

CHAPTER 2. ALTERNATIVES, INCLUDING THE PROPOSED ACTION

Introduction

Chapter 2 describes the proposed action and alternatives to the proposed action, including a no action alternative. This chapter also describes the measures necessary to mitigate environmental effects, identifies management requirements, develops monitoring plans, and shows a summary comparison of the alternatives as they relate to key issues and the purpose and need for action. In the Appendix A, detailed summary tables for each action alternative are available for comparison.

The Monument Fire Recovery Project FEIS incorporates information and relies on direction provided by the Malheur Forest Plan, as amended. All alternatives are designed to adhere to State and Federal laws and regulations.

This chapter is divided into seven sections:

- Changes made between the Draft and Final EIS
- Alternative Development Process
- Alternatives Considered but Eliminated from Detailed Study
- Alternatives Considered in Detail
- Implementation Schedule for the Alternatives
- Management Requirements, Constraints, and Mitigation Measures
- Monitoring Plans
- Comparison of Alternatives

Affected environment and environmental consequences of implementing alternatives for the Monument Fire Recovery Project analysis area can be found in Chapter 3. The analysis file is referenced throughout this document and contains additional documentation and analysis.

All the numbers included in the description of the alternatives are approximate, as they have been generated from several sources. Some were generated from electronic sources, ie, queries of GIS spatial data while others were generated from field surveys. Importantly, they do provide accurate display of effects or trends.

Changes made between the Draft and Final EIS

The following changes were made between the Draft and Final EIS. This listing does not include corrections, explanations, or edits to grammar and spelling. Some of changes resulted from comments made to the DEIS.

1. Detailed consideration is now given to an Alternative Considered but Eliminated from Detailed Study in the DEIS (#3 Restoration Only). There were numerous public comments on the DEIS requesting that this alternative be developed. This alternative does not include timber harvest activities. Alternative 5 is developed from the restoration only theme in the DEIS and is now fully analyzed in the FEIS.

2. Additional field surveys to better locate and identify the type of damage to the forested vegetation were completed during the summer of 2003. The new survey information leads to modifications of treatment unit boundaries and the type of harvest treatment due increased tree mortality. Also some the treatment map unit numbers were changed to simplify project implementation. The tables in Appendix A indicate a comparison of old and new numbers.
3. The total number of harvest acres decreased in all the action alternatives. Alternative 2 decreased 11%, Alternative 3 decreased 4%, and Alternative 4 decreased 17%. The decreases were made to remove areas with very low densities of salvageable trees. Helicopter yarding these low density areas were not economically viable.
4. Approximately 75% of the resiliency treatments acres (green tree harvest) in Alternatives 2 and 4 are now considered salvage harvest. The burn damage to the residual trees in these treatment areas was greater than originally estimated. The increase in tree mortality in these stands reduced stocking that made the need for thinning unnecessary. This increase in tree mortality also changed the original big game cover estimates in the project area. There are no longer any stands that provide cover affected by either commercial thinning or precommercial thinning. A non significant Forest Plan for cover is no longer needed to implement either Alternative 2 or 4.
5. Harvest Units 3 and 12 retained 1.5 to 2.5 snags per acre as was prescribed for these units before they were changed from resiliency treatments to salvage treatments. The southern half of Unit 2 was removed from treatment and became a snag retention area. Also the northern half of Unit 6 and the very southern portion of Unit 12 became snag retention areas.
6. Planting and thinning acres also decreased from DEIS estimates. Planting was reduced approximately 23% across Alternatives 2, 3, and 4. Precommercial thinning decreased approximately 4%. The reductions reflect better mapping of non forested areas that decreased both the acres of potential planting and thinning.
7. All the tables and maps at the end of chapter 3 were updated to reflect alternative revisions.
8. Salvage harvest in the portion of the RHCA below the confluence of Camp Creek and the Little Malheur River was changed to no harvest. Field data revealed there is a lack of large woody debris in this stream reach of the Little Malheur.

Alternative Development Process _____

This chapter of the FEIS describes in detail five alternative ways to manage land and resources in the Monument Fire project area. The Proposed Action was developed using the Forest Supervisor's specific direction detailed in the Project Initiation Letter, dated December 13, 2002. Public participation to review and comment on proposed activities in the Monument Fire area began in February 2003 and continues with this FEIS. Forest Service resource specialists were part of an interdisciplinary team (IDT) that worked on development of action alternatives. The range of options/differences between alternatives is limited and based on comments received from the public and other agencies, direction given by Forest leadership, and through incorporating Forest Plan amendments, existing State and Federal laws, and Forest Service interim direction.

Responding to DEIS public comments, an alternative that was “considered but not analyzed” in the DEIS was elevated to an alternative considered, Alternative 5.

Action alternatives 2, 3, and 4 described in the FEIS were developed with some common themes. These alternatives would:

- Remove fire-killed trees or trees expected to die as a result of fire injury. In Alternatives 2 and 4 some thinning of green trees would also occur;
- Use planting to reforest the burn area;
- Construct less than one mile of temporary roads;
- Timber harvest within the Little Malheur River subwatershed requires the use of helicopter yarding due to sensitive soil conditions;
- Reduce road impacts on wildlife habitat and water quality;
- Relocate Dedicated Old Growth (DOG) and Replacement Old Growth (ROG) areas burned by the fire because they are no longer suitable habitat;
- Apply water quality Best Management Practices (BMPs) in the design and implementation of the alternatives to protect water quality.
- Avoid effects on sensitive areas such as heritage sites and sensitive plant sites by not proposing harvest in those areas;
- Provide some level of employment to the local community.

Alternative 5 includes many of the non-harvest activities in Alternatives 2, 3, and 4.

These activities include planting, reduction in the miles of open roads, and relocation of DOG and ROG areas. The number of miles of road closures was increased in Alternative 5 and planting is reduced to those areas that severely burned.

Each action alternative analyzed in detail discloses environmental effects associated with its implementation, thereby facilitating a comparison of alternatives. This comparison of effects along with projected environmental consequences detailed in Chapter 3 provides the Responsible Official with information needed to make an informed choice between alternatives.

The interdisciplinary team (IDT) developed and analyzed in detail a reasonable range of alternatives. (40 CFR 1502.14 (a)). The alternatives address the needs to reduce fuel loadings, capture economic value of the dead and dying trees, improve vegetative structure, reduce the effects of roads on wildlife habitat and water quality, re-establish upland vegetation, and designate suitable Dedicated and Replacement Old Growth (DOG and ROG) areas to replace those degraded by the fire. The No Action Alternative is defined as no change from management activities as they now exist.

Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives, and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the Proposed Action provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives may have been outside the scope of the purpose and need, duplicate alternatives already considered in detail, or determined to be components that would cause unnecessary environmental harm.

Therefore, a number of alternatives were considered, but dismissed from detailed consideration, for reasons summarized below.

1. **Use of ground-based skidding systems for salvage harvesting in the Upper Little Malheur River** subwatershed was considered but not analyzed. Early in the development phase of the project, the interdisciplinary team recognized that ground based skidding could cause serious erosional processes to develop since a large portion of this area suffered high severity burn damage (loss of ground cover) and the soil type is highly erosive. To minimize these conditions, ground disturbance needed to be kept to a minimum. Helicopter yarding was the only solution to meet water and soil standards.
2. **Winter logging and helicopter yarding** was considered as an alternative to tractor skidding within the Upper Little Malheur subwatershed. The site conditions present a low risk of soil displacement from ground based skidding since the slopes are generally under 25%, the transport of sediment from the upland salvage areas is a long distance from fish bearing or perennial streams, and soil types risk to erosion is in the moderate range. No reduction of impacts to soil and water could be anticipated by requiring either helicopter or winter logging methods.
3. **Relocation of Little Malheur Trailhead** was included originally in the proposed action, but not analyzed in further detail in the proposed action or other alternatives. The relocation was eliminated because the planned log landing that could serve as a new trailhead was not needed for the sale. In the future, a detailed plan will need be analyzed to determine the best location of the trailhead and trail along the Little Malheur River beyond the junction of FS Road 1672 (Camp Creek Road).

Alternatives Considered in Detail

The Forest Service developed five alternatives, including the No Action and Proposed Action alternatives, in response to issues raised by the public.

Common to All Alternatives

Cattle grazing will be permitted when vegetative recovery standards identified in the Interim Malheur Forest Post Fire Grazing Guidelines are met (see Appendix G). In accordance with the guidelines grazing will not be permitted in areas with moderate to severe burn vegetative damage in the Monument Fire area for two or more growing years.

Motorized vehicle access within the fire area was restricted until danger trees that were identified as an immediate hazard to public safety, were removed during the summer of 2003. Roads on which hazard trees were felled were then opened for public use.

Firewood cutting will not be allowed in the project area until this current recovery analysis is completed, because many of the dead trees have a high value either for sawtimber or wildlife habitat. Mushroom gathering is permitted under conditions identified under the policy identified for the Malheur, Wallowa - Whitman, and Umatilla National Forests (see 2003 Mushroom Guide).

Alternative 1 (No Action)

Purpose and Design

The purpose of this alternative is to allow current processes to continue, along with associated risks and benefits, in the Monument project area.

The “No Action” alternative is required by NEPA. In this document the “no action” alternative means the proposed project (which includes all activities identified in the proposed action) would not take place in the Monument project area at this time. Alternative 1 is designed to represent the existing condition. It serves as a baseline to compare and describe the differences and effects between taking no action and implementing action alternatives.

Many of the current management activities taking place in the area would continue if Alternative 1 was selected, but no new activities would take place. Only those management activities considered part of normal maintenance requirements, or those allowed under previous decision documents would continue. Activities such as motorized access travel management, road maintenance, dispersed recreation, noxious weed management, and fire protection would be allowed to continue as they currently take place in the project area. Resumption of livestock grazing would be subject to the Forest's post burn grazing guidelines. This policy would allow grazing to resume at current levels after two growing seasons depending on fire severity and whether monitoring shows that the range resource is ready after the two growing seasons or not. Grazing may be delayed for a longer period if necessary to meet other resource objectives (USDA Forest Service 2003).

Fuels/Economics

Under this alternative, no salvage harvest would be implemented to accomplish project goals to reduce future fuel loading or capture economic value of the dead and dying trees.

Forest Vegetation

There would be no thinning in those stands with a large component of live trees remaining. There would be no planting under this alternative. For the purpose of comparison of alternatives, this alternative would analyze the effect of natural regeneration as a base line condition. However, because of Regional Forester direction (Regional Forester Letter 2002), to reforest burned areas that are not salvaged as soon as possible, artificial reforestation would need to be addressed in a subsequent analysis.

Water Quality

No road construction, reconstruction, decommissioning, or closures would occur in Alternative 1 however, normal road maintenance such as re-closing roads opened during fire suppression activities and felling hazard trees on open roads would continue. Roads would be maintained in accordance with annual maintenance plans. Open road densities would remain at pre fire levels.

There would be no immediate obliteration of the old skid trails in the Camp Creek drainage.

Old Growth and Pileated Woodpecker Habitat

Alternative 1 would not identify new Dedicated Old Growth (DOG) or Replacement Old Growth (ROG) areas. DOGs burned by the Monument Fire would remain as Management Area-13. All dead trees would be left standing, other than trees that may be cut or utilized through future activities identified in Chapter 1, Actions Outside of this EIS to Address Recovery Needs.

However, if the No Action Alternative is chosen, the Forest Service still maintains the discretion to adjust DOG, ROG, and management areas by conducting a separate environmental analysis.

Conformance with Forest Plan Standards and Guidelines, as Amended

Alternative 1 was developed to provide a baseline for comparison with the action alternatives. Because of the high tree mortality and loss of canopy cover caused by the Monument Fire, existing Dedicated Old Growth within the project area is unsuitable for many old-growth associated species and therefore this alternative does not meet Forest Plan Standards and Guidelines (36 CFR 219.10 (c)).

Alternative 2

Purpose and Design

As described in Chapter 1 in the Proposed Action section, Alternative 2 will meet the project purpose and needs by: 1.) salvage harvesting dead/dying trees, 2.) capturing the economic value of dead and dying trees, 3.) reducing levels of standing dead and down fuel, 4.) commercially and pre-commercially thinning stands of live trees improving resiliency of surviving forest vegetation, 5.) implementing reforestation activities to restore forest vegetation, 6.) replacing and updating habitat for dedicated old growth/associated wildlife species, and 7.) eliminating road and old skid trails responsible sedimentation and reduced water quality

Fuels/Economics

Commercial harvest of dead and dying trees on approximately 4,052 acres would provide economic opportunities for local and regional populations, by salvaging the economic value of dead and dying trees. The timber harvest would also reduce future fuel loading and reduce the risk of future high-severity fires. The harvest would include some RHCA's, where leaving standing dead trees increases the risk of future wildfires and other disturbance agents. These areas are identified as **Salvage and RHCA Salvage Treatments**.

Forest Vegetation

Commercial thinning is prescribed on approximately 223 acres; pre-commercial thinning is prescribed on 392 acres. The objective is to restore ecologically appropriate tree vegetation. Thinning would improve resilience to damage from insects, disease, and wildfire, by reducing stocking levels of the stands. These areas are identified as *Resiliency Treatments*.

To ensure the moderate and severely burned stands are reforested, conifer planting is prescribed. Stands identified as suitable forest below adequate stocking levels, would be planted with conifers.

Water Quality

Road decommissioning, road maintenance, and old skid trail obliteration projects are designed to reduce road density and improve the hydrologic function of existing roads and skid trails.

Old Growth/ Pileated Woodpecker Habitat

Other recovery projects include reforestation, and re-locating designated old-growth areas. The Malheur Forest Plan allocated old-growth forest areas that were severely burned would be re-allocated to undamaged stands.

Alternative Features

Mitigation measures, design features, and monitoring are identified at the end of this chapter.

Timber Harvest – Salvage, Resiliency, and RHCA Salvage Treatments

(See Figure 5, 10, and 11, Map Section)

- **Silvicultural prescriptions** – Salvage and RHCA Salvage Treatments – Removal of Dead/Dying Trees (HSV), Resiliency Treatment - Salvage and commercial thin (HSV/HTH).
- **Activity fuels treatment** – Lop and scatter in the Salvage helicopter-yarding areas; hand pile in the RHCA Salvage in the Little Malheur River, and lop and scatter in the other RHCA Salvage areas; lop and scatter in the Salvage Treatment tractor-yarding areas, and whole-tree yard in the tractor-skidded Resiliency Treatments. The slash on the log landings would be piled and burned.
- **Post-sale prescriptions** – Salvage and RHCA Salvage Treatments – hand plant conifer seedlings; Resiliency Treatment – Pre-commercial Thinning and hand plant conifer seedlings.
- **Removal size – Salvage Treatments** - Dead/Dying trees – 12” DBH minimum for helicopter yarding and 9” DBH minimum for tractor yarding, no maximum size; **RHCA Salvage Treatments** – Same as salvage except maximize removal size is less than 20” DBH; **Resiliency Treatments** - live (green) trees – 9” DBH minimum for ponderosa pine and 8”DBH for other species in the helicopter yarding, maximum size (green) 20.9” DBH; same removal size as the Salvage Treatment.
- **Harvest methods** – 3,875 acres of helicopter yarding; 490 acres of tractor yarding; helicopter yarding is prescribe for all harvest in the Upper Little Malheur subwatershed and tractor yarding in the Swamp Creek subwatershed (see Appendix A for breakdown by each harvest unit); no landings are within RHCAs.
- **Harvest Volume** – 30,000 (MBF)
- **Snags and down wood** – Meets Forest Plan standard for snags and down wood, retaining 2.4 dead or dying trees per acre in a clumpy distribution of trees greater than 21” dbh in size where available (See Chapter 2, Design Measures/Mitigation

Measures for Action Alternates, Wildlife, Wildlife Snags for size and spatial distribution).

- **Road maintenance and reconstruction** – 69.5 miles of maintenance and 0.2 miles reconstruction; maintenance includes spot rocking, brushing, hazard tree reduction, and blading; reconstruction includes replacement of a cattleguard, rocking, and reconstruction includes changing a road junction and installing a cattleguard. The maintenance also covers pavement repair on FSR 16 and FSR 13 out to County Road 62.
- **Road construction/helicopter log or service landing** – 4 temporary roads (0.6 miles) would be needed to access some landings; 20 log landings and 3 service landings; temporary roads will be decommissioned after use.

Reforestation/Precommercial Thinning

Post-harvest plant in Salvage, Resiliency, and RHCA Salvage Treatments areas and those areas not identified for harvest that historically were forested environments (see figure 8, Map Section).

- **Reforestation** – 5,322 acres of conifer planting or inter-planting, includes uplands and RHCAs. Protection from big game browsing is prescribed; protection methods include applying Big Game Repellent (BGR).
- **Precommercial thinning** – Precommercial thinning would take place on approximately 392 acres.

Road Management/Restoration

(See Figure 12, Map Section)

- **Gated road closures** – 7.0 miles of gated closures (year-long motorized vehicle closure) to increase big game security.
- **Road decommissioning** – 11.8 miles of decommissioning (currently 7.0 miles of the total is un-drivable) to reduce road-related sediment delivery to water sources.

Old Skid Trail Obliteration

(See Figure 14, Map Section)

Re-contouring/subsoiling – 2.2 miles of skid trail obliteration; low ground pressure excavating equipment or handwork for out-sloping or re-contouring skid road surfaces; objective is to increase infiltration, slow runoff, and return water into stream channels.

Replace Dedicated Old Growth (DOG) and Replacement Old-Growth (ROG) Areas

(See figure 15, Map Section)

Re-delineate and designate new DOG/ROG – Replace the fire-killed DOG/ROG acres as per Forest Plan standard; increase the size of an existing DOG/ROG).

New pileated woodpecker feeding area (PWFA) – Identify and delineate a new PWFA to meet Forest Plan direction.

Forest Plan Amendments

A non-significant Forest Plan amendment would be required to implement the proposed action. Alternative 2 was designed, in part, to replace DOG and ROG 04334PP that is now unsuitable due to the fire. Selecting Alternative 2 would include a site-specific, non-significant amendment to convert the original MA 13 to MA-1. The other part of the DOG and ROG re - delineation would change the boundary of DOG 04345 converting changing the MA 13 and MA 1 acres.

Selection of this alternative would meet Forest Plan Standards and Guidelines (36 CFR 219.10 (c)).

Alternative 3

Purpose and Design

Alternative 3 was developed from public concerns relating to timber harvest effects on water quality, sedimentation, and wildlife cover.

Key features in Alternative 3 reduce the risk of sedimentation by eliminating harvest in the RHCAs and not harvesting within 50 feet of the RHCAs for Category 2 and 100 feet for Category 4 streams (perennial and intermittent streams). This would further reduce the risk to water quality and sedimentation inputs from harvest activities. Greater retention of snags would also contribute to greater levels of future down log habitats.

To address snag habitat and retention of live tree concerns, more dead and dying trees than proposed in Alternative 2 are retained for snag habitat, and green/live trees would not be harvested to provide vegetative diversity. Concerns were raised that the strategy for managing snag habitat in the Proposed Action may not meet dead habitat dependent primary cavity excavator (PCE) needs. Recent studies (Knotts, 1998; Saab and Dudley, 1998; Dixon and Saab, 2000; Saab et al., 2002), indicate that the Forest Plan standard of 2.4 snags per acre would not meet minimum wildlife needs for management indicator species/PCE species in these severe burn habitats. Alternative 3 was designed to leave higher levels of snag habitat distributed in a way that accommodates a broader range of cavity excavator species. A total of 13 snags per acre (see Design Measure section under wildlife for size distribution) would be retained in each harvest unit. In the salvage harvest units, these snags would be distributed in 2-6 acres clumps in size throughout the treatment units. In addition, areas not harvested including patches of high density snag habitat would remain intact throughout the RHCAs and other patches of lower density habitat would also remain. These snag retention levels were established primarily to meet prescribed use levels for Lewis' woodpecker, hairy woodpecker, and northern flicker.

Fuels/Economics

The number of acres of harvest was reduced by approximately 1/3 from Alternative 2. This was primarily an economics factor of the high cost of helicopter logging. The volume of dead trees was reduced since many more dead/dying trees were retained for snag habitat, making the remaining of the lower density salvage uneconomical for removal by helicopter.

Commercial harvest of timber on approximately 2,825 acres would provide economic opportunities for local and regional populations, by salvaging the economic value of dead and dying trees. The timber harvest would also reduce fuel loading and reduce the risk of future high-severity fires. No harvest is proposed in the RHCA's where fuel loading will be a future problem.

Forest Vegetation/ Water Quality/ Old Growth/Pileated Woodpecker Habitat

The reforestation projects for conifer planting, road and old skid trail obliteration, and the areas designed for DOG/ROG/Pileated Woodpecker are the same type as described in Alternative 2.

Alternative Features

Mitigation measures, design features, and monitoring are identified at the end of this chapter.

Timber Harvest – Salvage Treatment

(See figures 6, 10, and 11, Map Section)

- **Silvicultural prescriptions** – Salvage harvest throughout upland areas; Resiliency Treatments from Alternative 2 would not occur, leaving all the live trees to retain wildlife cover. However, the dead/dying in these Alternative 2 resiliency units would be salvaged.
- **Removal size** – Dead/Dying trees – 12” DBH minimum for helicopter yarding and 9” DBH minimum for tractor yarding, no maximum size.
- **Harvest methods** – 2,520 acres of helicopter yarding in the Upper Little Malheur subwatershed; 305 acres of tractor yarding in the Swamp Creek subwatershed; (see Appendix A for breakdown by each harvest unit).
- **Harvest volume** – 14,400 MBF
- **Road construction/Helicopter landings** – Same as Alternative 2.
- **Fuels treatment** – Lop and scatter in helicopter yarding areas; lop and scatter in tractor-yarding areas; pile and burn landings.
- **RHCA harvest** – No harvest.
- **Snags and down wood** – Retain approximately 13.0 dead or dying trees per acre in clumps of 2 to 6 acres in size; (See Chapter 2, Design Measures/Mitigation Measures for Action Alternates, Wildlife, Wildlife Snags for size and spatial distribution)
- **Road maintenance** – Same as Alternative 2.

Reforestation/Precommercial Thinning

Post-harvest planting is proposed in Salvage areas and those areas not identified for harvest, which historically were forested environments (see figure 8, Map Section). Same as Alternative 2.

Road Management/Restoration

(See figure 12, Map Section)

- **Gated road closures and road decommissioning** – Same as Alternative 2.

Old Skid Trail Obliteration

(See figure 14, Map Section)

Re-contouring/subsoiling – Same as Alternative 2.

Replace Dedicated Old Growth (DOG) and Replacement Old-Growth (ROG) Areas; new Pileated Woodpecker feeding area

(See figure 15, Map Section)

Same as Alternative 2.

Forest Plan Amendments

A non-significant Forest Plan amendment would be required to implement the proposed action. Alternative 3 was designed, in part, to replace DOG and ROG 04334PP that is now unsuitable due to the fire. Selecting Alternative 4 would include a site-specific, non-significant amendment to convert the original MA 13 to MA-1 or MA-4A. The other part of the DOG and ROG re - delineation would change the boundary of DOG 04345 converting changing the MA 13 and MA 1 acres.

Alternative 3 would not require a Forest Plan amendment for snag retention because it meets the Forest Plan standard of 2.4 snags per acre greater than or equal to 21” dbh. The additional snags making up the 13 per acre are not the large diameter dead/dying but are greater than or equal to 10” dbh.

Selection of this alternative would be consistent with the Forest Plan, as amended (36 CFR 219.10 (c)).

Alternative 4

Purpose and Design

The focus of Alternative 4 is to provide a different snag management strategy for retention of wildlife snag habitat to retain all the dead and dying trees in the RHCAs from what was proposed in Alternative 2. Concerns were raised that the strategy for managing snag habitat in the Proposed Action may not meet snag retention needs for dead habitat dependent primary cavity excavator (PCE) needs. Recent studies (Knotts, 1998; Saab and Dudley, 1998; Dixon and Saab, 2000; Saab et al., 2002,) indicate that the Forest Plan standard of 2.4 snags per acre would not meet minimum wildlife needs for management indicator species/PCE species in these severe burn habitats. Alternative 4 was designed to leave snags in patches ranging in size from 4 to 90 acres in order to better meet the needs of PCE species because cavity nesters as a group prefer patches as opposed to single snags retained in uniform, even spaced distribution (Rose et al, 2001, Saab et al, 2002, Kotliar 2002). Within most of the salvage harvest units, no snags would be retained other than the smaller sub-merchantable trees, trees needed to meet down wood standards, and incidental standing cull trees. This snag strategy would require a non-significant Forest Plan amendment for both the salvage and resiliency harvest treatments.

This snag strategy would leave intact patches of high density (approximately 338 acres) snag habitat that would provide quality habitat for fire dependent primary cavity excavators. The lower density patches are also retained in Alternatives 2 and 3. In addition, areas not harvested including the RHCAs with a high density of snags would also remain.

Another benefit to the snag patch concept is that the management and retention of snag habitat is simplified. The cutting of hazard trees near logging operations or roads often reduces the numbers of snags. By retaining uncut patches of dead trees for snag habitat, the need to cut hazard trees within the patches is eliminated except along open roads.

Within the resiliency treatments and in salvage treatments units 3 and 12 (low to moderate severity damage), a snag density of 1.5 to 2.5 snags per acre would be retained to meet snag requirements for green forest PCE species.

As in Alternative 3, there is no harvest included in the RHCAs. By excluding RHCAs from harvest, public concerns for harvest in these areas would be addressed.

Fuels/Economics

The number of acres of harvest was reduced by approximately 20% from Alternative 2 due to a different snag habitat retention strategy. Since a greater number of dead/dying trees were retained for snag habitat, the harvest volume per acre was too low in some of the treatment areas to make a viable entry.

Commercial harvest of timber on approximately 3,344 acres would provide economic opportunities for local and regional populations, by salvaging the economic value of dead and dying trees. The timber harvest would also reduce fuel loading and reduce the risk of future high-severity fires. No harvest is proposed in the RHCAs where fuel loading will be a future problem.

Forest Vegetation/Water Quality/Old Growth/Pileated Woodpecker Habitat

The reforestation projects for conifer planting, road and old skid trail obliteration, and the areas designed for DOG/ROG/Pileated Woodpecker are the same type as described in Alternative 2.

Alternative Features

Mitigation measures, design features, and monitoring are identified at the end of this chapter.

Timber Harvest – Salvage and Resiliency Treatments

(See figures 7, 10, and 11, Map Section)

- **Silvicultural prescriptions – Salvage Treatment** – Removal of Dead/Dying Trees (HSV), **Resiliency Treatment** - Salvage and commercial thin (HSV/HTH).
- **Removal size** – Same as Alternative 2.
- **Harvest volume** – 26,500 MBF.
- **Harvest methods** – 2,885 acres of helicopter yarding in the Upper Little Malheur subwatershed; 459 acres of tractor yarding in the Swamp Creek subwatershed; (see appendix A for breakdown by each harvest unit).
- **Road construction/Helicopter Log or Service Landings** - 3 temporary roads (0.4 miles) would be needed to access some of the landings; 22 landings (19 log and 3 service landings).
- **Fuels treatment** – Lop and scatter in helicopter yarding area; lop and scatter in Salvage Treatment tractor-yarding areas.
- **RHCA harvest** – No harvest.

- **Snags and down wood** – Retain 11 dispersed snag patches, ranging from 4 to 90 acres (338 acres total), See Chapter 2, Design Measures/Mitigation Measures for Action Alternates, Wildlife, Wildlife Snags for size and spatial distribution) .
- **Road maintenance** – Same as Alternative 2.

Reforestation/Precommercial Thinning

Post-harvest plant in Salvage and Resiliency Salvage Treatments areas and those areas not identified for harvest, which historically were forested environments (see figure 8, Map Section). Same as Alternative 2.

Road Management/Restoration

(See figure 12, Map Section)

- **Gated road closures and road decommissioning** – Same as Alternative 2.

Old Skid Trail Obliteration

(See figure 14, Map Section)

Re-contouring/subsoiling – Same as Alternative 2.

Replace Dedicated Old Growth (DOG) and Replacement Old-Growth (ROG) Areas

(See figure 15, Map Section)

Same as Alternative 2.

Forest Plan Amendments

Two non-significant Forest Plan amendments would be required to implement Alternative 4.

Alternative 4 was designed specifically to leave higher levels of snag habitat and in a distribution pattern designed to increase cavity excavator habitat for species such as the black-backed woodpecker. By distributing the snag patches on a unit basis for better utilization by the species, and not a 40-acre block basis, we may not meet Forest Wide Standard and Guideline #39. Alternative 4 would include a site-specific, non-significant amendment to Forest Wide Standard and Guideline #39.

A non-significant Forest Plan amendment would be required to implement the proposed action. Alternative 4 was designed, in part, to replace DOG and ROG 04334PP that is now unsuitable due to the fire. Selecting Alternative 4 would include a site-specific, non-significant amendment to convert the original MA 13 to MA-1 or MA-4A. The other part of the DOG and ROG re - delineation would change the boundary of DOG 04345 converting changing the MA 13 and MA 1 acres.

Selection of this alternative would meet Forest Plan Standards and Guidelines (36 CFR 219.10 (c)).

Alternative 5

Purpose and Design

Detailed consideration is given to an alternative considered but not analyzed in the DEIS (#3 Restoration Only, No Timber Harvest) and developed into Alternative 5. There were numerous public comments on the DEIS requesting that this alternative be fully analyzed in the FEIS and follow recommendations contained in the Beschta Report. This alternative includes many of the restoration activities included in Alternatives 2, 3, and 4. It does not include salvage of dead and dying trees and it does not include commercial/precommercial thinning to improve stand resiliency.

The alternative is based on recommendations contained in a publication known as the Beschta Report. The Beschta Report is a compilation of scientist recommendations for fire recovery projects and post-fire timber salvage. Recommendations in this report favor natural recovery, with little or no salvage, as the best method to maintain a variety of resource values. Alternative 5 considered these recommendations and included some of them as features within the alternative to reduce sedimentation risk and retain live trees.

The standing dead and green/live stand component would be retained to provide the optimum primary cavity excavator species habitat and the green/live trees retained for vegetative diversity primarily for wildlife habitat.

The Alternative 5 projects include increased road closures, old skid trail rehabilitation, and limited conifer planting. The road restoration includes the activities identified in Alternative 2 plus additional road closures to further increase wildlife security, retention of snags from firewood cutting, and reduce threat of noxious weed spread, etc (figure 13, Map Section). The skid trail obliteration would be the same as described in Alternative 2. This reduces the effect of the old skid trails that are causing water quality problems.

The road maintenance items identified in Alternatives 2, 3, and 4 except the deferred maintenance of FSR 16 would be implemented. This would ensure that the roads that are left open are left in a condition that will not increase sedimentation or water quality problems within the project area.

Conifer planting would occur in those stands with severe fire damage where seed sources would not be present to assure natural regeneration (figure 9, Map Section). Moderately and lightly burned areas not prescribed for planting would be allowed to seed in naturally and would be periodically reviewed over the next five years for future planting needs in case natural regeneration is unsuccessful.

Fuels/Economics

The capture of economic value of the dead/dying timber would be forgone. There would be some employment provided to complete the other restoration projects such as conifer planting and road decommissioning.

Forest Vegetation

To ensure the severely burned stands are reforested, conifer planting will occur. Stands identified as suitable forest existing below adequate stocking levels would be planted with conifers. The low to moderately damaged stands will be allowed to regenerate naturally. (Figure 3, Map Section).

Water Quality

Same as Alternative 2.

Old Growth/Pileated Woodpecker Habitat

The areas designed for DOG/ROG/Pileated Woodpecker are the same type as described in Alternative 2.

Alternative Features

Mitigation measures, design features, and monitoring are identified at the end of this chapter.

Vegetation treatments

- **Road maintenance** – Same as Alternative 2.
- **Reforestation** – Only severely burned areas.
- **Precommercial thinning** – None

Road Management/Restoration

(See figure 13, Map Section)

- **Gated road closures** - 16.2 miles of gated closures (year-long motorized vehicle closure).
- **Road decommissioning** - Same as Alternative 2.

Old Skid Trail Obliteration

(See figure 14, Map Section)

Re-contouring/subsoiling – Same as Alternative 2.

Replace Dedicated Old Growth (DOG) and Replacement Old-Growth (ROG) Areas

(See figure 15, Map Section)

Same as Alternative 2.

Forest Plan Amendments

A non-significant Forest Plan amendment would be required to implement the proposed action. Alternative 5 was designed, in part, to replace DOG and ROG 04334PP that is now unsuitable due to the fire. Selecting Alternative 5 would include a site-specific, non-significant amendment to convert the original MA 13 to MA-1 or MA 4A. The other part of the DOG and ROG re - delineation would change the boundary of DOG 04345 converting changing the MA 13 and MA 1 acres.

Selection of this alternative would meet Forest Plan Standards and Guidelines (36 CFR 219.10 (c)).

Implementation Schedule for the Alternatives

Alternatives 2, 3, and 4

Mid June 2004 through November 2005

- Salvage Harvest and Commercial Thinning (includes temporary road construction, landing construction, and road maintenance).

November 2005

- Gated closures of FSR 1672471 and FSR 1672474

Spring 2003 through spring 2007

- Conifer planting

Summer 2006

- Resurface (BST) FSR 1600 and 1300

Summer 2007 through fall 2007

- Road decommissioning and skid trail obliteration

Spring 2006 through fall 2006

- Precommercial thinning

Alternative 5

Spring 2005 through fall 2007

- Installation and closure of gates and earthen berm closures; maintenance of roads (same as alternatives 2, 3, and 4).

Spring 2003 through spring 2007

- Conifer planting

Summer 2007 through fall 2007

- Road decommissioning and skid trail obliteration (same as alternatives 2, 3, and 4).

Design Measures/Mitigation for Alternatives 2, 3, 4 and 5

The Forest Service developed the following design measures and mitigation measures to be used as part of, all, or a portion of Alternatives 2, 3, 4 and 5, as noted.

Watershed/Soils

The goals of these design elements are (1) to minimize detrimental watershed and soil impacts, especially irreversible impacts; and (2) to ensure that detrimental soil impacts

from this harvest, past harvests, and future harvests, would total less than 20% of the area of each harvest unit.

Timber Harvest

Alternatives 2

Trees will be directional felled away from the stream courses in RHCAs.

Timber Harvest

Alternatives 2, 3, and 4

- Riparian Habitat Conservation Areas (RHCAs) for Category 1, 2, and 4 streams and for Category 3 and 4 wetlands shall be consistent with INFISH.
- Skidding and landings will not occur within RHCAs or ephemeral draw bottoms or other areas that may channel or concentrate water. Designated crossings of ephemeral draws shall be identified and approved by the timber sale administrator, prior to starting harvest of a given unit.
- Skid trails and landings will not be located within vegetative openings (non-forest, grassland, and shrublands) to avoid impacts to the shallow soils, unless approved by the Forest Service.
- Skidding is restricted to slopes less than 35%, using directional felling and tractor winching. This would minimize displacement, erosion, and irreversible damage to soils.
- The use of skidding equipment and feller-bunchers is restricted to soil moisture conditions between 10% and 30% or frozen or snow covered (See BMP for conditions that meet frozen and snow covered). Between this range of dry and wet conditions, detrimental soil impacts are minimized.
- Potential erosion from skid trails shall be controlled by the use of cross drains or comparable measures. The cross drains shall be spaced so that rills will not form between them, and located on soil where water will infiltrate, not on shallow or impermeable soil. Drainage off of skid trails shall be unobstructed.
- Skid trails and disturbed soil shall be seeded as specified in Malheur Forest-Wide Standards 128 & 129.
- To minimize soil displacement and compaction, skid trail locations shall be designated and approved prior to logging. To ensure skidding operations do not create detrimental soil conditions above the 20% Forest Plan standard, old skid trails in suitable locations should be reused.
- To ensure the soil protection standard would be met, the purchaser shall subsoil skid trails in tractor units where the soil is suitable.
- Erosion from subsoiling skid trails shall be controlled by subsoiling in a "J" pattern, by constructing water bars, or by comparable measures, such as intermittently lifting subsoiling tines out of the soil. If runoff cannot be diverted out of the furrows, do not subsoil. Skid trails on slopes steeper than 28% shall not be subsoiled, but will be cross drained.
- Subsoiling and seeding would be concurrent with harvest activities. Seeding called for above will be necessary, to supplement other erosion control measures.

Road Management Activities and Old Skid Trail Obliteration

Alternatives 2, 3, 4, and 5

Throughout the project, Best Management Practices (BMPs) will be used to minimize adverse impacts to aquatic habitat (see General Water Quality Best Management Practices, Pacific Northwest Region 1988). Listed below are the principle BMPs.

- To protect creeks during roadwork, including decommissioning roads and skid trail obliteration within the RHCAs, sediment filter fences or sediment traps will be installed. These will be located at culvert removal sites and at the downstream end of all culverts prior to beginning culvert installations, catch basin cleaning, and inlet/outlet ditch cleaning or construction. Sediment devices will remain in place until soils become stabilized. Soils may be stabilized by natural seeding processes, or promoted by artificial methods.
- All culverts removed from road decommissioning will be removed from the site and disposed of in an approved manner. Mulching and seeding will be performed to reduce potential sediment, as needed.
- A Forest Service employee qualified/certified in road construction will monitor the construction activities to ensure work is conducted in a workman-like manner, and to ensure resource objectives are met.
- A delivery/storage/application plan, to prevent petroleum products or other deleterious materials from entering water systems, is required by the Forest Service prior to fuel deliveries in the project area.
- Excess and unsuitable soil and rock material will be taken to an upland disposal area.
- The two approved water sources for road maintenance, dust abatement or reconstruction are identified on figure 11 in the Map section.
- Areas of streambank disturbance will be seeded or planted. Existing vegetation will be retained, as possible, and replanted, to promote vegetation.
- An oil and hazardous substance spill contingency plan will be in place.
- Instream work on Category 1 and 2 streams will be accomplished during low-flow stream conditions, and outside of spawning seasons. Work will be ceased if storm events occur, that increase stream flows.
- Dust abatement is required to minimize dust during log haul. Dust palliatives such as magnesium chloride and lignin sulfate will not be applied within 50 feet of stream channels.
- The gated road closures would be year-long closures to all motorized vehicles. The road could be opened for extended periods for administrative use (by permit only) to allow post-harvest project activities.
- Removal of hazard trees within the RHCAs, for the purpose of public safety, is restricted. Only the portion of the tree within the prism of the road or outside the RHCA can be removed.
- Use of existing closed roads by motorized vehicles is prohibited during logging operations.

Public Safety

Alternatives 2, 3, and 4

To ensure public safety, roads and trails within or adjacent the project area including Forest Service Road 1672 and Forest Service Trail 366 (Little Malheur River) will be closed to public use during helicopter yarding activities.

Monument Wilderness

Alternatives 2, 3, and 4

Prior to harvest activities adjacent the Monument Rock Wilderness boundary including hazard tree removal along roads, the boundary will be located and posted to standard, in a manner determined by the Forest Supervisor. No harvest or ground disturbing activities are permitted inside this boundary.

Alternatives 2, 3, and 4

Notify the recreating public about the harvest activities will be occurring adjacent to the Monument Rock Wilderness. There will be public notifications at the trailheads and major access roads, local newspaper, and Forest Web Page. Harvest activities will be restricted during major holidays i.e. July 4, and Labor Day. Haul will be allowed but the use of helicopters will be limited over the Monument Rock Wilderness during these holidays.

Non-Forested Land inside Harvest Treatment Areas

Alternatives 2, 3, and 4

The Salvage, Resiliency, and RHCA Salvage treatment area include small areas considered as non-forest, ranging in size from 0.5 to 10 acres. These sparsely forested areas would not be salvaged or reforested. They are defined in the Malheur Forest Plan as lands that never have had or that are incapable of having 10 percent or more of the area occupied by forest trees (Malheur LMRP, page VI 22).

Wildlife

Wildlife Snags

Alternatives 2, 3, and 4

If designated snags are identified as a hazard to logging operations within harvest units or along haul roads, they will be cut but not removed.

Alternative 2

Wildlife snags would be retained at Forest Plan standards (2.4 snags per acre 21" DBH or larger). If snags greater than 21" DBH are not available, an appropriate number of snags

of the largest representative diameter class would be retained. The snags would be averaged on a 40-acre basis, and would be left in small clumps where possible.

To provide immediate habitat for woodpecker nesting, 25% of the snags would be selected from soft snags, if available. The remainder would be hard snags, to last longer and provide habitat over time. Snags with broken tops are preferred, since shorter snags tend to last longer. Snags with existing woodpecker cavities would be retained, if found.

Alternative 3

Wildlife snags would be retained at levels displayed in the following table 2-1.

Table 2-1. Alternative 3; Snags per Acre by Diameter Class.

Snag DBH	Snag Number Per Acre
21"+	2.5
14" – 20.9"	7
10" – 13.9"	3.5
TOTAL	13

If sufficient snags do not exist at a specified diameter class, snags would be retained from the next lower diameter class. The intent is to leave an average of 13 snags per acre. The snags would be averaged on a 40-acre basis, and would be retained in small clumps where possible (preferably 2 to 6 acres in size). Each 40-acre area of each harvest unit will contain at least two 2-acre clumps. In designated clumps, no snags would be felled, including snags less than 10 inches DBH.

All snags retained in this alternative would be hard snags, as directed by the Forest Plan. In addition, soft snags would be retained above and beyond these retention standards where feasible, as directed in the Forest Plan. Snags with broken tops are preferred, since shorter snags tend to last longer. Snags with existing woodpecker cavities would be retained, if found.

Alternative 4

Wildlife snags would be retained in 11 patches dispersed across the project area in addition to those within the RHCAs. No harvest would occur in these areas.

Approximately 1.5 to 2.5 snags per acre 21" DBH or larger would be retained in the resiliency treatment areas (223 acres), if feasible at least 2.4 per acre would be retained. No snags would be retained within the salvage harvest units except within units 3 and 12. Within these two units, snags would be retained the same as the resiliency treatment areas designated for commercial thinning and salvage harvest.

Common to Alternatives 2, 3, and 4

If a tree marked for snag retention is required to be felled for operational needs, the tree will not be removed and a green tree of equal or larger size would be girdled and left as a replacement.

Down Woody Debris Requirements

Alternatives 2, 3, and 4

Maintain down logs for wildlife habitat and long-term site productivity by contractually providing and retaining the levels indicated below by leaving either standing dead/dying trees or existing down logs.

Table 2-2. Down Log – Alternatives 2, 3 and 4

Species	Pieces per Acre	Minimum Diameter at Small End (inches)	Minimum Piece Length (feet)	Total Length (feet/acre)
Ponderosa Pine	3-6	12"	> 6 feet	20-40
Mixed Conifer	15-20	12"	> 6 feet	100-140
Lodgepole Pine	15-20	8"	> 8 feet	120-160

Big Game Winter Range

Alternatives 2, 3, and 4

The Forest Plan directs the management of Management Area 4A (MA-4A), Big Game Winter Range Maintenance, to provide winter habitats for big game species, including Rocky Mountain elk and mule deer (LRMP, Chapter IV, MA-4A, Description). Among the standards is the direction to “restrict activities that disturb wintering big game in a significant and prolonged manner from December 1 to April 1” (LRMP, Chapter IV, MA-4A, Standard 7). Harvest and yarding activities, as well as haul of logs out of established landings, have the potential to create disturbances that would affect designated winter-range habitat in the project area, as well as in surrounding winter-range habitats outside the project area.

Monitoring would be done periodically between December 1 and April 1, to determine snow conditions and presence of big game on the winter-range habitat. If snow conditions and/or lack of presence of wintering big game animals permit, harvest, yarding, loading, and haul activities would be permitted to occur. If wintering big game are present, and effects have the potential to be significant or prolonged, actions will be restricted or suspended.

Firewood Cutting

Alternatives 2, 3, 4, and 5

No firewood cutting would be approved within the project area until the spring of 2008. This restriction will assure that the dead trees retained for snag habitat are not removed by firewood cutting.

Big Game Cover

Alternatives 2 and 4

A portion of resiliency treatment unit 16 (approximately 3 acres) meets the standard for marginal cover. Within this portion of the unit, all live trees will be retained.

Raptor Timing Restrictions

Alternatives 2, 3, 4, and 5

Description*	Timing – Activities Permitted**	Timing – Activities Restricted***	Notes
Occupied Goshawk nest sites (within Post Fledging Area or within ½ mile of nest sites)	Activities can occur: October 1 – March 31	Activities are restricted: April 1 – September 30	Four goshawk territories existed adjacent to the project area prior to fire.

*A survey of the four recorded nest sites would be conducted for northern goshawk prior to any harvest activities. Restriction may be waived based on District Biologist’s recommendations and Responsible Official’s approval.
 **Activities are permitted within the fire perimeter during these periods except within identified nesting areas, i.e., for goshawks, no activities within 30-acre nesting area; for all other raptors, no activities within 100 feet of nest trees.
 *** Activities are only restricted within distances specified in Column 1 for each species

Noxious Weeds

Alternatives 2, 3, 4, and 5

- Avoid or minimize disturbances within or adjacent to existing noxious weed infestations.
- Document noxious weed infestations identified during any inventories.
- Avoid weed-infested areas for use as landings or parking areas.
- Include a noxious weed locator map in the project file, to facilitate avoidance and monitoring.
- Complete post-project surveys to document infestations and to evaluate the effects of the project on noxious weeds.
- Retain desirable herbaceous growth on road shoulders, cuts, fills, ditches, and drainages.
- Reduce the transport or spread of noxious weeds by cleaning certification of ground-disturbing equipment. Equipment will be certified to be clean of all plant or soil material that may result in the establishment or spread of noxious weeds. Certification will occur prior to equipment entering the project area and before leaving, if noxious weeds are present in the area where the equipment is operating.
- Obtain rock material used for road maintenance or construction of landings, from weed-free sources.
- Use timber sale contract provisions to require that all off-road logging and construction equipment is free of noxious weeds, when moving equipment onto the sale area and/or moving between units that are known to contain noxious weeds. Specifically, use C6.35 - Equipment Cleaning; in this provision, the purchaser is required to certify that his equipment is weed-free. The Forest Service will reserve the right of inspection prior to the equipment's use, to verify that each piece operating in the project area is clean and weed-free.

- Continue annual monitoring of the burned area and landings for a minimum of 4 years following activity.
- On-going noxious weed treatment will continue to receive high priority in close proximity to this project area.

Heritage

Alternatives 2, 3, 4, and 5

- The nineteen identified historic properties within the Area of Potential Effect (APE) will be strictly avoided during all phases of the project. Sites will be identified as Areas to Protect (ATPs) during commercial timber harvest, and/or the boundaries of harvest units will be configured so that they do not include sites. Sites will be avoided during construction of temporary roads and log landings.
- If cultural resources are located during implementation of Alternatives 2, 3, 4, or 5, work will be halted and the District Archaeologist will be notified. The cultural resource will be evaluated, and a mitigation plan developed in consultation with the Oregon State Historic Preservation Office (SHPO) if necessary.
- Alternative 2 (RHCA salvage) - All logging slash will be lopped and scattered within the boundaries of obsidian-dominated lithic scatters. No slash piles will be burned within this site type.

Sensitive Plants

Alternatives 2, 3, 4, and 5

Project design measures are established to ensure that sensitive plant populations are not inadvertently impacted from proposed activities.

Prior to any ground disturbing activities associated with road decommissioning on the portion of Forest Road 1672479 where two sensitive plant sites are located, resource specialists including botany, hydrology/fisheries, and engineering would review and revise (if necessary) the decommissioning plan to ensure these sensitive plant populations are not inadvertently impacted.

Decommissioning of Forest Road 1672479 may require erosion control through direct seeding of the roadbed. Preferably, local, native grasses would be seeded; however, the source for these grasses has not yet been fully developed. To reduce the risk of creating competitive stress on sensitive plant species, only annual, non-persistent grasses would be used because they pose less threat of long-term competitive stress.

Reforestation

Alternatives 2, 3, 4, and 5

No sheep grazing within conifer planting units or natural regeneration units will occur until seedlings reach an average height of 3 feet. Before livestock grazing is re-introduced these areas will be reviewed by the District Silviculturist and Rangeland Management Specialist and approved by the District Ranger.

Monitoring Plans

Vegetation Monitoring (Silviculturist)

Tree marking will be monitored to ensure compliance with the silvicultural prescription and marking guide. Monitoring will check for correct selection and designation of trees expected to live and snags to be left for wildlife habitat and resource protection.

All areas planned for tree planting will be examined prior to planting. Exams will assess levels of competing vegetation, pocket gopher activity, and other environmental conditions. Seedling species and stock type will be prescribed as well as site preparation, planting, and protection methods.

Planted areas will be monitored for seedling survival, growth, and damaging agents. Stocking surveys will occur periodically until planting areas are certified adequately stocked and “free to grow”. Deficient areas will be replanted to at least minimum stocking. Protection measures may be implemented to increase tree survival.

Soil Monitoring (Soils Specialist)

Detrimental soil impacts would be monitored to check how closely they were predicted. Sampling would be done by a method similar to the soil assessment method used initially to determine the current soil conditions. About 25% of the tractor units would be sampled within three years of completion of activities. This would show the cumulative effects of harvest plus fuels treatment.

Watershed and Fisheries (District Hydrologist and Fisheries Biologist)

Monitor Best Management Practices (BMPs): Five to fifteen percent of activity areas by harvest system will be monitored to ensure BMP standards are being met. Monitoring would be done by the District hydrologist, fisheries biologist, soil scientist, or trained technicians after completion of the project.

Monitor Unit Boundaries along RHCAs: Monitor 10% of units adjacent to RHCAs to ensure adequate buffering of mechanized harvest/fuels reduction activities.

Monitor Road Decommission and Reconstruction Activities: Implementation monitoring would be conducted to determine if decommission or reconstruction activities were completed. Following completion of road decommission or reconstruction activities, effectiveness monitoring would be completed at year 1 and 3. Monitoring would consist of ocular surveys completed by hydrology or fisheries personnel (including photographs) on decommissioned road prisms within 100 feet of streams and at stream crossings to check for erosion (rilling or sheet) and/or establishment of ground cover on the prism and sediment transport to streams.

Upland Sediment Transport Monitoring: Monitoring would be conducted along unit boundaries with sensitive soils to determine if sediment is transported outside of units. Amount of sediment and distance traveled would be estimated and documented if observed.

Stream Channel Monitoring: Fine sediment in the Little Malheur River and Camp Creek will be monitored using Wolman Pebble Counts would be conducted at the stream cross sections (installed in 2002) on the Little Malheur River and Camp Creek before and after harvest activities and again after road activities are implemented to determine changes in sediment load and stream channel morphology. Rosgen stream cross sections

and longitudinal profiles would be completed if stream channel substrate composition changes by more than 20% or bankfull channel widths at the cross sections change by an observable amount.

Grazing (Team)

For moderate to high intensity (intensity as described in Johnson 1998 or as mapped by the BAER Team) fire in all areas suitable for grazing, as defined by the Forest Plan, grazing may resume after the vegetation has recovered to the percent ground cover that existed prior to the fire as described for the appropriate plant association type in *Plant Association of the Blue and Ochoco Mountains* (Johnson & Clausnitzer, 1992). A team consisting of at least two resource specialists, such as a range conservationist, botanist, ecologist, silviculturist, or hydrologist, will conduct the monitoring to determine if the percent ground cover has been reestablished. The method and results will be documented and submitted to the authorized official who will decide when to resume grazing. If monitoring is not done, grazing may resume after three full grazing seasons after the fire occurred, because research indicates that vegetation usually recovers within this timeframe (C. G. Johnson, pers. Comm., February 2003). However, grazing would not resume prior to two growing seasons after the fire, even if monitoring verified that the percent ground cover was the same as the pre-fire condition, to allow for plants to set seed. (Interim Post Fire Grazing Guidelines Malheur National Forest, 12/2/2003).

Noxious Weed Monitoring (Botanist or Range Specialist)

Monitoring will occur for three years, 2004 through 2006, to determine whether noxious weeds were introduced into the burned area by any means or expanded from known locations (Burned Area Emergency Rehabilitation Team, Noxious Weeds Technical Specialist Report, August 9, 2002). Monitoring activities will include walking fire lines, landings, and other areas where soil disturbance could have deposited weed seed. These actions should reduce the risk that weeds could spread or existing populations could enlarge.

Comparison of Alternatives

This section provides a tabular summary of the effects for each alternative. Information is focused on activities, effects and/or outputs that can be distinguished quantitatively or qualitatively among alternatives.

Table 2-3. Description of Activities by Alternative

Activities	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Harvest – Dead/Dying (Salvage)	None	Helicopter areas - removal of 12"+ dead Tractor areas - removal of 9"+ sawtimber	Same as Alt 2	Same as Alt 2	None
Harvest – Green Tree Thinning (Resiliency)	None	Helicopter areas- removal of 9" live PP & 8" live other species; dead =12"	No green tree removal	Same as Alt 2	None
Harvest – Dead/Dying in RHCA (RHCA Salvage)	None	Helicopter (all) – removal of dead 12" to 20.9" DBH	None	None	None
Reforestation	Natural regeneration	Conifer planting throughout the project area.	Same as Alt 2	Same as Alt 2	Conifer planting in only in severely burned areas.
Road Management	None	Includes gated closures for wildlife and road decommissioning	Same as Alt 2	Same as Alt 2	Same as Alt 2 plus and an additional 9 miles of closures.
Old Skid Road Obliteration	None	Includes subsoiling and re-contouring of old skid trails; 2.2 miles	Same as Alt 2	Same as Alt 2	Same as Alt 2

Table 2-4. Description of Activities by Alternative.

Activity	Units	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Treatment Type - Timber Harvest Prescription/Logging Systems						
Salvage - HSV	Acres	0	3451	2825	3121	0
Resiliency - HTH/HSV	Acres	0	223	0	223	0
RHCA Salvage - HSV	Acres	0	601	0	0	0
Helicopter	Acres	0	3785	2520	2885	0
Tractor	Acres	0	490	305	459	0
Total Harvest	Acres		4275	2825	3344	0
Reforestation/Pre-Commercial Thinning Activities						
Planting	Acres	0	4723	4723	4723	2845
Natural Regen/Interplanting	Acres	0	229	229	229	0
Pre-commercial Thin/Planting	Acres	0	370	370	370	0
Pre-commercial Thin	Acres	0	22	22	22	0
Road Activities/Landing Construction						
Temporary Road Construction	Miles	0	0.6	0.6	0.4	0
Helicopter Landing or Service Landings	Number	0	23	23	22	0
Maintenance	Miles	0	69.5	69.5	69.5	69.5
Reconstruction	Miles	0	.2	.2	.2	.2
Road Restoration						
Gated Closure	Miles	0	7.0	7.0	7.0	16.2
Road Decommissioning/Old Skid Trail Obliteration						
Decommission	Miles	0	11.8	11.8	11.8	11.8
Un-drivable	Miles	7.0	7.0	7.0	7.0	7.0
Skid Trail Obliteration	Miles	0	2.2	2.2	2.2	2.2

Table 2-5. Comparison of Alternatives by Issue and Measurement

Resource Issue (Number corresponds to Key Issue)	Unit of Measure	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt 5
#1 Snags Retained within Harvest Units	Numbers Retained	No Harvest	All Harvest Areas - 2.4/Ac; clumpy	All Harvest Areas - 13/ac; clumpy	Salvage Harvest Areas – none except units 3 & 12;* Resiliency - 1.5 – 2.5 /ac; clumpy	No Harvest
#1 Acres and % severely fire affected forested habitat remaining after salvage (Monument Fire Area- Malheur portion)	Acres	16,942 (100%)	13,465 (79%)	14,475 (85%)	14,341 (85%)	16,942 (100%)
#2 Acres of tractor skidding	Acres	0	490	305	459	0
#2 Acres of harvest in RHCAs	Acres	0	601	0	0	0
#2 Stream shading change due to salvage harvest	Average	0	-1 %	0	0	0
#2 Non-harvest ground disturbing activities within RHCAs - mod/severe burned areas.	Acres	0	20.2	20.2	20.2	20.2
#3 Acres of resiliency treatment (green tree harvest)	Acres	0	223	0	223	0
#3 Acres of marginal and satisfactory cover in the project area	Acres	281	281	281	281	281
#4 Commercial Harvest	Volume (MMBF)	0	30.0	14.4	26.5	0
#4 Present Net Value	\$ millions	0	\$1,734,048	-\$1,383,448	\$1,287,270	-\$2,171,750
#4 Timber Jobs Provided	Number	0	271	131	240	0
#5 Fire severity and fire intensity in 20 years as measured by fuel loading within RHCAs of Little Malheur and Camp Cr. **	See Below	**	**	**	**	
#6 Tractor Harvest on Severely and Moderately Burned Soils	Acres	No Harvest	466	264	415	No Harvest

*Alternative 4 retains un-harvested patches of snags dispersed throughout the project area.

** The fuel loadings vary by fire regime and plant association group; see table 2-6.

Table 2-6. Average Fuel Loading by Alternative

Project Area	Historical Tons/Acre	Alternative 1 Tons/Acre	Alternative 2 Tons/Acre	Alternative 3 Tons/Acre	Alternative 4 Tons/Acre	Alternative 5 Tons/Acre
Camp Creek RHCA	7-15	87	50	87	87	87
Little Malheur River RHCA	7-15	60	26	60	60	60
Little Malheur River Uplands	5-7	31	7	14	7	31
North Fork Malheur River Uplands	5-7	33	9	14	9	33

Table 2-7. Road Maintenance/Reconstruction Activities for Alternatives 2, 3, 4, and 5

Activity	Miles
Deferred Maintenance	34.2
Brush/Blade	29.5
Brush/Blade/Waterbars/Spot Rock	4.9
Brush/Blade/Waterbars/Rock	0.9
Brush/Blade/Reconstruct Junction	0.1
Reconstruct Cattleguard	0.1

Table 2-8. Harvest Summary by Alternative; Forested Wildlife Habitat.

	Alternative 2	Alternative 3	Alternative 4
Proposed Harvest Treatments (Includes Non Forest)			
Salvage (HSV)	3,451	2,825	3,121
RHCA Salvage (HSV)	601	0	0
Resiliency (HTH/HSV)	223	0	223
Harvest in Forested Habitat			
Light to Moderate Severe			
HSV	674	324	616
*HTH	76	0	76
High Moderate to Severe			
**HSV	3,477	2,467	2,601
HTH	0	0	0
Harvest in Forested Habitat (YFMS and OFMS stands)			
HSV	172	55	155
HTH	7	0	7

*Does not include HTH within Resiliency Treatments for UR and SI Structures; thinning in these two structures is limited to scattered trees; no measurable habitat effect of thinning in UR and SI.

**Includes HSV within Resiliency Treatment for UR and SI Forest Structures

HTH - Commercial Thinning

HSV - Salvage

PCE Fire Severity

Light to Low Moderate Fire Severity

Light - 1, 836

Low Moderate - (Moderate - SEOC, SECC, & YFMS) - 1,011

Total = 2, 847 Acres

High Moderate to Severe Fire Severity

High Moderate - (Moderate - UR & SI) - 5,076

Severe - 11, 866

Total = 16, 942 acres

Total Forested Acres= 19, 794 (11, 475 within wilderness and 8,319 within Project Area)