 2).
- Appropriate monitoring requirements to evaluate project implementation.
- Whether a site-specific Forest Plan amendment is required for implementation, the nature of the amendment, and whether the amendment would be a significant change to the Forest Plan. As described in Chapter 2, Alternative C (proposed action) and Alternative G would require a site-specific Forest Plan amendment for mule deer cover, outside of winter range, within portions of the project area.

The decision regarding which combination of actions to implement will be determined by comparing how each factor of the project purpose and need is met by each of the alternatives and the manner in which each alternative responds to the key issues raised and public comments received during the analysis. The alternative that the Responsible Official determines will provide the best mix of prospective results in regard to purpose and need, the issues, and public comments will be selected for implementation.

Table S.2: Relationship Between Underlying Needs and Proposed Action Elements

	NEED FOR:	NEED FOR:	NEED FOR:	NEED FOR:	NEED FOR:	NEED FOR:
ACTION	Wildlife habitat including snags and down wood, and live forest	Lower surface fuel loadings	High-quality fish and riparian habitat	Endemic, rather than epidemic, populations of bark beetls	Forest stands with structural conditions closer to HRV	Commercial timber production
Commercial Salvage (General)		◆		◆	◆	◆
Roadside Hazard and Maintenance Salvage:		◆				
Outside RHCAs		◆		◆	◆	◆
Within RHCAs		◆	◆	◆	◆	◆
Commercial Salvage in RHCAs (Not in Roadside)			◆	◆	◆	◆
Snag Retention	◆					
Precommercial Thinning					◆	
Reforestation (Planting)	◆		◆		◆	
Fuels Treatments and Reductions		◆	◆	◆	◆	
Prescribed Fire		◆			◆	
Road Management	◆		◆			
Temporary Road Development						◆
Road Reconstruction			◆			◆
Aspen Enhancement	◆		◆		◆	
Placement of LWD	◆		◆			
Deciduous Planting	◆		◆		◆	
Road 2917413 Drainage Improvement			◆			
Site-Specific Forest Plan Amendment		◆			◆	

◆ = Action Responds to Purpose and Need)

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Acronyms

BAER - Burned Area Emergency Rehabilitation

BMP - Best Management Practices

CEQ - Council on Environmental Quality

CWD - Coarse Woody Debris

DBH (or dbh) - Diameter at Breast Height

EIS (DEIS or FEIS) - Environmental Impact Statement
(Draft or Final)

HRV - Historic Range of Variability

IDT - Interdisciplinary Team

INFISH - Inland Native Fish Strategy

MA - Management Area

MIS - Management Indicator Species

MMBF - Million Board Feet

NEPA - National Environmental Policy Act of 1969

NFMA - National Forest Management Act of 1976

NFS - National Forest System

PETS - Proposed, Endangered, Threatened, or Sensitive
species

PFA - Goshawk Post-fledgling Area

RHCA - Riparian Habitat Conservation Area

ROG - Replacement Old Growth

ROS - Recreation Opportunity Spectrum

SHPO - State Historic Preservation Office

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