

**Young Stand Management and Fuels Reduction  
Treatments within the Grave Creek Watershed**

EA# OR118-03-004

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Proposed agency actions: A series of projects proposed to assist in meeting the land use objectives identified in the Medford District BLM Resource Management Plan. The primary purpose for this proposal is to conduct vegetation management treatments to meet a variety of resource management objectives and to reduce fuel loadings in these treated stands as well as others within the Grave Creek fifth field watershed. Utilization of excess materials within specific treatment units is proposed.

Type of statement: Environmental Assessment

Lead agency: United States Department of the Interior  
Bureau of Land Management  
Medford District, Glendale Resource Area

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## Chapter 1 - Purpose and Need

### 1.0 Introduction

The Glendale Resource Area of the Medford Bureau of Land Management (BLM) proposes vegetation management treatments, fuels reduction treatments, habitat improvement, and marketing of small diameter (less than 7 inches diameter) material within the Grave Creek Watershed. This project proposes work within the Matrix and Riparian Reserve land use allocations as well as selected owl core areas. Land allocations were established by the Northwest Forest Plan (USDA/USDI 1944, p.A-4 & A-5) and the Medford District Resource Management Plan (USDI 1995, p. 20-40).

Proposed treatments are located in:

- T32S, R4W, Sec. 34, 35
- T33S, R4W, Sec. 3, 9, 11, 15, 17, 21, 27, 29, 30, 31, 33
- T34S, R4W, Sec. 7
- T33S, R5W, Sec. 1, 3, 4, 9, 10, 11, 13, 14, 15, 17, 20, 21, 22, 23, 25, 26, 27, 28, 31, 32, 34, 35
- T34S, R5W, Sec. 1, 3, 9, 11, 15, 20, 21
- T33S, R6W, Sec. 10, 13, 19, 27, 31, 33, 34, 35
- T34S, R6W, Sec. 1, 3, 7, 19
- T33S, R7W, Sec. 7, 9, 13, 15, 17, 21, 25, 29, 33, 34
- T34S, R7W, Sec. 1, 3, 4, 5, 6, 11, 13, 15

A set of relevant issues for the project area was developed by the ID team. This Environmental Assessment (EA) focuses on these relevant issues, both in terms of project design features (PDFs) and in describing environmental effects. This environmental assessment addresses activities to be completed through fiscal year 2012.

### 1.1 Purpose and Need

Silvicultural treatments are needed to transition stands from their current conditions to conditions where long term stand management objectives can be met or accelerated. Maintenance treatments are needed to promote the survival and establishment of conifers and other vegetation by reducing competition from undesired plant species. Release, pre-commercial thinning, and pruning treatments are needed to accelerate growth, control stand density, influence species composition and dominance, and place stands on developmental paths so that desired stand characteristics result in the future. Treatments to restore plant communities (such as those to restore wetlands and meadows) are needed to promote native plant species and to control invasive species. Forest development treatments within young stands and treatments to restore plant communities are needed so that management direction as planned for in the Northwest Forest Plan (USDA/USDI 1994, p. B-5 – B-9 & B-31) and Resource Management Plan (USDI, p. 39-40, 46-49, 56, 62, 73, Appendix E) can occur and that land use allocation objectives to be achieved.

These forest development actions and vegetation treatments create slash and consequently increase the fuel hazard. Also, many “unentered” and “lightly entered” stands in the planning area are overstocked with conifers, hardwoods, and shrubs. Stand conditions such as these pose a risk to nearby communities and resource values. Fuels reduction treatments are needed to reduce the risk of large-scale fires occurring, to reduce risks to communities (Sunny Valley, Placer, Leland, Golden, Wolf Creek), to reduce risks of loss of resource values, and to reduce the cost of fire suppression should a wildfire were to occur. Fuels reduction treatments are needed to locally accomplish objectives of the National Fire Plan.

A portion of the project area has material suitable for small wood commodities. Marketing of some such materials (less than 7” diameter breast height (dbh)) is proposed from selected stands where conditions allow for removal. This would occur on approximately 900 acres of BLM managed land in the Grave Creek Watershed.

## **1.2 Plan Conformance**

### **Relationship to Other Plans**

This environmental assessment tiers to the analysis leading to the following documents:

- 1) Final EIS and Record of Decision dated June 1995 for the Medford District Resource Management Plan (RMP) dated October 1994;
- 2) Final Supplemental EIS on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl dated February 1994;
- 3) Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and its Attachment A entitled the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (NFP) dated April 13, 1994; and
- 4) Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines dated January 2001.

These documents are available at the Medford BLM office and the Medford BLM web site at <<http://www.or.blm.gov/Medford/>.

In addition to the above documents, proposed fuels reductions treatments relate to a new federal fire policy issued in 1995. The policy directs federal land managers to expand the use of prescribed fire in order to reduce the risk of large wildfires due to high fuel loadings and to restore and maintain healthy ecosystems. The use of prescribed fire as a management tool, would assist in meeting the objectives of conserving, protecting and restoring values that have been identified throughout the project area.

## Objectives

### Land Use Allocation Objectives

Management objectives pertinent to young stand management in each of the involved land use allocations are summarized below.

1. Matrix (USDI, p.38-40)

- Contribute to future timber production through treatments designed to assure a high level of sustained timber productivity.
- Contribute to the establishment of conifer regeneration through treatments designed to reduce competition for available water, light, nutrients, and growing space.
- Maintain/improve forest condition (health) through the use of density management and operations to reduce competition.
- Reduce the risks of stand loss through treatments that improve/maintain stand vigor and reduce dead fuels created by those activities.

2. Owl Core Area (USDA/USDI p. C-10 – C-13 & C-26 – C-45)

- Create stand conditions that would accelerate or would allow the development of late-successional forest characteristics through density management treatments.
- Reduce the risks of stand loss and contribute to long-term habitat viability through treatments that improve/maintain stand vigor and reduce dead fuels created by those activities.

3. Riparian Reserve (USDA/USDI p. C-32, C-35 & USDI p. 26-32)

- Implement management practices to: control stocking, reestablish and manage stands, establish and manage desired non-conifer vegetation, and to acquire vegetation characteristics needed to attain objectives of the Aquatic Conservation Strategy (ACS), including accelerating tree growth to create sources of large wood for streams.
- Provide dispersal habitat for northern spotted owls through treatments designed to promote future dispersal habitat and treatments designed to maintain current dispersal habitat.
- Provide habitat for species associated with late-successional habitat through treatments designed to maintain current late-successional habitat and through treatments designed to promote future late-successional habitat.
- Contribute to long-term habitat viability through treatments designed to maintain/improve forest condition (health) and treatments designed to reduce the risks of stand loss.

4. Other allocations (e.g. ACEC/RNA, TPCC withdrawn, Non-Forest)

- Contribute to the objectives of the land use allocation through density management and other young stand management practices.
- Reduce the risks of stand loss through treatments that improve/maintain stand vigor and reduce dead fuels created by those activities.

**Project (treatment) objectives-** see also Table 2

Brushing- Maintenance and release brushing are being proposed under this project. Both types of brushing have objectives of reducing competition (primarily from shrubs and hardwoods) for available moisture, nutrients, light, and growing space so that vegetation necessary to meet land use allocation objectives is more vigorous and in a more free-to-grow condition. Maintenance brushing has the primary objective of conifer establishment. Release brushing has the primary objective of increased and/or accelerated growth.

Precommercial Thinning- Precommercial thinning has the objective of reducing competition (primarily from other conifers) for available moisture, nutrients, light, and growing space so that vegetation necessary to meet land use allocation objectives is more vigorous and is in a more free-to-grow condition. Cutting of hardwoods and shrubs with the conifers may occur.

Pruning – Pruning treatments have several objectives that are dependant on stand type and land use allocation. Pruning may be done to meet wood quality objectives on Matrix lands. Pruning may be done to create diversity within stands for wildlife objectives within reserves. Pruning may be done to maintain sugar pine within stands to meet wood and wildlife objectives. Pruning may also be done to reduce fuel ladders.

Fuels reduction treatments –The objectives of these treatments are to reduce the potential for a human-caused fire to start (risk) as well as to reduce the intensity and rate of spread of a wildfire should a fire get started (hazard). The highest priorities for fuels treatments would be along major travel routes and ridges. Treatment of these high risk and hazard areas offer the greatest potential for altering fire behavior. This change in fire behavior greatly increases the probability that direct suppression measures would be successful. Ultimately, the total number of acres burned and the number of acres burned by a high intensity fire would decrease.

Wildlife habitat treatments - The objective of these projects is to enhance habitat by modifying site conditions so that greater amounts of water is retained for longer periods of time throughout the year. Quiet water habitat for western pond turtles, waterfowl and waterbirds, neotropical migratory birds, bats, and other wildlife would be improved. Placement of gates designed to limit vehicle access would minimize disturbance to wetland-associated wildlife. The goal of the meadow restoration projects is to restore early successional habitat that will benefit elk, deer, and other early-seral wildlife species.

Material utilization – The objective of operations that remove small diameter materials from stands is to realize value for the public. Removing material from stands that have been treated or would soon be treated would provide materials such as small diameter poles, posts, and firewood for local communities. The public would realize a cost savings through reduced fuel treatment costs. The public would also realize a small amount of revenue through the sale of the material.

The Medford District RMP directs that actions take place on lands managed by the Bureau of Land Management so that land use management objectives may be met. Vegetation management treatments are to be done to achieve short-term and long-term Timber Resources (RMP, p.72), Special Forest Products (RMP, p.75), Wildlife Habitat Resources (RMP, p. 44), Rural Interface Area (RMP, p.88), and Fire Management objectives (RMP, p.89). Vegetation management treatments themselves are

resource neutral and are tailored to meet LUA and resource objectives. Vegetation management treatments and silvicultural systems are described in Appendix E of the Medford District RMP, p. 179. As described in the appendix, treatments would be designed to meet resource management objectives and would incorporate current and developing knowledge of natural processes. Treatments would also consider the elements of ecosystem function, composition, and structure.

### **1.3 Decisions to be made**

The Glendale Resource Area Field Manager must decide:

- 1) Whether or not the impacts of the proposed action are significant to the human environment beyond those impacts addressed in previous NEPA documents. (If the impacts are determined to be insignificant, then a Finding of No Significant Impact (FONSI) can be issued and a decision can be implemented. If any impacts are determined to be significant to the human environment, then an Environmental Impact Statement must be prepared before the Manager makes a decision).
- 2) Whether to implement Alternative 2, the proposed action; Alternative 3, that allows for commodity removal; or defer to the no action alternative.
- 3) Determine whether the selected alternative is consistent with the Resource Management Plan.

Several issues of potential concern were raised during the scoping phase of project planning. They are:

1. The effectiveness of fuels reduction treatments may be diminished somewhat by management activities on private lands that are adjacent to or in the general area of units proposed for treatment.
2. Proposed treatments may create conditions that would allow noxious weeds to increase in areas where they currently are and spread to other areas.
3. Smoke from fuels reduction projects may irritate local residents and pose a safety hazard.
4. Prescribed fire may escape to private lands and cause damage.
5. Removal of some of the lower canopy layers within stands through fuels reduction treatments may conflict with desired stand conditions within late-successional stands (multiple canopy layers). Likewise fuels reduction treatments may remove conifer regeneration and may conflict with guidelines for timber management in visually sensitive areas.
6. Can small wood materials be removed in such a fashion as to improve stocking, reduce fuel loading, and provide marketable commodities to the community?

## **Chapter 2 – Alternatives**

### **2.0 Introduction**

This chapter describes alternatives that are under consideration. Descriptions focus on potential actions, outputs, and any related mitigation.

### **2.1 Alternatives**

#### **2.2.1 Alternative 1: No Action**

Under the no-action alternative, management actions described under the Proposed Action or other alternatives would not take place at this time. RMP related routine management actions would continue to occur. Routine actions include road maintenance and maintenance/protection of young stands that have developed as the result of past timber harvest. Routine actions would also include fire suppression. The Bureau of Land Management has a master cooperative fire protection agreement with the Oregon Department of Forestry (ODF). This agreement delegates the responsibility of fire protection of all lands within the planning area to the Oregon Department of Forestry. This contract directs ODF to take immediate action to control and suppress all fires. Their primary objective is to minimize total acres burned while providing for fire fighter safety. The agreement requires ODF to control 94 percent of all fires before they exceed 10 acres in size. Under this alternative as well as the action alternatives, full fire suppression tactics would be utilized to minimize the size of any wildfire when there weren't restrictions already in place on tactics and methods to minimize damage to unique habitat and resources.

Opportunities for timber harvest, post-establishment silvicultural treatments, fuels treatments, forest health treatments, and other management in this watershed would continue to be a viable option for the future but would be analyzed through a separate environmental analysis.

#### **2.2.2 Alternative 2: Vegetation Management and Fuels Reduction Treatments**

Alternative 2 proposes treatment of vegetation within young stands resulting from past harvest as well as older “unentered” or lightly “entered” stands. Vegetation treatments, mechanical treatment of slash, hand piling, and burning would be done within the riparian reserves, but would not be done within designated no treatment zones (NTZ). Proposed fuels treatments would occur in a variety of stand and vegetation types throughout the Grave Creek Watershed. Vegetation treatments would consist primarily of maintenance/release brushing, pre-commercial thinning, and density management. A variety of conifer spacings would be used. Unestablished stands would generally have more closely spaced conifers after treatment to account for potential mortality. Established stands would generally have wider spacings to provide additional growing space. Brush, hardwoods, and conifers in excess of those required to meet desired future stand conditions (DFC) and desired fuel loadings would be cut. For younger, unestablished stands the short-term DFC is a stand that contains enough young conifers that, after mortality of some those young conifers, the stand becomes established and meets the stocking standard of approximately 220 established, well-spaced conifers per acre on Matrix lands and approximately 170 established, well-spaced conifers on other land use allocations. Conifer species would be those appropriate for the site and stands would have a component of hardwoods. For

established stands, the short-term DFC is that the stand is in a healthy, vigorous condition and contains conifers, hardwoods, and other vegetation that it can in the long-term meet the objectives of the land use allocation. Units within the Matrix and available for future timber harvest would have as a long-term DFC to be in a condition where after one or more commercial thinnings, a regeneration harvest that retained biological legacies could take place at age of approximately 100 years (150 years for Connectivity/Diversity Blocks). Units or portions of units within reserves would have a DFC of being a stand with late-successional characteristics such as multiple canopy layers, large conifers, a mix of conifers and hardwoods, and presence of snags. Pruning of selected leave conifers and hardwoods on Matrix and within Riparian Reserves would be done to meet wood quality, species composition, wildlife habitat diversity, and fuels management objectives. Pruning of young sugar pine would be done to aid in the establishment and maintenance of sugar pine within the project area.

Under Alternative 2, approximately 3300 acres would be treated to produce desired stand conditions and allow stands to develop in a way that they could meet land use allocation objectives. Approximately 1500 acres would receive a maintenance or release brushing treatment. Approximately 1500 acres would receive a pre-commercial thinning / release treatment. Approximately 2000 acres would be pruned. Some units would receive multiple treatments such as a unit that would be precommercially thinned followed by a pruning. A small number of units have wire in them that was used as part of treatments to promote seedling survival. The wire was used as supports for “vexar” tube and shade installations and would be removed as units were treated. Selected units would be re-treated as brush and hardwood species resprouted.

An array of treatments designed to reduce hazardous fuels would be completed under Alternative 2. The type of treatment utilized would be dependent on existing and projected fuel loadings, existing vegetative conditions, slope, access, and objectives of the land use allocation. Treatments would include manual and mechanical methods in combination with prescribed burning. Manual treatments are defined as those that would be done with chainsaws or similar equipment capable of being carried by one person as well as treatments such as pruning which would be done with non-motorized equipment such as loppers and hand saws. Mechanical treatments are defined as those that would be done with tracked or tired vehicles usually fitted with a type of grinding or chopping head on a boom. Fuels treatments would include the treatment of slash resulting from silvicultural activities designed to produce specific stand conditions as well as treatment of areas specifically because of the fuels present. Fuels reduction treatments would be based on hazard and risk considerations. Follow-up fuels treatments would be done to maintain desired fuel conditions within previously treated stands.

Under Alternative 2, approximately 5,700 acres would be treated to reduce hazardous fuel loading and the potential for major wildfires. Of these acres identified for fuels treatments, approximately 1,900 acres would receive manual treatments (slashing, hand piling, hand pile burning). Mechanical treatments would be applied to approximately 300 acres. The remaining 3,500 acres would be underburned or broadcast burned to reduce fuel loadings. These acres would include units that were previously harvested under commercial timber sales. All 5,700 acres are included for future treatments to maintain desired fuel loadings and the reduction of encroaching ladder fuels. Future fuels maintenance treatments would include underburning as well as additional handpiling and burning of piles. Table A-4, Proposed Fuels Units lists additional information.

In addition to units treated to reduce fuel loadings, an estimated twenty five percent of the acres that were treated for Silvicultural reasons would receive treatments to reduce activity fuels. Alternative 2 also includes several wetland restoration/enhancement and meadow restoration projects. See Table A-6 for a summary of these restoration/enhancement projects.

The amount of vegetation treatment, fuel hazard reduction, and other work accomplished would be dependent on available funding. The majority of the proposed work is projected to occur within fiscal years 2004 through 2009. Initial fuel hazard reduction work is projected to be completed by fiscal year 2010. Follow-up maintenance fuel treatments would occur through 2012.

Table A-1, Prescription Summary Table by Objectives and Land Use Allocation, describes where proposed treatments would be most appropriate, the objectives of the prescriptions and the relative fuel loading created by the treatment. Table A-2, Vegetation Treatment Prescriptions, describes proposed treatments to conifers, hardwoods, brush, and riparian and areas to be reserved. Table A-3, Proposed Vegetation Treatments, for a listing of units proposed for treatment and the type of treatment(s) proposed. Tables A-4a, A-4b, A-4c, and A-4d Fuels treatments, describe proposed fuels treatments and the stands that treatment would occur in.

Silvicultural, fuels reduction, and other proposed treatments would be coordinated so that land use allocation objectives can be met.

**PROJECT DESIGN FEATURES:** Project design features (PDFs) are included for the purpose of reducing anticipated adverse environmental impacts identified in the scoping process and which might stem from the implementation of the proposed action. This section outlines these PDFs.

### **PDFs for All treatment prescriptions**

#### **Riparian Reserves**

Riparian reserve widths would be those of the Northwest Forest Plan:

Fish-bearing streams - 2 site potential tree heights from each streambank (slope distance).

Permanently flowing non-fish-bearing streams, seasonally flowing, or intermittent streams - 1 site potential tree height from each streambank (slope distance).

Lakes and natural ponds - 2 site potential trees slope distance from the outer edge of the body of water.

Constructed ponds and reservoirs and wetlands greater than one acre, seeps, or springs – at least 100 feet from the outer edge of the riparian vegetation (slope distance)

Treatments would meet Aquatic Conservation Strategy and Riparian Reserve objectives.

Brushing, pre-commercial thinning, and cutting of vegetation to meet land use allocation and fuels reduction objectives would be done within the riparian reserve portions of units with the exception of no treatment zones (NTZ) that would be maintained adjacent to streams, springs, and wet areas. There would be a twenty-five foot (25') NTZ along each side of stream channels showing signs of annual scour. For lakes, ponds, springs, and other wet areas, the NTZ would be twenty-five feet beyond the edge of riparian vegetation.

Slash piling and burning would be done within the riparian reserves except as follows. A 25' slope distance no treatment zone (NTZ) would be retained along fish-bearing streams, permanently flowing non-fish-bearing, seasonally flowing or intermittent streams. These no treatment zones would extend from the edge of the riparian vegetation or, if no riparian vegetation exists, from the edge of the stream channel.

Trees and brush to be cut would be felled away from stream and wet area NTZs. Cut material falling into NTZs would be removed. There would be no piling and/or burning within NTZs

Treatments with mechanized equipment other than chainsaws would not be allowed within Riparian Reserves along fish bearing streams. Fuels reduction treatments in these Riparian Reserves may be done to the extent that the cutting/grinding head can reach into the Riparian Reserve from the outside.

Tracked and tired vehicles, including ATVs would be restricted to existing, maintained, system roads within the Riparian Reserve areas of fish bearing streams.

Crossings of stream channels or NTZs by tracked or tired vehicles or equipment, including ATVs, would be limited to existing maintained system roads. If another crossing area is needed, it would first be reviewed by the Field Manager.

Mechanical treatments would not be done on unstable areas.

Hand treatments (i.e., treatments with chainsaws, similar power equipment, or non-motorized equipment) within Riparian Reserves would be the same as for the uplands, except with regard to the treatment of madrone on non-fuels reduction treatments. For madrone, up to two (2) stems would be left on a stump. This would help provide wider madrone crowns that are desirable for wildlife use. For other sprouting hardwood tree species other than tanoak, only one (1) main stem would be left.

Hand piles within riparian reserves would be burned. Due to differences in vegetation and silvicultural treatment, pile density in riparian reserves is expected to be 5 to 10% lower than the upland areas.

### **Soils/Watershed**

To minimize loss in soil productivity and surface erosion, the average unit slope for equipment conducting mechanical treatments would be less than 45%. The tracked or tired equipment may occasionally be on steeper slopes while moving from bench to bench, but would be limited to short pitches of a distance less than 300 feet.

There would be no mechanical treatment or operation of any other vehicle within the no treatment zone (i.e. no track, no grinding).

Mechanical treatment would occur only when soil moisture is dry enough to support machinery without destroying soil integrity.

Crossing ephemeral streams (no annual scour) by equipment doing mechanical treatments would be perpendicular to draw. Mechanical equipment would not drive up and down draw bottoms.

Burning would be done in a manner that would minimize the loss of soil organic material and minimize damage to reserve trees.

Refueling of chainsaws and other equipment would be done no closer than 150 feet of any stream or wet area. Spilled fuel and oil would be cleaned-up and would be disposed of at an approved disposal site.

## **Wildlife**

Seasonal operating constraints would be included to reduce potential impacts to certain wildlife species where the particular species is determined to be present. Constraints would be per the Medford District RMP and USFWS Biological Opinion #1-7-96-F-392 for BLM silviculture projects 1996 through 2005:

Spotted Owls - No work involving chainsaws would be permitted within 0.25 mile of a known active spotted owl nest or activity center between March 1 and June 30.

Bald Eagle - Work activities within ¼ mile non line-of-sight or ½ mile line-of-sight of active bald eagle nests would be restricted to between January 1 and August 1.

Peregrine falcons - Avoid disturbance to pairs between February 1 - August 1 (RMP).

Other raptors - Between March 1 and July 15 and within 1/4 mile of nest sites or activity centers, no disturbances that may disturb or interfere with nesting (RMP) would be permitted.

## **Roads**

All roads and mapped trails within the project unit would be kept free of slash concurrently with the treatment.

Slash would be removed from the area within ten feet of roads within project units where fuels reduction treatments are not done.

Culverts would be kept free of slash.

Handpiles would not be constructed on turnouts.

## **Survey and Manage and Special Status Species**

Red tree vole surveys would be conducted in suitable habitat where fuels treatment operations occur. Known red tree vole (*Arborimus pomos*) sites would be identified and protected by pulling burn piles away from the drip line of active nest trees and thereby directing smoke and heat away from tree

crowns. Underburns would have a control line around active nest trees to direct smoke and heat away from tree crowns.

The Oregon megomphix (*Megomphix hemphilli*) is the only survey and manage mollusk species which may be affected by proposed treatments. However, this species has only been located in the extreme northern portion of the Glendale RA. Hundreds of surveys have been conducted within the Grave Creek watershed, with no records of this species being located. This species is associated with dense upland maple stands, where fuels treatments are not expected to occur. Based upon no observations of this species in the watershed and treatments planned in atypical Megomphix habitat, no surveys would be conducted for this species. Big leaf maple would be retained.

Identified Survey and Manage Special Status Species locations would be buffered and managed according to the current management recommendations.

### **Botany**

In general, populations of Special Status and/or Survey and Manage vascular plants, lichens, and bryophytes would be protected with a no-cut buffer of approximately 100 feet. Buffer widths would be determined on a site by site basis in accordance with existing microsite conditions. For units with prescriptions that would result in less than 40 percent canopy retention, buffers would be enlarged to up to 200 feet radius. In cases where an existing road bisects a buffer, the buffer would extend across the road to ensure adequate protection of the plant site. Within any buffer, the potential for prescribed fire activity would be analyzed on a site by site basis, and may be permissible with project design features that minimize the possibility of exposing the plant to unnatural levels of heat exposure.

For Bureau Special Status species, buffers would occur around Bureau Sensitive and Assessment species, but not Tracking Species. For Survey and Manage Species, management guidelines for high priority (when established) and known sites of Category A, B, C, D and E species would be followed.

The planning area is within the range and habitat of *Fritillaria gentneri*, but not *Limnanthes floccosa* var. *grandiflora*, and *Lomatium cookii*. If populations of *F. gentneri* are found during pre-disturbance surveys, they would be protected.

Underburning in areas where species such as *Camassia howellii* and *Silene hookeri* var. *bolanderi* are present may be permitted. To protect young subterranean shoots, burning would not occur later than March 1. Fall burning would be done as late as possible, after the duff layers receive moisture from fall precipitation. This practice avoids killing the underground bulbs and caudices from which the new plants resprout.

### **Noxious Weeds**

Tracked and tired equipment including ATVs used for mechanical treatments would be washed prior to arrival to the site to reduce the potential to introduce seed or plant parts.

## **Cultural Resources**

Mitigation measures would be applied to areas where there are known archaeological sites as needed to protect the site.

If archaeological sites are found in treatment units, a buffer area would be delineated and directional falling away from the site center would be employed.

If historical sites are located in fuels treatment units, the site would be protected by designating a no entry buffer area.

If archaeological sites are located in units where a mechanical equipment is to be used, a designated no entry buffer area would be employed to protect the sites.

## **Treatment specific PDFs**

### **Vegetation**

Vegetation Treatments #1-9 would be accomplished with the use of chainsaws, small motorized equipment, or hand tools. Treatments #10 and #11 would be accomplished by the use of a tracked or tired vehicle fitted with a grinding head. Treatment #12 would be accomplished with loppers or hand operated pruning saws. Cutting of vegetation for fuels reduction treatments (except mechanical) would be accomplished with the use of chainsaws, small motorized equipment or handtools.

The upper diameter cutting limit for all conifers and hardwoods would be 7 inches dbh.

Trees and brush to be cut would be felled in a manner that avoids damage to leave trees. Cut trees or brush that is lodged in or covering a leave tree would be dislodged or removed.

In prescriptions calling for one hundred percent brush cutting, all brush except elderberry within the project unit would be cut.

Dogwoods, big leaf maple, Oregon ash, and pacific yew would be retained.

All vigorous, rust-free sugar pine would be retained regardless of size or spacing. Sugar pine with white pine blister rust disease as evidenced by bole cankers or diamond/bulls-eye shaped infections/wounds on the bole would be cut.

In areas of project units not designated for fuels reduction treatments, slash would be cut and limbed sufficiently to lay no more than 3 feet deep on the ground.

If evidence of blackstain disease is found within a project unit, a buffer of uncut conifers extending for a radius of twenty-five feet from any infected tree would be left. Brush and hardwoods within the buffer would be cut according to the prescription.

Slash falling across project unit boundaries would be moved completely into the project unit.

Stand conditions within units would be reassessed for changes and applicability of proposed treatment prior to work being done. This is a multiple year project. There exists the possibility that site conditions could change (e.g. conifer mortality, wildfire, brush growth greater than expected). Also, some of the treatments are projections based on knowledge of what has happened on similar units in the past. Treatments would be modified to account for site conditions at time of treatment. Spacing of conifers and hardwoods would be based on factors such as stand age and development, anticipated future mortality, and ability to respond to release. If the effects of treatments are different than what was analyzed in this EA, a new NEPA document would be done. Clearances would be current at time of treatment.

For treatment specifics see Table A-2: Vegetation Treatment Prescriptions. In addition the following PDFs apply.

#### Vegetation Treatment - Brushing prescriptions (#1-3, 10)

The largest, healthiest, best-formed conifers would generally be selected as leave trees within brushing prescriptions #2 and #3. A limited number of trees with conditions such as forked tops, broken tops, double or crooked stems, and/or mechanical injury would be retained as a minor stand component in addition to conifers selected as leave trees. In project units containing a variety of conifer species, leave trees would be selected to approximate the species composition of the plant series of the site. Generally, the following species preference would be used: a) cedar species, healthy sugar pine; b) ponderosa pine, Jeffrey pine, white fir, hemlock; and c) Douglas-fir. Species preference would consider factors such as seed source of planted or seeded trees and presence of disease. Size, health (vigor), and form would take precedence over the listed species preference.

For radius brushing with conifer spacing, treatment #3, multi-stem hardwoods located at the perimeter of the cutting zone (area within the cylinder of an acceptable leave tree requiring cutting of brush and hardwoods measured from the stem of the leave tree to four feet beyond the outside edge of the branches) would be cut except for one main stem (two within riparian reserves).

#### Vegetation Treatment – Pre-commercial Thinning prescriptions (#4-9, 11)

Stands would be pre-commercially thinned (a density management treatment) so as to provide increased moisture, sunlight, nutrients, and growing spaces to the selected conifer and hardwood leave trees.

Conifer leave trees would be selected to meet the selected wide or narrow spacing based on factors such as anticipated future mortality, amount of competitive brush species present, position on slope, aspect, and soil type.

The largest, healthiest, best-formed conifers would generally be selected as leave trees. A limited number of trees with conditions such as forked tops, broken tops, double or crooked stems, and/or mechanical injury would be retained as a minor stand component in addition to conifers selected as leave trees.

In project units containing a variety of conifer species, leave trees would be selected to approximate the species composition of the plant series of the site. Generally, the following species preference would be used: a) cedar species, healthy sugar pine; b) ponderosa pine, Jeffrey pine, white fir, hemlock; and c) Douglas-fir. Species preference would consider factors such as seed source of planted or seeded trees and presence of disease. Size, health (vigor), and form would take precedence over the listed species preference.

Where present, hardwood trees would be selected to be retained on an average 40' x 40' spacing that would overlap conifer leave tree spacing. Additional hardwood trees would be retained where conifers were absent. Species preference would be that appropriate to the plant series. The general order of preference would be: 1) California black oak, 2) white oak, 3) Pacific madrone, 4) golden chinquapin, 5) canyon live oak, 6) hardwoods besides tanoak, and 7) tanoak.

#### Vegetation Treatment - Pruning prescription (#12)

Pruning would be done on selected trees to meet wood quality, fuels, species composition, and wildlife habitat objectives.

Pruning for wood quality objectives would occur on the upland portion of Matrix allocated land and would generally be on an approximate 20' x 20' spacing. Preference would be given to pruning healthy, disease-free Douglas-fir or ponderosa pine followed by other conifer species.

Pruning for wildlife habitat objects would occur primarily within Riparian Reserves and would consist of pruning individual trees scattered throughout the area or pruning all trees within an area so as to create flyways and trees with clear boles.

Pruning for fuels objectives would generally treat all trees (both conifers and hardwoods) within a general area such as along both sides of a road.

A minimum fifty percent live crown ratio would be retained on pruned trees.

Planted and natural sugar pine within treatment units would be evaluated for risk of mortality to white pine blister rust. Where feasible and where the cost was not prohibitive, the lower limbs up to 10 feet (or fifty percent of the tree height whichever would be less) and infected limbs within reach of the ground with a pole saw would be pruned. This would occur irrespective of the land use allocation.

There would be no pruning in owl core areas.

#### **Slash treatment / Fuel hazard reduction**

Areas subject to prescribed burning operations would include stands where slash has been created by: brushing and/or thinning during silvicultural activities; past commercial harvest; and by manual and/or mechanical fuel treatment activities. Slash would be treated in stands or portions of stands where fuel hazard and risk assessments indicate the need for it. Available funding for such work would be a factor determining the extent of treatment that would occur. Proposed fuels treatments are listed Table A-3, Proposed Vegetation Treatments and Table A-4, Proposed Fuels Units

To conform with air quality standards and guidelines, all prescribed burning would be managed in a manner consistent with the requirements of the Oregon Smoke Management Plan and the Department of Environmental Quality's Air Quality and Visibility Protection Program. When burn units are adjacent to rural residential areas, burning would be timed to minimize the amount of residual smoke. This can be accomplished by burning when conditions for smoke dispersal are optimal such as during rainy days and periods when atmospheric instability is present.

Patrol and mop-up of burned piles would occur when needed to prevent burned areas from reburning or becoming an escaped fire.

PDFs for vegetation management treatments in Riparian Reserves would apply to fuel treatments. However, site-specific conditions, as assessed by hydrologist, fish biologist, and/or wildlife biologist, may result in more restrictive PDFs for the Riparian Reserve portion of the proposed fuel treatment units.

### **Fuel hazard and risk assessment**

An initial assessment of units proposed for fuels reduction has determined a need for some type fuel hazard reduction treatment. The assessment considered hazard, risk, and values at risk. The proposed fuel treatments are based on this initial assessment. Units proposed for silvicultural treatments would be assessed for the need of some type of fuels reduction treatment following the completion of the silviculture treatment.

Hazard is defined by the ability of a fire to spread and the fire's resistance to control once ignited. Hazard is rated using a numerical points system for each of the following factors: slope, aspect, position on slope, adjacent fuel model, ladder fuels and estimated fuel loadings following a thinning/brushing treatments. A point summary is then calculated and a rating of high, moderate or low is assigned.

Risk is defined as the source of ignition. A rating of high, moderate, or low is assigned based on human presence/use and the probability of lightning occurring.

Values at risk are based on a consideration of human and resource values within the planning area and immediately outside of it. Conditions considered include land allocations, special use areas, human improvements/monetary investment, residential areas, agricultural use, structures present, soils, vegetative conditions and wildlife habitat. The assessment ranks the values at risk in a unit at high, moderate or low. Also considered the proximity of a unit to specific "communities at risk" as identified in the National Fire Plan. These are communities located within the "wildland urban interface" and are communities that are adjacent to or near public lands that pose a threat of wildfire. These areas are given special consideration for fuels treatment.

The need for fuel reduction treatment would be reviewed after the vegetation treatments were completed. This field review would update the hazard/risk assessment and would ensure that the fuel treatment prescriptions and prioritizations were appropriate. The field review would verify the estimated hazard and risk using a numerical field rating guide similar to the initial assessment. In addition, the following factors would be considered: 1) fuel continuity; 2) access; 3) fuel loading; 4)

proximity to previously treated or proposed hazard reduction areas; and 5) ability to conduct fuels reduction treatment without causing unacceptable damage to leave trees and other desired vegetation.

A final determination for fuel treatment needs and priorities would be based on the field hazard/risk assessments. Prioritization for treatment would be based on both hazard and risk priorities and available funding. Factors that influence priority include strategic hazard reduction, distribution and location to private lands and other land management projects.

Criteria for prioritizing fuels treatments are shown in the table below.

Fuels Treatment Prioritization	
Fuels Treatment Priority	Rating Criteria Used
1	Areas described as "Communities At Risk" by the National Fire Plan. Areas within the watershed designated as High Value, High Risk, and/or High Hazard by the Watershed Analysis.
2	Areas adjacent to planned or accomplished fuel hazard reduction projects, silviculture units, and/or commercial harvest units.
3	Areas along ridge tops and roadsides in order to establish fuel breaks.
4	Maintenance of reduced fuel loadings on areas treated under fuel reduction, silviculture, or commercial harvest operations.

When only portions of a unit or stand are to be treated, the areas selected for hazard reduction treatment would be critical points on the sites. Examples of critical points include: areas where the highest potential loss would be experienced should a wildfire occurred, or along areas where a high risk of an ignition source would be present (e.g., along heavily used roads).

Areas planned for fuels treatment may be reexamined by resource specialists at any stage of treatment to determine if the planned fuels treatment is still applicable. Planned treatments may be changed to better meet the objectives outlined in this EA. Proposed changes will be limited to treatments allowed under this EA or amendments to this EA.

Units listed in Table A-3 have as their emphasis an objective(s) that would be accomplished by a silvicultural treatment. It is anticipated that only fifteen to twenty-five percent of the total acreage listed in Table A-3 would actually receive a fuels reduction treatment primarily because of potential damage to desired residual vegetation by the fuels reduction treatment.

Units in Tables A-4a, A-4b, A-4c, and A-4d have as their emphasis a fuels reduction objective. Trees within these units are generally more capable of withstanding prescribed fire. It is anticipated that all units listed in these tables would receive a fuels reduction treatment.

Project Design Features described for vegetation management treatments would apply for fuels reduction treatments with the following exception; hardwoods would be retained on an approximate 40' X 40' spacing throughout the entire treatment unit. Additional stems of stump sprouting hardwoods would not be retained.

Prior to prescribed fire being utilized as a slash treatment or used to maintain fuels at desired levels (maintenance burn), a prescribed burn plan would be written, reviewed by fuels management specialists and authorized by the Field Manager. A prescribed burn plan would identify the objectives and complexity of the burn, issues that need to be mitigated, and safety information.

Prior to the ignition of a treatment unit, coordination would occur with the National Weather Service and with the Oregon Department of Forestry to obtain smoke management clearance. The burn boss for the prescribed fire plan would complete a final field review on the day of the burn with a Go/No-Go checklist that is designed to ensure that the burn is within all planned parameters and that resource and safety objectives would be met.

### **Hand piling and pile burning**

The purpose of the hand piling and pile burning is to reduce the fire and fuel hazard either throughout an entire unit or at strategic locations in a unit (*e.g.*, road sides, ridge tops and along property boundaries adjacent to private land). Priority would be to treat those units or portions of units that have the highest hazard and risk ratings.

Units where hand piling and pile burning is proposed are shown on Tables A-3 and A-4. In these units slash 2' long and less than 6" diameter would be hand piled. Chainsaws may be utilized to reduce the size of the slash to sizes appropriate for hand piling. Maximum pile size would be approximately 8' in diameter by 8' in height. All piles would be covered with a 6' x 6' sheet of 4-mil polyethylene plastic. At least 3/4 of the pile's surface would be covered and the plastic anchored to preserve a dry ignition point. Slash piles would not be placed on logs, stumps, talus slopes, on turnouts, in roadways or in drainage ditches. Piles would not be within ten feet of trees over sixteen inches in diameter or within twenty-five feet of a unit boundary.

The density of resultant piles (#/acre) would vary depending on the nature of the individual unit. Typically, the number of piles in units proposed for fuels reduction treatments would be 60-100 piles per acre. In units treated for silvicultural reasons, the number of piles would be approximately 40 to 80 piles/acre with a spacing between each pile ranging from 10' to 20'.

Drip torches or other hand held devices would be used to ignite piles. Burning would be done in the fall/winter season after substantial rainfall has occurred. "Substantial rainfall" generally means one inch in a 48 hour period, or a cumulative amount that wets the litter and duff layer and penetrates the mineral soil layer to 1/4 inch or more. These conditions would typically prevent the spread of fire outside the burning pile, minimizing the risk of an escape.

To prevent unacceptable damage to leave trees ignition of piles may require two or more entries. Individual piles may be left if it is judged that by burning them unacceptable damage such as reduced stocking would result.

Slashing and piling would be allowed within the Riparian Reserves except as follows: a twenty-five foot (slope distance) no treatment zone (NTZ) would be retained along fish-bearing streams, non-fish-bearing perennial streams, seasonally flowing or intermittent streams, springs, wetlands, and other wet

areas. These NTZs would extend from the edge of the stream channel. Hand piles within riparian reserves would be ignited.

Underburning and broadcast burning would be allowed within the Riparian Reserves. Backing fire would be allowed to partially burn down into an NTZ. Fire lines, created by hand, would be allowed within Riparian Reserves, but would not be created within NTZs. Along fish-bearing perennial streams fire lines would be no closer than 50 feet from streambanks. In areas with sensitive soils, fire lines would be no closer than one hundred feet of streambanks.

Foam would not be used within Riparian Reserves.

### **Mechanical Fuel Reduction treatments (Prescriptions #10, 11)**

Table A-4 indicates which units would receive treatments mechanical fuel hazard reduction treatments by a machine such as an excavator equipped with a boom and a hydraulic chipping/shredding head. The machine mechanically shreds and chips slash and/or live vegetation. The types of stands that would have this type of treatment would include older and two size class regeneration stands where the amount of slash that would be created from conventional hand treatments would be excessive in both amount of slash created and cost to treat.

Residual conifer spacing would generally range from 16' x 16' to 20' x 20'. Residual hardwoods spacing would be approximately 25' x 25' to 40' x 40' with 100% maintenance brushing.

Where only a portion of a unit can be treated mechanically, the rest of the unit would be treated using manual methods and chainsaws.

Mechanical treatments would not occur within the No Treatment Zone (NTZ). Mechanical treatments would not occur within special status plant or other no treatment buffers.

Mechanical treatments would take place from approximately May 1 to approximately November 29 when appropriate soil moisture conditions exist. Work would be stopped during the summer months when IFPL fire restrictions require it.

Mechanical fuels treatments that entail stem removal would be limited to trees less than 7 inches diameter at breast height (dbh).

### **Follow-up Maintenance Fuel Treatments**

Maintenance underburns would be implemented to help maintain the stand in a desired condition and prevent a future build-up of fuels. Maintenance underburns would typically occur 2-7 years following the initial treatments but would be dependant upon the condition of the stand, the regrowth of slashed vegetation, and the germination of additional plants.

## **Underburning and Broadcast Burning**

Underburning is a type of prescribed fire used to remove excess forest fuels from beneath the overstory canopy. Broadcast burning is a type of prescribed fire ignited to burn over a designated area within well-defined boundaries for the purpose of reducing slash created from commercial harvest activities. Generally an underburn is a cooler fire than a broadcast burn.

For both underburning and broadcast burning, hand fire lines would be constructed where necessary for control. Underburns would normally occur in the spring when prescribed burning is most likely to successfully meet objectives while minimizing the risk of escapement.

## **Administration of Smoke Producing Projects**

The operational guidance for the Oregon Smoke Management Program is managed by the Oregon State Forester. The policy of the State Forester is to:

1. Regulate prescribed burning operations on forest land.
2. Achieve strict compliance with the smoke management plan.
3. Minimize emissions from prescribed burning.

For the purpose of maintaining air quality, the State Forester and the Department of Environmental Quality shall approve a plan for the purpose of managing smoke in areas they designate. The authority for the State administration is ORS 477.513(3)(a).

ORS468A.005 through 468A.085 provides the authority to DEQ to establish air quality standards including emission standards for the entire State or an area of the State. Under this authority the State Forester coordinates the administration and operation of the plan. The Forester also issues additional restrictions on prescribed burning in situations where air quality of the entire State or part thereof is, or would likely become adversely affected by smoke.

In compliance with the Oregon Smoke Management Plan, prescribed burning activities on the Medford District require pre-burn registration of all prescribed burn locations with the Oregon State Forester. Registration includes specific location, size of burn, topographic and fuel characteristics. Advisories or restrictions are received from the Forester on a daily basis concerning smoke management and air quality conditions. These advisories or restrictions insure that burning done by the Medford BLM would be in compliance with standards set for particulate matter.

Prescribed burning operations would follow all requirements of the Oregon Smoke Management Plan and Department of Environmental Quality and Visibility Protection Program. Prescribed burns would be conducted with the limits of a burn plan that describes prescription parameters so that acceptable and desired effects are obtained. Smoke produced from prescribed burning is the major pollutant of concern.

National Ambient Air Quality Standards for PM<sub>2.5</sub> have been established to protect human health. Due to the lack of monitoring data for PM<sub>2.5</sub> these standards have yet to be implemented. It is

estimated that by the year 2003 monitoring data for PM2.5 will be completed. When standards are implemented for PM2.5, all burning proposed would comply with these standards.

### **Wetland Enhancement Projects**

The proposed wetland project located in T33S, R4W, section 15 would involve rehabilitating a riparian area that was formerly a mining site. This action would be accomplished by replacing a 1 foot by 4 foot wooden weir along the edge of a pond with a rock weir to permit fish passage and provide additional aquatic habitat for a longer duration of inundation; deepening an existing pond, and re-vegetating stream and pond banks to provide for bank stability and vegetated habitats for fish and wildlife. The proposed wetland project located in T33S, R4W, section 11 would restore an area in the headwaters area of upper Grave Creek, by excavating the existing failed structure and filling with dirt, placing a new water control structure, and gating to limit disturbance to wildlife. A gate would be placed across existing road that is approximately 100 yards north of the intersection of 34-4-5.2 and 34-4-28 to reduce vehicular access to an existing wetland.

Operations that involve the movement of soil would occur during drier summer months (generally after June 30) to reduce soil movement into the stream and to minimize disturbance to wetland wildlife.

### **Meadow Restoration Project**

Meadow restoration would occur within a large meadow complex on the side of King Mountain, located in S24 and S19, T33S, R5W. These areas would be broadcast burned to reduce the number of shrubs, encourage sprouting of forage plants, and to reinvigorate meadow grasses and shrubs. Encroaching trees may also be removed where they occur on withdrawn (TPCC) lands.

### **2.2.3 Alternative 3: Proposed Action with Some Commodity Removal**

Alternative 3 proposes to accomplish the same vegetation management and fuels reduction objectives within the units proposed for treatment in Alternative 2. However, in addition, Alternative 3 proposes to utilize a portion of the vegetation within the units that would otherwise be cut, piled, and subsequently burned or left on site to decay. Implementation of Alternative 3 would not change desired future conditions of the stands resulting from the vegetation/fuels treatment. Utilization of materials would occur where economically feasible and where removal of materials would not cause unacceptable damage to the residual stand.

Materials to be removed from treatment units would consist of small diameter conifers and hardwoods. Table A-5, Utilization of Small Diameter Material, displays units where removal of material is proposed, what material is to be removed, how the removal is to occur, and timing of the removal.

Removal of material to be utilized may occur prior to vegetation/fuels treatments being done or after vegetation/fuels treatments were done but before handpiling and/or burning took place. Vegetation and fuels reductions treatments would not occur for one year on units proposed for utilization to allow time for pretreatment removal of material to occur.

The Project Design Features (PDFs) for Riparian Resources, Soils, Wildlife, Vegetation, and Roads as described in Alternative 2 would be used. In addition to those in Alternative 2, the following PDFs would occur in Alternative 3:

Merchantable woody material may be removed to roads with the following methods:

- Traditional cable yarding with lateral yarding capabilities.
- Tractor winching with lateral hauling.
- Monocable. This system consists on a slow moving continuous loop of cable. Logs are attached by hand to the cable and removed at the landing.
- Log chutes. This system consists of a series of interlocking half pipes, placed at an angle to the slope. The pipes lie on the ground and serve as a logging corridor. When connected, the pieces act as a 'chute'.
- Any other method of removal by hand.

If use of any of the above methods indicates that unacceptable damage to leave trees or other resources would occur, materials would not be removed from that unit or portion of the unit.

Directional falling away from streams and wet areas would be required within one tree length of those areas and within two lengths of fish bearing streams with cable yarding systems.

The maximum diameter of material removed would be seven inches. The maximum length of material removed would be seventeen feet. Branches would be bucked prior to removal.

All machinery for removal would operate from existing roads only and would provide for a minimum one end suspension of pieces.

All landings would be designated.

Yarding across riparian areas would not be allowed. Landings would not occur within 100' from riparian vegetation.

Where soil exposure occurs as a result of removal techniques, temporary landings, or yarding corridors, it would be followed by hand scarification of soil, seeding, and/ or waterbarring to mitigate soil runoff. No materials would be cut and/or removed from No Treatment Zones and buffers.

All tracked and tired vehicles (excluding tracked vehicles used for mechanical fuels treatments but including ATVs) used for extraction of special forest products generated from brushing, fuels treatments, precommercial thinning treatments and other non-commercial treatments would be seasonally restricted; generally May 15 through November 15- dependant upon soul moisture and the possibility of damage to the soil profile. These restrictions would be especially important in areas with sensitive soils (e.g. serpentine, clays, granitics).

Equipment used in operations (besides tracked vehicles used for mechanical fuels treatments) would be allowed on slopes of less than 35%.

PDF's specific for Traditional Cable Yarding:

- Cable yarding would not be allowed between March 1 and June 1 to prevent bark slippage on residual trees.
- The number of cable yarding corridors would be minimized to reduce soil compaction. --

Corridors would be located at least 50 feet apart at the tail end; lateral yarding would be required in all units.

PDF's specific for Tractor Winching:

- Yarding tractors would be permitted on rocked roads only.
- Yarding tractors would not be allowed between March 1 and June 1 to prevent bark slippage on residual trees.
- Winching would be allowed from June 1 thru November 1

PDF's specific for Monocable and 'Chute' Yarding Systems

- Monocable systems may be used year round unless unacceptable soil disturbance is occurring.
- Use of 'chute' systems would be allowed year round

Methods of removal that would not be used:

- High lead yarding
- Tractor yarding off of rocked roads
- Helicopter Yarding
- Horse logging
- Pulling cable through blocks from existing roads with vehicles
- No yarding up or down ephemeral draws
- No yarding across sensitive soils

The following table displays roads that would potentially used to remove cut materials from selected units.

Probable BLM Haul roads to be used for Commodity Removal		
Location of Removal Unit	BLM Road #'s	Estimated # miles of road
T34S-R05W- 21	34-5-21, 34-5-20, 34-5-8	6
T34S-R05W-1	34-5-2	1
T33S-R05W-35	33-5-35.5, 33-5-35.4 33-5-35.3, 34-5-1	3
T33S-R05W- 7, 18, 20, 21	33-5-7, 33-5-18	3
T33S-R05W-9, 10, 15	33-5-10, 33-5-10.2	3
T33S-R06W- 27	33-6-26, 33-6-27.2	2
T33S-R06W- 19	33-6-19.0, 33-6-19.1, 33-6-20.0	3

Water dips would be established at appropriate intervals on natural surface roads where appropriate.

## Chapter 3 - Affected Environment

### 3.0 Introduction

The affected environment describes the existing resource components within the proposed area that might be affected by the alternatives. The information in this chapter serves as a general baseline for determining the effects of the alternatives in the Environmental Consequences section of this document.

### 3.1 Location

Units proposed for treatment are scattered throughout the Grave Creek watershed. Refer to the Grave Creek watershed analysis (USDI 1999) for further information on the watershed and its features.

### 3.2 Riparian Reserves / Water Quality / Fisheries

Many of the units proposed for treatment do not contain Riparian Reserves. Some units contain ephemeral draws that do not flow annually. Most Riparian Reserves that are within proposed treatment units are associated with intermittent streams or perennial streams without fish. For these areas, plants that are adapted to moist soil conditions may be present only within a few feet of the stream or not at all. Outside of these narrow zones of riparian plants field observations made by hydrographer found the vegetation in the Riparian Reserve is similar to that which is found in the drier upland areas outside of the reserves. A few fish-bearing perennial streams are present within the proposed treatment units. The natural stand condition in the areas outside the immediate riparian zone would be an open overstory and sparse understory dominated by fire-adapted species. Due to past land management practices and the exclusion of fire, forest stands in the project area are typically more dense and brushy than under pre-settlement conditions. Fuel loadings are higher. Several major tributaries to Grave Creek, as well as Grave Creek, are identified by the Department of Environmental Quality (DEQ) under section 303d as water quality limited for temperature (see table below).

**Table 3-1. Water Quality Limited Streams**

<b>Stream Name</b>	<b>Miles</b>
Big Boulder Creek	0-1.8
Boulder Creek	0-3.9
Butte Creek	0-2.5
Coyote Creek	0-7.4
Grave Creek	0-33.1
Slate Creek	0-3.1
Wolf Creek	0-11.5

The following table lists units that overlap or that are within one half mile of fish streams.

**Table 3-2. Vegetation Treatment Units in Relation to Fish Streams.**

<b>Fuels &amp; Silviculture units that overlap or are within 1/2 mile from fish streams.</b>				
<b>Treatment type</b>	<b>Unit #</b>	<b>Overlapping Or 1/2 mile?</b>	<b>Fish species affected</b>	
fuels	184/240	Overlapping	Coho & Steelhead	
silviculture	102/6667	1/2	Coho & Steelhead	
	59/5646	1/2	Coho & Steelhead	
	106/6706	1/2	Coho & Steelhead	
	115/6809	1/2	Coho & Steelhead	
	108/6751	1/2	Coho & Steelhead	
fuels	173/227	1/2	Coho & Steelhead	
	168/221	1/2	Coho & Steelhead	
	174/229	1/2	Coho & Steelhead	
silviculture	21/4407	Overlapping	Steelhead	
	62/5704	Overlapping	Steelhead	
	57/5621	Overlapping	Steelhead	
fuels	22/29	Overlapping	Steelhead	
	107/136	Overlapping	Steelhead	
	158/205	Overlapping	Steelhead	
	179/235	Overlapping	Steelhead	
	170/223	Overlapping	Steelhead	
	silviculture	79/6145	1/2	Steelhead
		35/5098	1/2	Steelhead
28/4753		1/2	Steelhead	
115/6809		1/2	Steelhead	
53/68		1/2	Steelhead	
64/5756		1/2	Steelhead	
38/5139		1/2	Steelhead	
33/4905		1/2	Steelhead	
30/4799		1/2	Steelhead	
25/4675		1/2	Steelhead	
23/4601		1/2	Steelhead	
17/4323		1/2	Steelhead	
15/4225		1/2	Steelhead	
fuels		173/227	1/2	Steelhead
	168/221	1/2	Steelhead	
	163/212	1/2	Steelhead	
	178/234	1/2	Steelhead	
	174/229	1/2	Steelhead	

### **3.3 Fire and Fuels**

The Grave Creek Watershed Analysis (WA) describes historic fires and sources of ignition (p. 70-72) and defines High Hazard Areas, High Risk Areas, and High Value Areas (p. 45-47). Map #12 in the WA shows the High Hazard Areas that exist within the watershed. Map #13 incorporates all three criteria to develop “High Priority Fuels Management” areas.

#### **3.3.1 Fire History**

Pre-settlement fires in the watershed most frequently began in mid-summer and could continue to burn until autumn rains fell in October or November. With an extended time period to burn fires could cover large areas. Where high intensity fires did occur, they often reset the vegetative stand age to zero. Soils were left vulnerable to severe erosion due to loss of vegetation and organic matter.

Most fires were characterized by patchy, mosaic patterns, with areas of intense fire that killed overstory trees. The fires, however, were dominated by areas of low intensity underburns where only occasional trees or small patches of overstory trees were killed. Repeated, high intensity fires are revealed by the absence of older conifers on some sites that are now occupied by hardwoods. Evidence of low intensity fires can be seen in many older conifer stands.

South-facing slopes typically experience a higher intensity of fire disturbance than north facing slopes. Large conifers on south-facing slopes generally have a patchy distribution, as compared to the north-facing slopes, which often have a more continuous canopy of larger coniferous trees.

Historically, lightning was the most common source of ignition in this watershed. Due to the low summer precipitation and increased lightning frequency, July, August, and September were the months of greatest ignition activity. Miners were a source of intentional fire ignition. Areas were burned to open ground for mineral exploration and mining. Native Americans were also a source of intentional ignition in this area prior to European settlement. Burning was employed by Native Americans to encourage the resprouting of tanoak and to control pest populations. In addition, this practice cleared the ground under trees, which made hunting and gathering seed and acorns easier. Native Americans also burned along ridge tops to maintain travel corridors and openings for the production of hazel and beargrass, which were used for basket material one or two years after the site was burned.

Fire frequency and fire return interval vary throughout the planning area depending on stand characteristics, weather, and topography. In the watershed, it appears that fires were probably more frequent and more intense in the hot, low elevation areas than along the upper ridges where conditions are generally cooler and there is more moisture. While fire frequencies varied a great deal, it is likely that the fire return interval for this watershed was in the order of 15-30 years (Agee 1993).

Fire is directly linked with other disturbance factors. For instance, in conifer forests there are frequent post-fire insect attacks. Scorched trees are more likely to be successfully attacked by bark beetles and other insects. Crown scorch on ponderosa pine at levels about 50 percent is associated with 20 percent or more mortality by western pine beetle in mature trees; younger trees can survive more than 75 percent scorch with about 25 percent mortality.

The potential for stand-replacing fires in this area has increased due to fire suppression activities that began around the turn of the century. Fire suppression has allowed an increase in dense vegetation in young and mature forest stands. Historic lightning fire data within this area indicate that fires ranged from less than an acre to more than 2,000 acres. The density of this vegetation has created ladder fuels which have the potential to carry fire into forest canopies, increasing the risk of severe fire behavior. These types of fires make wild land fire suppression efforts difficult. The longer these stands are left untreated, the greater the potential for severe fire behavior.

The following table lists fires that have occurred within the Grave Creek watershed since 1947.

Recent Fires within the Grave Creek Watershed		
Name	Year	Acres
MERLIN LUMBER	1947	37
GREENBACK #1	1951	251
RATTLESNAKE CREEK	1951	1360
LAST CHANCE #1	1952	97
BUTTE CREEK 1	1955	123
WATER TANK GULCH	1956	27
FOLEY GULCH	1963	65
PLACER	1964	70
BRUSHY GULCH II	1970	10
GRAVE CREEK	1978	2900
PLEASANT CREEK	1987	1240

### 3.3.2 Fire Suppression and Management

Fire suppression efforts began in the early 1900s but effective suppression in the area did not occur until after World War II. With the advent of roads into the area, combined with adequate personnel, suppression efforts became more effective.

Fire control has reduced the occurrence and the number of acres burned. Some vegetation manipulations, such as slash burning after harvest, are designed to reduce the spread of wild fires, to reduce fire intensity, and prepare the site for reforestation. Other management practices, such as pre-commercial thinning, create a short-term increase in the accumulation of dead fuels, as well as result in an increased short-term risk of intense fires.

Current fire management still involves suppression of wildfires, both human-caused and natural ignitions. However, fire management has taken on several new directives that focus on fire prevention. Forested areas that are harvested on federal land usually receive some prescribed fire treatment, ranging from broadcast burns to hand-piling excess woody material that can not be sold for firewood, followed by pile burning. Prescribed burning is a multi-purpose tool used for removal of slash resulting from harvest and for control of competing vegetation. Planting and reforestation success is improved and the likelihood of a catastrophic fire is reduced.

### **3.3.3 Current Fuel Characteristics**

Three factors were used to assess fuels and the potential for fires:

Fuel hazard - the capability of fuels to carry a fire

Fire risk - the probability of ignition

Value - the relative potential for resource loss from a fire.

Fuel hazards were analyzed based on fuel models of different vegetation types. The highest hazard was related to brushy, light fuels and ladder fuels.

There were several aspects of high fire risk, including: ridge tops, where the probability of lightning strikes are highest, the major access roads which receive the most vehicle use, the I-5 corridor, and the areas adjacent to private residences.

The following areas were considered high value:

-spotted owl core areas

-private residences

Three factors were used to analyze fire management decisions: hazard, risk, and value. These factors were used to evaluate and set priorities for treatments while giving consideration to other management opportunities, such as areas adjacent to existing fuels projects throughout the watershed, areas needing maintenance treatments to maintain stand health and reduced fire hazard, areas needing density management and other vegetation treatments, wildlife habitat enhancement and ridgeline treatments designed to establish a system of fuel breaks which would help reduce the potential size of a wildfire. Areas where all three factors were rated as high were deemed highest priority for fuels treatment.

The planning area is primarily composed of a checkered board pattern of BLM lands and blocks of non-federal lands. These lands are considered high hazard and high risk because of the presence of potential ignition sources and the light flashy fuels. Many of these pieces of private land have been logged in the past several years with no subsequent slash reduction treatment.

The potential for uncharacteristic stand-replacing fires in this area, along with most of the Klamath Province, has increased due to fire suppression activities that began around the turn of the century. With fire suppression came an increase in dense vegetation in young and mature forest stands. The density of this vegetation has created ladder fuels, which have the potential to carry fire into forest canopies, increasing the risk of severe fire behavior. These types of fires make wild land fire suppression efforts difficult. The overall health of the forest has also been greatly compromised by this dense vegetation, due to the competition with trees for soil moisture, nutrients, light, and growing space.

## **3.4 Air quality**

Air quality is regulated by the 1963 National Clean Air Act as amended in 1966, 1970, 1977 and 1990. The 1977 amendment provided for the prevention of significant deterioration (PSD) program. The intent of the PSD program is to limit air degradation in those areas of the country where the air quality is much better than standards. Under this provision, certain national parks and wilderness areas were

designated as Class I airsheds, whereas the remainder of the country was designated Class II. Although the PSD permit provisions of the Clean Air Act apply only to major stationary sources of air pollution (motor vehicles are mobile sources), the Environmental Protection Agency (EPA) used them to determine the degree of potential impacts of other sources on air quality. Forest management activities in the analysis area do not require a PSD permit.

The Oregon Smoke Management Plan, a part of the required state implementation plan (SIP), identifies strategies for minimizing the impacts of smoke from prescribed burning on the smoke sensitive areas within western Oregon. Particulate matter with a nominal size of 10 microns or less (PM 10) is the specific pollutant addressed in the SIP.

Two designated air quality areas (defined by the Oregon Department of Environmental Quality) may be affected by management activities within the planning area. The Grants Pass non-attainment area is approximately 10 miles south. The Medford/Ashland non-attainment area is approximately 35 miles south of the watershed. Both of these non-attainment areas are far enough away that they should not be affected by prescribed fire activities within the project area. The non-attainment status of these communities is not attributable primarily to prescribed burning. Major sources of particulate matter within the Rogue Valley are smoke from woodstoves, dust, and industrial sources. The contribution to the non-attainment status of particulate matter from prescribed fire has historically been less than 4 percent of the annual total.

Air quality and visibility monitoring sites do not exist in the immediate vicinity where treatments would occur, therefore, existing air quality information is not available. Generally speaking, air quality is excellent since there are no stationary sources of particulate matter production.

When burning under spring-like conditions, larger fuels are not consumed due to higher fuel moisture. Fuel consumption is lower, creating fewer emissions, with smoke dispersal easier to achieve under general meteorological conditions. Ignition techniques, such as aerial firing, further reduce total emissions by accelerating the ignition period and reducing the total combustion process due to the reduction in the smoldering stage. Hand piling of slash allows selective burning of woody debris during late fall and winter but only under weather conditions that allow desired smoke dispersion. These mitigation measures can be used to bring emissions below levels required in the Clean Air Act.

### **3.5 Wildlife**

A range of wildlife species utilize areas proposed for young stand management. The shrubby vegetation found in young stands is used for foraging and nesting by many songbirds. There are, however, no wildlife species considered exclusively dependent on the age classes of the stands proposed for treatment. This discussion will focus on potential impacts to T&E, survey and manage species, and songbirds.

The areas proposed for young stand management are generally less than 40 years old. The dense shrubby vegetation associated with young stands provides foraging and nesting habitat for a variety of songbirds as well as mammals such as elk and deer. Stands less than 40 years old do not provide nesting habitat for spotted owls, marbled murrelets, and bald eagles. Bald eagles and spotted owls may

occasionally use young stands for foraging. However, this foraging is most likely associated with edges where adjacent large trees provide perching opportunities and cover.

There are 15 spotted owl cores or activity centers within 1/4 mile of the areas proposed for treatment. There are no known bald eagle or peregrine falcon nests within 1/2 mile of the proposed treatment units. There are no marbled murrelet nests documented on the Medford District BLM. None are known to occur within 1/4 mile of the proposed treatment units.

Survey and manage molluscs with potentially suitable habitat in the project area include *Monadenia chaceana* and *Helminthoglypta hertlieni*. These molluscs are strongly associated with talus and rock outcrops. Coarse woody debris is also an important habitat component for these species.

Red tree voles are associated with mature Douglas-fir stands with high canopy closure (>50%). The young stands proposed for treatment are not suitable red tree vole habitat.

### **3.6 Botany**

Vascular plant surveys were conducted in the spring of 2003 for units less than forty years of age. Nonvascular surveys will be completed in fall of 2003. The following delineates species found during vascular and nonvascular surveys.

Preliminary results of the 2003 vascular plant surveys indicate four Bureau Tracking (BTO), two Bureau Sensitive (BSO), and 1 Survey and Manage (S&M) species are present within some of the project area units.

The four tracking species include *Hieraceum greenei* (Greene's hawkweed), *Euonymus occidentalis* (Western burning bush), *Silene hookeri ssp. bolanderi* (Bolander's silene), and *Allium bolanderi var. mirabile* (Bolander's onion).

Bureau Sensitive species found in the project area include *Calochortus howellii* (Howell's camas) and *Cypripedium fasciculatum* (Clustered Lady's Slipper). Howell's camas was found in fuels units 27-4 and p-20-1. This species is typically associated with dry, open meadows with serpentine-influence soils. Clustered Lady's Slipper is typically found within north-facing, mature conifer stands, although it has been found in silviculture units with varying aspects as well. In the project area, *C. fasciculatum* (also a Category C Survey and Manage Species) was found in silviculture unit 135247 and in fuels units p-9-1 and p-11-1.

No additional Survey and Manage species have been found within the project area units.

*Fritillaria gentneri*, *Limnanthes floccosa var. grandiflora*, and *Lomatium cookii* are listed as federally endangered under the Endangered Species Act. Only *Fritillaria gentneri* has a range which extends into a portion of the Glendale Resource Area. The proposed Project Area lies outside the range and habitat for all three species.

Management recommendations for Survey and Manage species require maintenance of late-successional forest structure, soil conditions, and microclimate around known sites, and, for some species, the

prevention of snag and stump loss through prescribed fire (USDA-USDI 1996, Castellano and O'Dell 1997).

Generally, thinning prescriptions, akin to those planned under this project, would retain up to 60% canopy. Based on the numbers in the literature, plant sites occurring in thinning units should receive a buffer 100 feet in diameter.

Buffers would provide protection to plant populations which could be impacted by pile burning and ground disturbance, and would protect interior forest microclimate. No effects are anticipated to those Special Status, or Survey and Manage plants that require protection. Some populations of species that do not require protection (Tracking species, S&M Category F species) may be extirpated, although others would not, as they fall within areas protected for other resources.

Microclimate measurements show that interior conditions may not be found until 100 to over 790 feet from clearcuts or agricultural fields, depending on site conditions and weather, and the variable measured (Chen 1991, Rodrigues 1998). Some of the smaller microclimate differences appear to be irrelevant to biological systems, as edge effects on biological variables, such as plant regeneration and species composition, generally average around 200 to 250 feet, with a range of 50 to 450 feet, adjacent to cleared areas (Chen 1991, Rodrigues 1998, Jules 1997).

### **3.7 Vegetation**

Units are distributed across the different vegetation types present in the watershed.

Units proposed for treatment are primarily younger stands less than forty years of age that have resulted from past timber harvests and associated reforestation treatments. Units may be single-storied resulting from a harvest that removed all trees from the site. Units may also have multiple canopy layers that have resulted from one or more partial cut harvests. Some of the units proposed for treatment, however, are older natural unentered stands. Many of the fuels reduction units fall into this category.

The current GIS record (last updated 2000) of Port Orford cedar indicate that there is no natural Port Orford cedar within the project area.

### **3.8 Soils**

Units proposed for treatment are distributed throughout the Grave Creek HUC 5 area. Geology, soils and vegetation communities are quite variable from west to east. Since this is the case it is difficult to describe each and every unit. Several thousand acres per year would be treated (brushing/precommercial thinning/fuels reduction treatments). Silviculture and fuels treatments that would occur in areas of sensitive or unstable soils would be mitigated for through Project Design Features listed in Ch. 2 of this document. The Grave Creek Watershed Analysis is incorporated here by reference, where greater detail of soils is discussed.

### **3.9 Noxious Weeds**

Invasive Species known to be in the area include bull thistle (*Cirsium vulgare*), scotch broom (*Cytisus scoparius*) and meadow knapweed (*Centaurea pratensis*) (see ROD for Medford District RMP -1995, pg. 92). These plants occur throughout the Grave Creek Watershed, primarily on disturbed sites that lack of crown cover such as along roads.

## Chapter 4 – Environmental Consequences

### 4.0 Introduction

This chapter forms the scientific and analytic basis for comparison of alternatives. Discussions include environmental impacts anticipated from implementation of the alternatives, both positive and negative. Only substantive site-specific environmental changes that would result from implementing the proposed action or alternatives are discussed in this chapter. If an ecological component is not discussed, it should be assumed that the resource specialists have considered affects to that component and found the proposed action or alternatives would have minimal or no affects. It also identifies and analyzes mitigation measures, if any, which may be taken to avoid or to reduce projected impacts.

**Table 4-1 Critical Elements by Alternative**

The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order and must be considered in all EAs. The Y=yes and N=no designates whether each resource or issue would be affected under each specified alternative.

Resource or Issue Affected by Alternative	Alternative (Y or N)			Resource or Issue Affected by Alternative	Alternative (Y or N)		
	1	2	3		1	2	3
Air Quality	Y	Y	Y	Threatened & Endangered Species	Y	N	N
Area of Critical Environmental Concern (ACEC)	N	N	N	Wastes, Hazardous/Solid	N	N	N
Cultural	N	N	N	Water Quality	N	N	N
Farmlands, Prime/Unique	N	N	N	Riparian Zones	Y	Y	Y
Flood plains	N	N	N	Wild & Scenic Rivers	N	N	N
Native American Religious Concerns	N	N	N	Wilderness	N	N	N
Invasive Species	Y	Y	Y	Environmental Justice	N	N	N
Energy	N	N	N	*Survey and Manage	N	Y	Y

\*Non-Critical Element

Chapter 4 presents discussions of the environmental consequences that are site specific and tiers to the analysis of the same resources in the Final Supplemental Resource Management Plan/Environmental Impact Statement BLM, November 1994 (RMP/EIS). In keeping with the directives of the National Environmental Policy Act (NEPA), the discussions focus on impacts considered potentially significant. The level of detail and depth of impact/analysis are generally limited to that needed to determine whether new significant environmental effects are anticipated. Direct, indirect and cumulative effects were considered.

Direct effects are site-specific and result from the immediate action, such as the harvest of a timber sale unit or the construction of a particular road. Direct effects are confined to a specific area such as a timber sale unit, a particular elk range, or a spotted owl site, and can be short term or long term.

Indirect effects occur at a different place or time than the proposed action.

Cumulative effects are generally not site-specific and are not readily attributable to any one action. Cumulative effects are the result of past, immediate, and reasonably foreseeable actions on a larger area, such as a watershed, regardless of ownership.

#### **4.1 Air Quality, Fire and Fuels**

##### **Alternative 1: No Action**

Under Alternative 1 no fuels treatments are proposed. BLM and non-federal lands would be at an increased risk of loss from catastrophic fire with continued and increased fuel loading.

The wildland fire hazard and hazardous fuel conditions would increase as live fuel densities increased over time due to the growth of the brush, hardwoods and conifers. Crown bulk densities would increase, thus increasing the risk of stand replacement crown fires under high to extreme fire weather conditions. Increased fire behavior intensities, flame lengths and rates of spread would result from the increased fuel levels. Dead and downed fuels from past management activities would contribute to fire spread, but would decrease over time as fine fuels (<1") decomposed and compacted.

Untreated areas in the No Action Alternative would perpetuate current conditions. In many mature stands, growth and deterioration would increase fuel loading. These conditions, over time, would increase the potential for stand replacement fires to occur within or adjacent to the planning area. All action alternatives propose treatments to reduce fire hazard. This opportunity to reduce fire hazard would not occur under Alternative 1.

Stand densities would remain unchanged. The trend towards shade tolerant species would continue and would create a moderate increase in ladder fuels. As mortality continued in these stands, snag populations and down, woody fuels would continue to accumulate. Until a disturbance, such as fire, entered the stand, this trend is unlikely to change. If a fire were to occur, rate of spread and flame length could be severe enough to prevent direct attack by hand crews. A wildfire would have the potential to cause a considerable amount of scorch and mortality of individual trees. The potential for a large fire to occur would increase as the vegetation increased in density and became more continuous and homogeneous.

Existing high hazard conditions would continue in brush fields; in areas with light, flashy fuels (south-facing slopes); and in overstocked stands with ladder fuels. Continued fire suppression activities would allow pole-sized Douglas-fir and hardwoods to grow underneath large, overstory conifers, creating very dense stands that are prone to stand-replacing fires under extreme weather conditions. Flame lengths and rates of spread would be higher in this Alternative due to a build up of down, woody fuels.

Plantations are the exception, because canopies remain closed do not permit grasses to grow. The only fuel that would be on the ground to burn would be small twigs and needles from the overstory.

## **Alternative 2: Proposed Action**

Thinning and brushing of stands would move the vertical live fuel profile to a horizontal surface fuel. Crown bulk densities would be reduced in all units proposed for treatment to a level that crown fire potential is minimized. Crown base height and dead and downed fuel loading would increase. Down and dead fuel loadings would vary based on the age of the stand, spacing requirements and diameter of fuels being thinned or brushed.

Fuel treatment levels would be based on the predicted fuel loading following the thinning or /brushing treatment as described in Table A-2. Table A-2 proposes twelve (12) silviculture treatment prescriptions and gives a relative fuel loading description of each treatment.

Mechanically treated units would have the vertical live fuel profile reduced to a compact fuel bed, generally less than eight inches in depth. Fire intensities, flame lengths and rates of spread would be the lowest under these prescriptions. These resulting changes in fire behavior would reduce the resistance to fire control efforts. Fire suppression forces would have more time to detect and respond to a slower moving fire. The potential for effective direct attack on the fire is greater when the fire is less intense, slower moving, and has lower flame lengths. Fire behavior would be reduced to a low intensity ground fire. Mortality to existing trees would be reduced. Field observations have indicated that slash treated with mechanically has higher decomposition rates as compared to manually treated fuels. Fire hazard would be expected to decrease more rapidly.

Table A-4 indicates which units would receive mechanical fuel hazard reduction treatments (usually with an excavator equipped with a 30+ foot boom and a hydraulic chipping/shredding head). The machine mechanically shreds and chips slash and/or live vegetation. The treatment would immediately and substantially alter the fuel profile thereby reducing the potential need for subsequent prescribed burning. The treatment would lower future burn intensities in follow-up fuels maintenance treatments. Mechanical treatment would result in fuel conditions that make fire control easier in the event of a wildfire. In addition, this type of treatment would give results similar to pre-commercially thinned units with the added benefit of fuel hazard reduction, all done with one entry and treatment.

Flame lengths of 2-4 feet would be expected in underburn units. Broadcast burn units would exhibit more intense fire behavior, with 4-6 foot flame lengths, due to the high fuel loading in these units. The majority of fuel created and consumed by the proposed action would be 3 inches and less in diameter. These fuels typically burn out relatively fast with little heat transfer to soils. This may result in less scorch and mortality to the residual stand in underburn units. Some mortality would be expected in the smaller diameter size classes as a result of the burn. Hazard would be reduced.

Prescribed burns would be conducted within the limits of a Burn Plan that prescribes burn parameters so that acceptable and desired effects are obtained. Smoke produced from prescribed burning would be the major air pollutant of concern.

Fuels management activities generate particulate pollutants in the process of treating natural and activity related fuels. Smoke from prescribed fire has the potential to effect air quality. The use of prescribed fire for ecosystem restoration can produce enough fine particulate matter to be a public health and/or welfare concern. Fine particulate matter in smoke can travel many miles downwind impacting air quality in local communities, causing a safety hazard on public roads, impairing visibility in class I areas, and/or causing a general nuisance to the public. If properly managed, most negative effects of prescribed fire smoke would be minimized or eliminated.

The National Ambient Air Quality Standards (NAAQS), set by the authority of the Clean Air Act (CAA), cover six “criteria” airborne pollutants: lead, sulfur dioxide, carbon monoxide, nitrogen oxides, ozone and particulate matter. The lead and sulfur content of forest fuels is negligible, so these two forms of air pollution would not be a consideration in prescribed burning.

Prescribed burning would emit some carbon monoxide (CO), from 20 to 500 lb. per ton of fuel consumed. This would be a concern if there were other persistent large CO sources in the immediate vicinity. CO is such a reactive pollutant, however, that its impact would be quickly dissipated by oxidation to carbon dioxide where emissions are moderate and irregular and there is no atmospheric confinement.

Burning would also emit moderate amounts of volatile organic compounds (VOC) and minor amounts of nitrogen oxides (NOx). These are precursors to formation of ground level ozone. Here, fire-related emissions would be seen as important only when other persistent and much larger pollution sources already cause substantial non-attainment of NAAQS.

Particulate matter smaller than 10 micrometers (PM 10) is a term used to describe airborne solid and liquid particles. Because of its small size, PM 10 readily lodges in the lungs, thus increasing levels of respiratory infections, cardiac disease, bronchitis, asthma, pneumonia, and emphysema. The fate of PM emissions from proposed prescribed burning would be twofold. Most (usually more than 60%) of the emissions would be ‘lifted’ by convection into the atmosphere where they would be dissipated by horizontal and downward dispersion. The “unlifted” balance of the emissions (less than 40%) would remain in intermittent contact with the ground. This impact would be dissipated by dispersion, surface wind turbulence and particle deposition on vegetation and the ground. The risk of impact on the human environment differs between the two portions of smoke plume.

### Smoke Aloft

Until recent decades, the impact of the lifted portion of smoke was ignored because it seemed to “just go away.” The impacts of smoke aloft would generally be not realized until the mechanisms of dispersal bring the dispersed smoke back to ground level. Because the smoke has already dispersed over a broad area, the intensity of ground-level exposure would be minimal. The duration of exposure may include the better part of a day, however, and the area of exposure may be large.

### Ground Level Smoke

Unlike smoke aloft, the potential for ground level smoke to create a nuisance would be immediate. This part of the smoke plume does not have enough heat to rise into the atmosphere. It stays in

intermittent contact with the human environment and turbulent surface winds move it erratically. Also in comparison to smoke aloft, human exposure would be more intense, relatively brief (a few hours) and limited to a smaller area. Smoke aloft is already dispersed before it returns to the human environment while ground level smoke must dissipate within that environment. Dissipation of ground level smoke would be accomplished through dispersion and deposition of smoke particles on vegetation, soil and other objects.

### Non-attainment Areas

The city of Grants Pass has a past history of being in violation of the national ambient air quality standards for PM 10 and is classified as non-attainment for this pollutant. The non-attainment status of this community is not attributable to prescribed burning. The major source of particulate matter within the non-attainment area is smoke from woodstoves and dust and industrial sources. Over the past seven years the Grants Pass population center has not been in violation of national ambient air quality standards for PM 10

Prescribed burning emissions, under all alternatives, is not expected to adversely effect annual PM10 attainment within the Grants Pass and Medford/Ashland non-attainment areas. Any smoke intrusions into these areas from prescribed burning are anticipated to be light and of short duration.

National Ambient Air Quality Standards for PM2.5 have been established to protect human health. Due to the lack of monitoring data for PM2.5 these standards have yet to be implemented. Monitoring data for PM2.5 is currently being completed.

### **Alternative 3: Proposed Action with Some Commodity Removal**

Removal of materials from selected units prior to handpiling and burning would reduce the amount of material needing to be handpiled and later burned. The number of piles per acre would be reduced. The cost of the fuel reduction treatment would also be reduced.

## **4.2 Invasive Species**

### **Alternative 1: No Action**

No impacts would be anticipated.

### **Alternative 2: Proposed Action**

For the first ten years after actions in this alternative, ground disturbance, pile burning, and the reduction of canopy may allow noxious and invasive species to spread and to become established in the Project Area. The amount of disturbances would be small and as such would have only minor effects towards the spread of noxious and invasive species. Disturbance would be greatest along roads.

### **Alternative 3: Proposed Action with Some Commodity Removal**

For the first ten years after actions in this alternative, ground disturbance, pile burning, commodity removal and the reduction of canopy may allow noxious and invasive species to spread and to become established in the Project Area. The amount of disturbances would be small and as such would have only minor effects towards the spread of noxious and invasive species.

Soil disturbance within narrow yarding corridors may allow invasive plant species to become established. Under Alternative 3 there would be fewer piles burned. There would be less ground exposed for invasive plant species to become established.

#### **4.3 Threatened & Endangered Species**

##### **4.3.1 Fisheries**

#### **Alternative 1: No Action**

No treatment of activity fuels following silvicultural treatments or completion of fuels reduction treatments would leave conditions as they are currently. Fuels loadings would increase as vegetation grew and stand elements died. Some sediment could reach perennial and intermittent streams, and could reach fish streams in pulses depending on precipitation rates following fire.

#### **Alternative 2: Proposed Action**

No adverse effects to water quality would be anticipated from the proposed action. Piles would not be placed within No Treatment Zones (see Project Design Features section). These no treatment zones along streams would be sufficient to protect streams from even the small erosion risk associated with removal of the organic soil layer under burned piles. The spacing of hand piles to be burned outside the no treatment zones, but within the Riparian Reserve, would be sufficient to minimize the risk of sediment transport. Additionally, exclusion of mechanized equipment from the Riparian Reserves of fish bearing streams and the formation of NTZs would assist in maintaining overall water quality (see Project Design Features section, pg.16).

No cumulative effects would be anticipated from the proposed action as burning would be widely dispersed spatially at the site and watershed levels. In addition, it would be unlikely that all of the proposed burning would take place within the same season, but would instead take place over a 2 to 3 year period or longer. Water quality would remain well within the range of natural variability since the disturbance area would likely be smaller than that of a more natural fire regime of the summer months when vast areas would burn resulting in more nutrient release and potential erosion and resultant sedimentation of streams.

No adverse effects to aquatic species or aquatic resources would be anticipated from the wetland restoration and enhancement, or meadow restoration projects.

No adverse effects to fish or aquatic resources would be anticipated from the proposed action. The no treatment zones for PCT, brushing and mechanical fuels reduction treatments on perennial streams and

intermittent streams with fish accompanied with the removal of only small diameter trees would prevent a reduction of shade from taking place. Bank stability, nutrient input and cover in the form of overhanging vegetation would not be affected by the proposed actions.

Pre-commercial thinning, brushing and mechanical fuels reduction treatments would place the stands on developmental paths so that desired stand characteristics result in the future. The resultant fuel loading and fire hazard would be lower than under the no action alternative

### **Alternative 3: Proposed Action with Some Commodity Removal**

The environmental consequences of this alternative would be similar to those in Alternative 2; except in some areas there would be increased disturbance to the soil profile on roads where temporary landings would be created. There would not likely to be an increase in sedimentation, however, or an effect on water quality due to adherence to the Project Design Features (see Ch. 2, pg. 13) and the formation of no treatment zones.

#### **4.3.2 Wildlife**

##### **Alternative 1: No Action**

Under the No Action Alternative, stands would be left to develop along their current trajectory. As a result, most stands would continue to have increasing fuel loads and decreasing tree growth rates due to overstocking.

In their current condition, there would be an increased risk of stand destroying fires associated with high fuel loading. As long as fuel levels remain high, the risk of stands being set back to earlier seral stages would remain elevated and the ability to effectively manage for mature forests and associated wildlife species would be greatly compromised.

As these stands develop, overstocking would result in decreased growth rates for conifers. Stand development would be highly variable. On some sites, conifers would become a less dominant component in the stand. Competition would result in mortality from drought stress, disease and insects. Mortality of large conifers within some of the stands would occur.

For spotted owls, bald eagles, marbled murrelets and red-tree voles, the No Action alternative may delay the development of suitable habitat or in some instances prevent desired habitat from developing without the occurrence of a disturbance event that resets the stand back to early seral conditions. Fire hazard would be increased and there would be a greater potential for stand replacing fires.

For molluscs, important habitat features such as down logs and rock outcrops would remain intact. This enhances the ability of these sites to provide suitable habitat as stands mature. Fire hazard would increase and there would be greater potential for stand replacing fires.

Under the No Action Alternative, habitat for songbirds would remain available. Songbirds are associated with a diverse array of habitat conditions for nesting and foraging. Stand development

which includes a variety of species and forest conditions would likely benefit a wide range of songbirds. Songbird species and abundance would fluctuate over time as stand conditions change.

### **Alternative 2: Proposed Action**

In general, young stand management would result in short-term effects associated with disturbance, stand modification and fuel reduction. Long-term effects would include increased tree growth, shifts in species composition, fuel reduction and decreased mortality associated with overstocking.

Fuel reduction would reduce the risk of stand replacement fires and would enhance the long-term ability of these stands to achieve mature forest conditions. Estimates are that 5-15% of the targeted fuels would not be consumed. This would allow for some of the ground cover benefits provided by slash to remain intact.

For spotted owls, bald eagles, and red-tree voles, young stand management would not impact the suitability of current foraging or nesting habitat. This is based primarily on the fact that young stands do not provide suitable nesting habitat or preferred foraging habitat. These species are associated with mature forests and their use of young stands would be incidental.

In the long term, young stand management is expected to benefit spotted owls, bald eagles, and red-tree voles by creating better growing conditions for trees. Treatments that reduce the amount of time required to achieve larger diameter trees and provide for mature forests would benefit these species.

Restricting the operation of power equipment within 1/4 mile of spotted owl nest sites or activity centers of all known pairs and resident singles between March 1 and June 30 would minimize potential disturbance to nesting owls.

For songbirds, young stand treatments would modify habitat. The treatments would be a short-term disturbance to individuals using the treated sites. While the removal of vegetation may displace foraging and nesting for some individuals, it may improve habitat for others. Songbirds which prefer more open habitats would benefit from young stand management treatments. However, because hardwoods and brush sprout quickly after treatment, the benefits of an open stand would diminish over time. In the long term, treatments that reduce the amount of time required to achieve larger diameter trees and provide for mature forests would benefit species associated with those habitat types.

For molluscs, important habitat features such as down logs and rock outcrops would remain intact. Proposed treatments would enhance the ability of these sites to provide suitable habitat as stands mature.

### **Alternative 3: Proposed Action with Some Commodity Removal**

The environmental consequences of this alternative would be similar to those in Alternative 2.

### 4.3.3 Botany

No effects are anticipated to threatened or endangered plants. *Fritillaria gentneri*, *Limnanthes floccosa* var. *grandiflora*, and *Lomatium cookii* have not been found in the planning area, but would be protected if found.

#### **Alternative 1: No Action**

Under the No Action Alternative, no effects would occur to Special Status, Threatened or Endangered, or Survey and Manage vascular plants, lichens, or bryophytes. However, a potential exists for long-term negative effects resulting from catastrophic fire if ground and ladder fuels in these areas are not lessened.

#### **Alternative 2: Proposed Action**

Buffers would occur around Survey and Manage Category A, B, C, D, and E species, Threatened and Endangered, and Bureau Special status species (with the exception of Bureau Tracking species). Some Survey and Manage fungi could be extirpated, as surveys are no longer required. Buffers would provide protection to known plant populations. The chances of negative effects would be decreased by buffers.

Since piling and the burning of piles would be kept at least ten (10) feet or more from the boles of 16" DBH or greater trees, (all land allocations) any habitat which may exist for lichens and bryophytes would be protected and the potential for non-vascular plants to re-establish in the future would be maintained.

Underburning in areas where species such as *Camassia howellii* and *Silene hookeri* var. *bolanderi* are present may be permitted. To protect young subterranean shoots, burning would not occur later than March 1. Fall burning would be done as late as possible, after the duff layers receive moisture from fall precipitation. This practice avoids killing the underground bulbs and caudices from which the new plants resprout. Although there might be a short-term negative effect, circumstantial evidence suggests these species respond well to fire activity. Burning would also reduce brush and small tree cover, thereby reducing shading and competition. By combining these two factors, it is expected that the long-term effect would be positive.

Mechanical fuels treatments on native vegetation have the potential to yield both positive and negative effects. Woody debris left after treatment would be smaller in size than other mechanical methods that would reduce the chances of severe fire effects under a wildfire compared to the No Action alternative. However, a thick layer of woody debris under the right moisture conditions could create a high intensity ground fire. Effects from such a fire could include damage to the soil and seed bed to a point where any species in the herbaceous layer may have difficulty re-establishing in the short-term.

BLM Manual 6840 requires that actions on BLM lands do not contribute to the need to list Special Status species under the Endangered Species Act. Some sites of the newly listed Special Status species might be affected from the action Alternatives, but any possible losses should be minimal and would not contribute to listing under the ESA. For the Special Status species that are Bureau Tracking, surveys and mitigation measures are discretionary (BLM Manual 6840).

No negative effects would be expected to occur to Special Status, Threatened or Endangered, or Survey and Manage vascular plants, lichens, or bryophytes. Fuels reduction activity and elimination of overstocked units would be linked to long-term beneficial effects, as these activities lessen the chances of catastrophic wildfire.

### **Alternative 3: Proposed Action with Some Commodity Removal**

The environmental consequences of this alternative would be similar to those in Alternative 2.

## **4.3 Effects on Water Quality**

### **Alternative 1: No Action**

Routine management actions would continue to be done. Stands would continue to be overstocked. Wildland fire hazard would increase. With increased fire hazard would come an increased likelihood of damaged soils from hot fire occurrences in the future. Hot fires would consume organic matter on the soil surface and in the upper mineral soil layer. Soil productivity could be reduced as organic matter in the duff/litter layer and upper mineral soil layer is an important source of nutrients.

### **Alternative 2: Proposed Action**

Assuming an average of 60-100 piles per acre with each pile covering approximately 64 square feet, burned spots after piles are burned would comprise about 8 to 14 percent of the ground's surface. Assuming that most of the piles burnt would result in a spot on which the soil has a substantial reduction of organic matter, pile burning would result in a short term reduction of soil productivity and mychorrhizal loss for the individual spots. Since the burned spots would, most likely, occupy less than 14 percent of the treated unit, the overall reduction of in productivity would be minimal. Erosion or stream sedimentation should not be a factor as the spots would be islands surrounded by a matrix of vegetative cover. Water quality downstream would, most likely, be maintained since nutrient release from burning would be held within the soil column and not released as free ions in subsurface waters. Using mechanical methods to treat slash would result in some minor disturbance to the O and A horizon (top most) soil layers. This disturbance would be minimized because the tracked machine would "walk" on top of newly created slash and any older slash present during the treatment operation.

A wildland fire would burn with less intensity than under the no action alternative. Any resultant increase in erosion/sedimentation would thus likely be far less than without the treatment. Also, any resulting decrease in soil productivity would likely be less than without the treatment and subsequent wildfire.

At the 5<sup>th</sup> and 6<sup>th</sup> field watershed level, effects of the vegetation and fuels reduction treatments on additional stream sediment over background levels would be minimal and would not likely be measurable. Soil integrity would remain well within the range of natural variability since the disturbance area would likely be smaller than that of the natural fire regime of the summer months.

No adverse effects to soils are anticipated from the wetland restoration and enhancement, or meadow restoration projects. Broadcast burning of meadows would be done under moist soil conditions. This type of burning is not anticipated to burn hot enough to affect soil integrity.

### **Alternative 3: Proposed Action with Some Commodity Removal**

The environmental consequences of this alternative would be similar to those in Alternative 2, except there would be an increase in disturbance to the soil profile from machinery used for extraction. For the most part, this increased disturbance would be limited to roads where temporary landings would be created. There would not likely be an increase in stream sedimentation or erosion due to adherence to the Project Design Features (see Ch. 2, pg. 14). Also, with less fuel after commodity removal, there would be fewer hand piles created and burned and, as a result, less soil exposed.

## **4.4 Riparian Zones**

### **Alternative 1: No Action**

Fuel loading in the Riparian Reserves would pose a greater wildfire hazard than if the proposed action of hand piling and burning slash is implemented. The risk of a stand-replacement fire would remain high in much of the Riparian Reserve acreage; including miles of streams which would be vulnerable to the effects of wildfire outside the historic range (see soil effects). Additionally, a hot fire in the uplands, above riparian areas, could have consequences on water quality, such as increased erosion and stream sedimentation.

### **Alternative 2: Proposed Action**

The short and long term effects of the proposed action would be beneficial at the site and watershed levels, as wildfire hazard would be reduced in and around Riparian Reserves.

## **4.5 Effects to Transportation Systems**

### **Alternatives 1 & 2**

No impacts would be anticipated.

### **Alternative 3: Proposed Action with Some Commodity Removal**

This Alternative would offer an opportunity to maintain the roads that would be used for access. There would be no new rocking of roads, so costs of road maintenance would be relatively low. The Commodity Removal would affect about 10 miles of existing paved roads and 19 miles of rocked roads. Culvert inlets and outlets would be cleared of debris where needed. Roads would be brushed of overhanging vegetation posing a safety hazard.

## **4.6 Vegetation**

### **Alternative 1: No Action**

Current trends in vegetation growth and stand formation would continue. Stands would continue to be overstocked. Growth of conifers would slow. In places where there was an overstory of older conifers, the older conifers would have a higher probability of mortality from moisture stress and related insect attack. Desired stand elements (large conifers and large hardwoods) would gradually die out. In younger more uniform stands, trees with older forest characteristics would tend not to develop. There would be slowing of stand development. Less shade tolerant species would die out.

### **Alternative 2: Proposed Action**

Silvicultural treatments that promote conifer survival and growth would occur. Stand vigor would be improved or maintained. Stands would be placed on developmental trajectories that would allow long-term objectives to be met.

Fuels reduction treatments would occur. These treatments would produce similar effects on residual vegetation as precommercial thinning and brushing treatments. Stocking would be reduced. Stand vigor would be improved. Some mortality of residual conifers would be expected from scorch from the burning of handpiles. The amount of mortality would not be expected to reduce stocking to unacceptable levels or limit the opportunity for commercial thinnings to occur in the future on lands managed for timber production.

### **Alternative 3: Proposed Action with Some Commodity Removal**

The environmental consequences of this alternative would be similar to those in Alternative 2.

## **4.7 Monitoring**

Monitoring for invasive plant species would occur at units where cut materials were utilized. Inspection of roads in the monitoring efforts used in hauling and inspection of landing sites would also be included in monitoring. The cycle of monitoring would begin the spring after operations take place and then every three years for next nine years.

## **4.8 Cumulative Effects**

On a regional scale, the Northwest Forest Plan (NFP) examined cumulative impacts to threatened and endangered species, and developed a system of reserves to provide habitat and connectivity blocks between these reserves. A management direction was established that allowed for “carrying out a large number of projects on lands administered by the Forest Service and BLM. From a perspective of the northern spotted owl, these cumulative effects are mitigated through the design and implementation of the alternatives in this SEIS {referring to the NFP}. Yet, from the perspective taken for the subsequent analysis for a site-specific project, local cumulative effects would be important considerations in the design of site specific alternatives and mitigation.” (FSEIS 1994 pg 3&4-5)

The Medford District Resource Management Plan (RMP) tiered to the NFP and incorporated the standards and guidelines developed to reduce or eliminate significant impacts to the environment, “This Final EIS for the RMP incorporates the analysis in that Final SEIS.” (RMP pg 1-5). The project activities identified in this environmental assessment were designed to incorporate these standards and guidelines.

Project level analysis was completed for this area. The Grave Creek watershed is a 5<sup>th</sup> field watershed and has provided harvestable trees over the past several decades, including:

<b>Timber Sale</b>	<b>Year Harvested</b>	<b>Year Decision Record signed</b>
Low Five		1995
Poor Angora’s Folly	2001-2003	
Mackin Gulch	1990	1989
Tunnel Vision		1991
I-shank Pilot Rock land exchange – Boise Cascade purchased and logged		1996
Fall Creek	1992	1987
Saw Mill Gap	1990	1988
Rock Creek	1984	

Other management activities that have occurred or would occur within this watershed are repair and upgrade of the existing dam and diversion structure at Burma Pond, culvert replacement for Wolf Creek and Last Chance Creek, road improvement on Slate Creek, McCoy Creek Roads, and road decommissioning on Clark Creek Road.

The condition of the watershed was characterized in the Grave Creek Watershed Analysis (USDI 1999) and included an assessment of seral stages. Outside of designated late successional reserves (6% of the watershed), about 21,450 acres (85% of the watershed) are available for timber harvest. Several timber sales remain uncut at this time including Serpent’s Grave, Coyote Pete and King Wolf. Future projects in the planning stages of development include the Five Rogues Timber Sale, Rock Creek culvert replacement, and Shank’s Creek road improvement.

Follow-up treatment is planned for many of these areas to treating slash for fuels hazard reduction and reforestation. The prescribed burning would follow very time and location specific burn plans developed to meet air quality standards. No cumulative effects would be anticipated from burning it would be widely dispersed spatially at the site and watershed levels. In addition, it would be unlikely that all of the proposed burning would take place within the same season, but instead take place over a 2 to 3 year period or longer.

## Chapter 5 – List of Preparers

### 5.0 Agencies and Persons Consulted

Landowners within 1/4 mile of the proposed action and those within the Grave Creek Watershed have been sent notice of this project. A legal advertisement will be placed in local newspapers to announce to the public that the Glendale Resource Area is requesting public comments on the proposed management action. The EA will be available for a 30 day public review period. (Copies of this environmental assessment will be made available upon request.) In addition, notification of this proposal will be sent to the Oregon Department of Fish and Wildlife, the Oregon Dept. of Forestry, county commissioners of the affected county, several environmental groups, and representatives of the timber industry to request their comments. These announcements will be made following completion of this environmental assessment but before a decision is made.

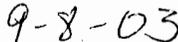
This project was presented at two public meetings. The first public meeting was a meeting for the Five Rogues Timber Sale held in Wolf Creek, Oregon. While this project is not a part of the proposed Five Rogues Timber Sale, a map depicting proposed treatment units was displayed. The second public meeting was specifically for this project. It was held in Sunny Valley, Oregon. The Field Manager will consider all input before making a final decision concerning this proposal. Opinions, concerns and suggestions on the project are welcome.

### 5.1 List of Interdisciplinary Preparers

Sherwood Tubman	Ecosystem Planner	NEPA
Michael Bornstein	Wildlife Biologist	Wildlife
Jim Brimble	Forester	Silviculture, Vegetation
Donni Vogel	Fuels Specialist	Fuels
Dave Eichamer	Forester	Special Forest Products, Noxious Weeds
Rachel Showalter	Botanist	Plants and Fungi
Rose Hanrahan	Hydrologist	Soils, Watershed, Riparian, Fisheries
Dustin Wharton	Engineer	Engineering

Reviewed By:

  
Glendale RA Ecosystem Planner  
for format and adequacy

  
Date

## Reference

USDI 1999. Grave Creek watershed analysis. Bureau of Land Management, Medford, OR.

USDA and USDI. 1994. Record of Decision for amendments to Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl. Portland, OR.

USDI. 1995. Record of decision and resource management plan, Bureau of Land Management, Medford District. Medford, OR.

## Acronyms and Glossary

BLM	Bureau of Land Management
CWD	Coarse Woody Debris
DBH	Diameter at Breast Height
DEQ	Department of Environmental Quality
ESA	Endangered Species Act
GFMA	General Forest Management Area
LSR	Late-successional Reserve
NMFS	National Marine Fisheries Service
NFP	Northwest Forest Plan
ODFW	Oregon Department of Fish and Wildlife
R	Range
RIA	Rural Interface Area
RMP	Resource Management Plan
ROD	Record of Decision
S	Section
SIP	State Implementation Plan (smoke emissions)
T	Township
TPCC	Timber Productivity and Capability Classification
USFWS	US Fish and Wildlife Service

**Air Quality:** A measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.

**Allocation:** Process to specifically assign use between and ration among competing users for a particular area of public land or related waters.

**Alternative:** One of at least two proposed means of accomplishing planning objectives.

**Analysis:** The examination of existing and/or recommended management needs and their relationships to discover and display the outputs, benefits, effects, and consequences of initiating a proposed action.

**Assessment:** A form of evaluation based on the standards of rangeland health, conducted by an interdisciplinary team at the appropriate landscape scale (pasture, allotment, sub-watershed, watershed, etc.) to determine conditions relative to standards.

**Aquatic:** Living or growing in or on the water.

**Area of Critical Environmental Concern (ACEC):** An area of public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life/provide safety from natural hazards.

**Biodiversity:** The variety of life and its processes, and the interrelationships within and among various levels of ecological organization. Conservation, protection, and restoration of biological species and genetic diversity are needed to sustain the health of existing biological systems. Federal resource management agencies must examine the implications of management actions and development decisions on regional and local biodiversity.

**Bryophytes:** Plants of the phylum Bryophyta, including mosses, liverworts, and hornworts, characterized by the lack of true roots, stems and leaves.

**Bureau Status BS (Bureau Sensitive):** Species that could easily become endangered or extinct in a state. Bureau Sensitive species are restricted in range and have natural or human-caused threats to survival. Bureau Sensitive species are not FE, FT, FP, FC, SE, or ST, but are eligible for federal or state listing or candidate status. All anadromous fish species, unless federally listed, proposed, or candidate, are under review and are considered Bureau Sensitive until status is determined.

**Bureau Status BA (Bureau Assessment):** Species which are not presently eligible for official federal or state status but are of concern in Oregon may, at a minimum, need protection or mitigation in BLM activities. These species will be considered as a level of special status species separate from Bureau Sensitive, and are referred to as Bureau Assessment (BA) species.

**Bureau Status BT (Bureau Tracking):** Species which need an early warning to prevent becoming listed as threatened or endangered in the future. It is encouraged that occurrence data is collected on these species for which more information is needed to determine status within the state or which no longer need active management.

**Coarse Woody Debris:** The terms Coarse Woody Debris, Large Woody Material and Large Down Wood are used interchangeably.

**Commercial Thinning:** The removal of generally merchantable trees from an even-aged stand, usually to encourage growth of the remaining trees. See Appendix 4 for further explanation.

**Cultural Resources:** Those resources of historical and archaeological significance.

**Cumulative Effects:** Those effects on the environment that result from the incremental effect of the action when added to past, present, and reasonably foreseeable future actions regardless of what agency or person(s) undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

**Defer:** postponement of road treatment to a later date, at which time the road and treatment would be re-evaluated.

**Density Management:** objectives of the treatment is to reduce stand stocking to maintain or enhance the following; forest/stand health, stand structure and function for wildlife, and stand characteristics for purposes other than growth and yield. One such application is to reduce lateral fuels when potential wildfires occur. There are two types of density management – commercial and non-commercial. See appendix 4 for further explanation.

**Dispersal Habitat:** Habitat that supports the life needs of an individual animal during dispersal. Generally satisfies needs for foraging, roosting, and protection from predators.

**Diversity:** The aggregate of species assemblages (communities), individual species, and the genetic variation within species and the processes by which these components interact within and among themselves. The elements of diversity are: 1. community diversity (habitat, ecosystem); 2. species diversity; and 3. genetic diversity within a species. All three change over time.

**Ecosystem:** A system made up of a community of animals, plants, and micro-organisms and its interrelated physical and chemical environment.

**Endangered Species:** Any animal or plant species in danger of extinction throughout all of a significant portion of its range. These species are listed by the U. S. Fish and Wildlife Service.

**Floodplain:** A plain along a stream or river onto which the flow spreads at flood stage.

**Formation:** The primary unit in stratigraphy consisting of a succession of strata useful for mapping or description. Most formations possess certain lithologic features that may indicate genetic relationships.

**Fuel hazard:** capability of fuels to carry a fire

**Fire risk:** probability of ignition

**General Forest Management Area:** Forest land managed on a regeneration harvest cycle of 70-110 years. A biological legacy of six to eight green trees per acre would be retained to assure forest health. Commercial thinning would be applied where practicable and where research indicates there would be gains in timber production.

**Guideline:** Practices, methods, techniques and considerations used to ensure that progress is made in a way and at a rate that achieves the standard(s).

**Habitat:** A specific set of physical conditions in a geographic area(s) that surrounds a single species, a group of species, or a large community. In wildlife management, the major components of habitat are food, water, cover, and living space.

**Impact:** Synonymous with effects. Impacts may include ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Impacts may also include those resulting from actions which may have both beneficial and detrimental (adverse) effects. Impacts may be considered as direct, indirect, or cumulative:

**Direct:** Impacts caused by an action occurring at the same time and place.

**Indirect:** Impacts caused by the proposed action and occurring later in time or farther removed in distance, but are still reasonably foreseeable.

**Cumulative:** Those which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.

**Intermittent Stream:** Seasonal stream. A stream that flows only at certain times of the year when it receives water from springs or from some surface source, such as melting snow in mountainous areas.

**Invertebrate:** Any animal without a backbone or spinal column.

**Late-Successional Habitat:** Forest seral stages greater than 80 years of age, which include early and late mature and old-growth stands (This includes the definition provided in the NFP for late successional forest as forest seral stages which include mature and old-growth age classes).

**Late-Successional Reserve:** A forest in its mature and /or old-growth stages that has been reserved (See Old-growth Forest and Succession). FEMAT

**Long Term:** more than one hundred years.

**Matrix:** Federal lands outside of reserves, withdrawn areas, and Managed Late-Successional areas. FEMAT

**Monitoring:** A process of collecting information to evaluate if objectives and anticipated or assumed results of a management activity or plan are being realized or if implementation is proceeding as planned.

**Noxious Weeds:** Those plants which are injurious to public health, agriculture, recreation, wildlife, or any public or private property.

**Old-Growth Forest:** A forest stand usually at least 180-220 years old with moderate to high canopy closure; a multi-layered, multi-species canopy dominated by large overstory trees; high incidence of large trees, some with broken tops and other indications of old and decaying wood (decadence); numerous large snags; and heavy accumulations of wood, including large logs on the ground.

**Organic Matter:** Plant and animal residues accumulated or deposited at the soil surface; the organic fraction of the soil that includes plant and animal residues at various stages of decomposition; cells and tissues of soil organisms, and the substances synthesized by the soil population.

**Outstanding:** Standing out among others of its kind; distinguished; excellent.

**Perennial Stream:** A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

**Permit:** A short-term, revocable authorization to use public lands for specific purposes.

**Prescribed Fire:** Controlled application of fire to natural fuels under conditions of weather, fuel moisture, and soil moisture that will allow confinement of the fire to a predetermined area and, at the same time, will produce the intensity of heat and rate of spread required to accomplish certain planned benefits to one or more objectives to wildlife, livestock, and watershed values. The overall objectives are to employ fire scientifically to realize maximum net benefits at minimum environmental damage and acceptable cost.

**Raptors:** Birds of prey, such as the eagle, falcon, hawk, owl, or vulture.

**Riparian Habitat:** Riparian habitat is defined as an area of land directly influenced by permanent (surface or subsurface) water. They have visible vegetation or physical characteristics reflective of permanent water influence. Lake shores and stream-banks are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil.

**Riparian Vegetation:** Plants adapted to moist growing conditions along streams, waterways, ponds, etc.

**Route:** A path, way, trail, road, or other established travel corridor.

**Sensitive Species:** Those species that (1) have appeared in the Federal Register as proposed for classification and are under consideration for official listing as endangered or threatened species or (2) are on an official state list or (3) are recognized by the BLM as needing special management to prevent their being placed on Federal or state lists.

**Seral Stages:** The series of relatively transitory plant communities that develop during ecological succession from bare ground to climax stage.

**Short Term:** 10-20 years.

**Silvicultural System:** A planned sequence of treatments or prescriptions over the entire life of a forest stand needed to meet management objectives.

**Soil Moisture:** Water contained in the soil; commonly used to describe water in the soil above the water table.

**Special Status Species:** Wildlife and plant species either Federally listed or proposed for listing as endangered or threatened; state-listed or BLM determined priority species.

**Threatened Species:** Any animal or plant species likely to become endangered within the foreseeable future throughout all of a significant portion of its range. These species are listed by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service in accordance with the 1973 Endangered Species Act and published in the Federal Register.

**Timber Management:** A general term for the directing, managing or controlling of forest crops and stand of trees.

**Timber Production:** The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use other than for fuel wood.

**Topography:** The accurate and detailed description of a place.

Uplands: Lands that exist above the riparian/wetland area, or active flood plains of rivers and streams; those lands not influenced by the water table or by free or unbound water; commonly represented by the toe slopes, alluvial fans, side slopes, shoulders and ridges of mountain and hills.

Vertebrate Species: Any animal with a backbone or spinal column.

Watershed: All land and water within the confines of a drainage divide.

Watershed Analysis: A systematic procedure for characterizing watershed and ecological processes to meet specific management and social objectives. Watershed analysis provides a basis for ecosystem management planning.

Way: A path, trail, or other established travel corridor.

Wetlands: Lands including swamps, marshes, bogs, and similar areas, such as wet meadows, river overflows, mud flats, and natural ponds.

Wilderness: Undeveloped federal land retaining its primeval character and influence without permanent improvements or human habitation.

Wilderness Area: Areas designated by congressional action under the 1964 Wilderness Act.

Wilderness is defined as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness areas are protected and managed to preserve their natural conditions, which generally appear to have been affected primarily by the forces of nature with the imprint on human activity substantially unnoticeable; have outstanding opportunities for solitude or for a primitive and confined type of recreation; include at least 5,000 acres or are of sufficient size to make practical their preservation, enjoyment, and use in an unimpaired condition; and may contain features of scientific, education, scenic, or historical value as well as ecological and geological interest.

Wildfire: Any wildland fire that does not meet management objectives, thus requiring a fire suppression response. Once declared a wildfire, the fire can no longer be declared a prescribed fire.

## Appendix A: Proposed Prescriptions

Table A-1 describes the conditions under which each type of prescription would generally be used. Riparian Reserve areas occur within many of the proposed treatment units. Management recommendations for riparian reserves would be implemented where ever they occur. Table A-2 and the discussions below summarize and compare the twelve proposed vegetation management treatment prescriptions.

<b>Table A- 1: Prescription Summary Table by Objectives and Land Use Allocation</b>					
<b>Rx #</b>	<b>Description of stand where prescription would be most applicable</b>	<b>Objectives of the prescription</b>	<b>Appropriate Land Use Allocations within project area</b>	<b>Relative Fuel Loading created by this treatment (compared to other proposed treatments)</b>	<b>Remarks</b>
<b>#1) 100% Brushing without Conifer Spacing</b>	<ul style="list-style-type: none"> <li>-Uniform, predominantly one size-class stand &lt;15 years of age, where brush competition can still be a problem to the establishment of conifer regeneration</li> <li>-Stands dominated by brush species</li> <li>-Ave. DBH of dominant conifers generally &lt; 2 inches</li> </ul>	<ul style="list-style-type: none"> <li>-Establishment of conifers</li> <li>- Reduce competition to conifers from hardwoods and brush.</li> <li>-Increased diameter and height growth of conifers.</li> <li>-Keep fuels from getting large</li> </ul>	-All land use allocations	-Due to the smaller size class, this prescription would generally have a low level (of the proposed treatments) of fuel loading after treatment.	-One or more brushing/ thinning treatments would probably be required to achieve desired future stand conditions (based on LUA)
<b>#2) 100% Brushing with Conifer Spacing</b>	<ul style="list-style-type: none"> <li>-Predominantly one size-class stand &lt;15 years of age or understory of a previously partial cut stand, where brush competition can still be a problem to the establishment of conifer regeneration</li> <li>-Stands dominated by brush species but containing areas of clumpy, sometimes advanced, conifer regeneration</li> <li>-Ave. DBH of dominant conifers &lt; 4 inches</li> <li>-Treatment of slash is to be done</li> </ul>	<ul style="list-style-type: none"> <li>-Establishment of conifers</li> <li>-Reduce competition to selected conifers from excess conifers, hardwoods and brush.</li> <li>-Increased diameter and height growth of conifers.</li> <li>-Reduce the amount of ladder fuels and risk of wildfire.</li> </ul>	-All land use allocations	-Due to the smaller size class, this prescription would have the low to medium levels of fuel loading after treatment.	-One or more brushing/ thinning treatments would probably be required to achieve desired future stand conditions (based on LUA)

<p><b>#3) Radius Brushing with Conifer Spacing</b></p>	<ul style="list-style-type: none"> <li>-Predominantly one size-class stand &lt;15 years of age, where brush competition can still be a problem to the establishment of conifer regeneration.</li> <li>-Stands dominated by brush (not ceanothus spp. or tanoak) but containing areas of clumpy, sometimes advanced, conifer regeneration</li> <li>- Stands containing areas without conifers</li> <li>- Ave. DBH of dominant conifers &lt;4 inches</li> </ul>	<ul style="list-style-type: none"> <li>-Establishment of conifers</li> <li>-Reduce competition to selected conifers from excess conifers, hardwoods and brush.</li> <li>-Increased diameter and height growth of conifers -Minimize the amount of slash created by brushing treatment</li> <li>-Reduction of brushing costs</li> </ul>	<ul style="list-style-type: none"> <li>-All land use allocations</li> </ul>	<ul style="list-style-type: none"> <li>-Due to the smaller size class, this prescription would have the low to medium levels of fuel loading after treatment</li> <li>-Treated stands may have areas of uncut brush and hardwoods</li> </ul>	<ul style="list-style-type: none"> <li>-One or more brushing/ thinning treatments would probably be required to achieve desired future stand conditions (based on LUA)</li> </ul>
<p><b>#4) Pre-commercial thinning with 100% brushing: Narrow Spacing</b></p>	<ul style="list-style-type: none"> <li>-Overstocked stand &lt;30 years of age where brush is a major component of the stand but is not currently a problem for conifer survival</li> <li>-Brush competition is reducing growth of conifers</li> <li>-Conifers are of a size that thinning to a wider spacing may allow brush and conifer wildings to again become major competitors</li> <li>-Treatment of slash may be done</li> </ul>	<ul style="list-style-type: none"> <li>-Reduce competition from excess conifers, hardwoods, and brush</li> <li>-Stand differentiation where it does not exist</li> <li>-Increased diameter and height growth of conifers</li> <li>-Shade brush out of stand at early age or smaller size</li> <li>-Maintain options for future commercial thin</li> </ul>	<ul style="list-style-type: none"> <li>- All land use allocations, especially Matrix</li> </ul>	<ul style="list-style-type: none"> <li>-Fuel loadings would be medium to high after this treatment</li> </ul>	<ul style="list-style-type: none"> <li>-One or more brushing/ thinning treatments may be required to achieve desired future stand conditions (based on LUA)</li> </ul>
<p><b>#5 Pre-commercial thinning with 100% brushing: Wide Spacing</b></p>	<ul style="list-style-type: none"> <li>-Overstocked stand &lt;30 years of age where brush is a major component of the stand but is not currently a problem for conifer survival</li> <li>-Brush competition is reducing growth of conifers</li> <li>-Conifers are of a size that they would be able to out-grow brush when thinned at a wide spacing</li> <li>-Treatment of slash is probable</li> </ul>	<ul style="list-style-type: none"> <li>-Reduce competition from excess conifers, hardwoods, and brush</li> <li>-Stand differentiation where it does not exist</li> <li>-Increased diameter and height growth of conifers</li> <li>-Reduce ladder fuels</li> <li>-Shade brush out of stand</li> <li>-Thin trees at a spacing wide enough so that burning of handpiles does not pose a risk to leave trees</li> </ul>	<ul style="list-style-type: none"> <li>- All land use allocations, especially reserves</li> </ul>	<ul style="list-style-type: none"> <li>-Fuel loadings would be high after this treatment</li> </ul>	<ul style="list-style-type: none"> <li>-One or more brushing/ thinning treatments may be required to achieve desired future stand conditions (based on LUA)</li> </ul>

<p><b>#6) Pre-commercial thinning with cut brush/hardwoods greater than ½ the height of conifer: Narrow Spacing</b></p>	<p>-Overstocked stand &lt;30 years of age where brush is present in the stand but is not currently a problem for conifer survival          -Competition from excess conifers is reducing growth of desired conifers more than competition from brush and hardwoods          -Conifers are of a size that thinning to a wider spacing may allow brush and conifer wildings to again become major competitors          -Some stand differentiation is occurring          -Treatment of slash is not probable due to factors such as location, site conditions, rainfall</p>	<p>-Reduce competition from excess conifers, hardwoods, and brush          -Stand differentiation where it does not exist          -Increased diameter and height growth of conifers          -Some reduction in ladder fuels          -Shade brush out of portions of the stand          -Maintain options for future commercial thin          -Maintain species diversity          -Reduced pre-commercial thinning costs</p>	<p>-All land use allocations, especially Matrix</p>	<p>-Fuel loadings would be medium to high after this treatment          -Treated stands may have areas of uncut brush and hardwoods</p>	<p>-One or more brushing/ thinning treatments may be required to achieve desired future stand conditions (based on LUA)</p>
<p><b>#7) Pre-commercial thinning with cut brush/hardwoods greater than ½ the height of conifer: Wide Spacing</b></p>	<p>-Overstocked stand &lt;30 years of age where brush is present in the stand but is not currently a problem for conifer survival          -Competition from excess conifers is reducing growth of desired conifers more than competition from brush and hardwoods          -Conifers are of a size that thinning to a wider spacing would not allow brush and conifer wildings to again become major competitors          -Some stand differentiation is occurring          -Treatment of slash is not probable due to factors such as location, site conditions, rainfall</p>	<p>-Reduce competition from excess conifers, hardwoods, and brush          -Stand differentiation where it does not exist          -Increased diameter and height growth of conifers          -Some reduction in ladder fuels          -Shade brush out of portions of the stand          -Maintain species diversity          -Reduced pre-commercial thinning costs</p>	<p>-All land use allocations, especially reserves</p>	<p>-Fuel loadings would be medium to high after this treatment          -Treated stands may have areas of uncut brush and hardwoods</p>	<p>-One or more brushing/ thinning treatments may be required to achieve desired future stand conditions (based on LUA)</p>
<p><b>#8) Pre-commercial thinning based on the spacing of tree crowns: Narrow Spacing</b></p>	<p>-Overstocked stand &lt;30 years of age where brush is present in the stand but is not currently a problem for conifer survival          -Competition from excess conifers is reducing growth of desired conifers more than competition from brush and hardwoods          -Conifers are of a size that thinning to a wider spacing may allow brush and conifer wildings to again become major competitors          -Stand differentiation is occurring          -Height / Diameters ratios of conifers are high but some conifers would respond to release</p>	<p>-Reduce competition from excess conifers, hardwoods, and brush          -Stand differentiation where it does not exist          -Increased diameter and height growth of conifers          -Some reduction in ladder fuels          -Shade brush out of portions of the stand          -Maintain species diversity          -Variable spacing of leave conifers          -Utilization of available</p>	<p>-All land use allocations</p>	<p>-Fuel loadings would be medium to high after this treatment          -Treated stands may have areas of uncut brush and hardwoods</p>	<p>-One or more brushing/ thinning treatments may be required to achieve desired future stand conditions (based on LUA)</p>

		<ul style="list-style-type: none"> <li>growing space</li> <li>-Retention of visuals</li> <li>-Mutual support of conifers</li> <li>-Somewhat higher (compared to wide spacing) conifer stocking so that some loss of trees would still result in meeting target stocking levels</li> </ul>			
<b>#9) Pre-commercial thinning based on spacing of tree crowns: Wide Spacing</b>	<ul style="list-style-type: none"> <li>-Overstocked stand &lt;30 years of age where brush is present in the stand but is not currently a problem for conifer survival</li> <li>-Competition from excess conifers is reducing growth of desired conifers more than competition from brush and hardwoods</li> <li>-Conifers are of a size that thinning to a wider spacing would not allow brush and conifer wildings to again become major competitors</li> <li>-Stand differentiation is occurring</li> <li>-Treatment of slash may be desired</li> </ul>	<ul style="list-style-type: none"> <li>-Reduce competition from excess conifers, hardwoods, and brush</li> <li>-Stand differentiation where it does not exist</li> <li>-Increased diameter and height growth of conifers</li> <li>-Some reduction in ladder fuels</li> <li>-Shade brush out of portions of the stand</li> <li>-Maintain species diversity</li> <li>-Variable spacing of leave conifers</li> <li>-Utilization of available growing space</li> <li>-Retention of visuals</li> </ul>	-All land use allocations	<ul style="list-style-type: none"> <li>-Fuel loadings would be high after this treatment</li> <li>-Treated stands may have areas of uncut brush and hardwoods</li> </ul>	-Additional brushing/ thinning treatments would probably not be required to achieve future desired stand conditions (based on LUA)
<b>#10) Brushing by use of grinding head mounted on a tracked vehicle</b>	<ul style="list-style-type: none"> <li>-Uniform, predominantly one size-class stand &lt;15 years of age, where brush competition can still be a problem to the establishment of conifer regeneration</li> <li>-Stands dominated by brush species</li> <li>-Ave. DBH of dominant conifers generally &lt; 2 inches</li> <li>-Slopes &lt;45%</li> </ul>	<ul style="list-style-type: none"> <li>-Establishment of conifers</li> <li>-Reduce competition to conifer from hardwoods and brush.</li> <li>-Increased diameter and height growth of conifers.</li> <li>-Immediate treatment of fuels</li> </ul>	-All land use allocations	<ul style="list-style-type: none"> <li>-Fuel loadings would be medium to high following this treatment but fuels would be in small pieces on the ground with a greatly reduced potential of a large fire occurring</li> <li>-Fuels would be in a condition for rapid decomposition</li> </ul>	-One or more brushing/ thinning treatments would probably be required to achieve desired future stand condition (based on LUA)

<p><b>#11) Pre-commercial thinning by use of grinding head mounted on a tracked vehicle</b></p>	<ul style="list-style-type: none"> <li>-Overstocked stand &lt;30 years of age where brush may be major component of the stand but is not currently a problem for conifer survival</li> <li>-Brush competition is reducing growth of conifers</li> <li>-Treatment of slash desired</li> <li>-Slopes &lt;45%</li> </ul>	<ul style="list-style-type: none"> <li>-Reduce competition to conifers from excess conifers, hardwoods and brush.</li> <li>-Increased diameter and height growth of conifers.</li> <li>-Immediate treatment of fuels</li> </ul>	<p>-All land use allocations</p>	<ul style="list-style-type: none"> <li>-Fuel loadings would be high following this treatment but fuels would be in small pieces on the ground with a greatly reduced potential of a large fire occurring</li> <li>-Fuels would be in a condition for rapid decomposition</li> </ul>	<ul style="list-style-type: none"> <li>-One or more brushing/ thinning treatments may be required to achieve desired future stand conditions (based on LUA)</li> </ul>
<p><b>#12) Pruning of conifers and hardwoods</b></p>	<ul style="list-style-type: none"> <li>-Pre-commercially thinned stand or stand to be pre-commercially thinned (density management)</li> <li>-Stand where pruning will not substantially decrease vigor of treated trees</li> <li>-For wood quality: stands with conifers generally 4" dbh and less; vigorous, fast growing stands, trees tall enough so that a full lift (10') can be done</li> <li>-For diversity: stands where a variety of bole form is desired; where it is desirable to maintain light on the forest floor for a longer period of time; where flyways are desired</li> <li>-For blister rust control: stands containing young sugar pine, especially those already infected w/rust</li> </ul>	<ul style="list-style-type: none"> <li>-Improve wood quality within Matrix units (increase amount of clear wood)</li> <li>-Increase/maintain structural/habitat diversity</li> <li>-Increase/maintain species diversity (light dependent species)</li> <li>-Reduction of fuel ladders</li> <li>-Control of white pine blister rust on sugar pine</li> </ul>	<p>-All land use allocations</p>	<ul style="list-style-type: none"> <li>-Fuel loadings created by this treatment would be low compared to other proposed cutting treatments</li> </ul>	<ul style="list-style-type: none"> <li>-Additional brushing/ thinning treatments would probably not be required to achieve future desired stand conditions (based on LUA)</li> <li>-Additional treatments may be required if pruning is done to control white pine blister rust on sugar pine</li> </ul>

**Table A- 2: Vegetation Treatment Prescriptions** (see also chapter 2)

Rx #	Conifer Spacing	Hard wood Spacing	Brushing	¼ acre reserve – no treatment areas	Riparian Treatment	Land Use Allocation where this Rx could be applied
<b>#1) 100% Brushing without Conifer Spacing</b>	No spacing of conifers to be done	No spacing of hardwoods to be done	100% brushing	Within unentered stands; selected areas on a unit by unit basis	25' no cut area each side of channels showing signs of annual scour; retention of 2 main stems of madrone per bud	All
<b>#2) 100% Brushing with Conifer Spacing</b>	8' x8' to 14' x14'	No spacing of hardwoods to be done	100% brushing	Within unentered stands; selected areas on a unit by unit basis	25' no cut area each side of channels showing signs of annual scour; retention of 2 main stems of madrone per bud	All
<b>#3) Radius Brushing with Conifer Spacing</b>	10' x 10' to 14' x14'	No spacing of hardwoods to be done	Within cutting zone of selected conifers and hardwoods	Within unentered stands; selected areas on a unit by unit basis	25' no cut area each side of channels showing signs of annual scour; retention of 2 main stems of madrone per bud	All
<b>#4) Pre-commercial thinning with 100% brushing: Narrow Spacing</b>	8' x8' to 14' x 14'	40' x40'; released hardwoods to be left where conifers are absent	100% brushing	Within unentered stands; selected areas on a unit by unit basis	25' no cut area each side of channels showing signs of annual scour; retention of 2 main stems of madrone per bud	All
<b>#5 Pre-commercial thinning with 100% brushing: Wide Spacing</b>	15' x15' to 20' x20'	40' x40'; released hardwoods to be left where conifers are absent	100% brushing	Within unentered stands; selected areas on a unit by unit basis	25' no cut area each side of channels showing signs of annual scour; retention of 2 main stems of madrone per bud	All
<b>#6) Pre-commercial thinning with cut brush/hardwoods greater than ½ the height of conifer: Narrow Spacing</b>	8' x8' to 14' x 14'	40' x40'; released hardwoods to be left where conifers are absent	Within cutting zone of selected conifers and hardwoods	Within unentered stands; selected areas on a unit by unit basis	25' no cut area each side of channels showing signs of annual scour; retention of 2 main stems of madrone per bud	All
<b>#7) Pre-commercial thinning with cut brush/hardwoods greater than ½ the</b>	15' x15' to 22' x20'	40' x40'; released hardwoods to be left where conifers are	Within cutting zone of selected conifers and hardwoods	Within unentered stands; selected areas on a unit by unit basis	25' no cut area each side of channels showing signs of annual scour; retention of 2 main stems of madrone per	All

<b>height of conifer: Wide Spacing</b>		absent			bud	
<b>#8) Pre-commercial thinning based on the spacing of tree crowns: Narrow Spacing</b>	2-6' between crowns	40' x40' ; released hardwoods to be left where conifers are absent	100% brushing	Within unentered stands; selected areas on a unit by unit basis	25' no cut area each side of channels showing signs of annual scour; retention of 2 main stems of madrone per bud	All
<b>#9) Pre-commercial thinning based on spacing of tree crowns: Wide Spacing</b>	4-8' between crowns	40' x40' ; released hardwoods to be left where conifers are absent	100% brushing	Within unentered stands; selected areas on a unit by unit basis	25' no cut area each side of channels showing signs of annual scour; retention of 2 main stems of madrone per bud	All
<b>#10) Brushing by use of grinding head mounted on a tracked vehicle</b>	No spacing of conifers to be done, some incidental spacing would occur as necessary for movement of vehicle	40' x40' ; released hardwoods to be left where conifers are absent	100% brushing	Within unentered stands; selected areas on a unit by unit basis	Treatment by chainsaw, small motor driven cutting device or handtools within areas not treated by machine. 25' no cut area each side of channels showing signs of annual scour; retention of 2 main stems of madrone per bud	Matrix, outer half of Riparian Reserves
<b>#11) Pre-commercial thinning by use of grinding head mounted on a tracked vehicle</b>	14' x14' to 20' x20'	40' x40' ; released hardwoods to be left where conifers are absent	100% brushing	Within unentered stands; selected areas on a unit by unit basis	Treatment by chainsaw, small motor driven cutting device or handtools within areas not treated by machine. 25' no cut area each side of channels showing signs of annual scour; retention of 2 main stems of madrone per bud	Matrix, outer half of Riparian Reserves
<b>#12) Pruning of conifers and hardwoods</b>	variable	variable	N/A	Within unentered stands; selected areas on a unit by unit basis	25' no treatment area each side of channels showing signs of annual scour	All

**Table A- 3: Proposed Vegetation treatments**

TRSU	Key Number	Unit Name	Unit Acres	LUA	Vegetation management Treatment(s) *	Comments
32-4-34.004	130518	Last Chance Creek	58	GFMA	Brushing, pct	Pct-12ac
33-4-3.016	158574	Waggoner 3-6	16	GFMA	Brushing	
33-4-3.023	158581	---	6	GFMA	Brushing	Powerline
33-4-17.011	159211	Lil Boulder 17-4A	11	GFMA	Brushing	
33-4-21.007	158728	Gravey 7T	7	GFMA	Brushing	
33-4-27.004	158847	Pleasant Grave 27-3A	12	CONN	Brush w/spacing	Wires in upper part of unit
33-4-27.005	158848	Pleasant Grave 27-3B	4	CONN	Brushing	
33-4-30.003	158880	Baker Creek	18	GFMA	Brushing	
33-4-30.004	158881	Baker	5	GFMA	Brushing	
33-5-4.010	132270	Leavens Gulch	12	GFMA	Brushing	
33-5-4.030	133068	---	3	GFMA	Brushing	
33-5-10.004	132286	---	32	GFMA	Brushing	
33-5-10.007	137801	---	12	GFMA	Brushing	
33-5-14.019	132307	Dutch Herman #19	14	GFMA	Brushing	
33-5-15.006	134653	---	3	GFMA	Brushing	
33-5-15.017	132313	Dutch Herman #9	13	GFMA	Brushing, pruning	
33-5-15.018	132314	Dutch Herman #9	20	GFMA	Brushing, pruning	
33-5-20.006	137479	Robinson Gulch E	16	GFMA	Brushing	
33-5-25.004	137778	---	14	GFMA	Brushing	
33-5-27.010	134977	Coyote Creek #12	28	GFMA	Brushing 100%	
33-5-28.002	134690	Peter's Pride B/O #2	4	GFMA	Brushing	
33-5-32.015	137598	Miller Gulch #7	12	GFMA	Brushing w/spacing, pruning	
33-5-35.006	132014	Eastman Gulch B/O #6	6	GFMA	Brushing	
34-5-3.003	137469	Eastman Gulch B/O 4	47	GFMA	100% brushing w/ narrow spacing	Mistletoe on ponderosa pine and incense cedar
34-5-3.010	137473	Eastman Gulch #3	20	GFMA	Brushing	
34-5-11.021	113739	7 Come 11	4	GFMA	brushing	
34-5-11.022	113740	7 Come 11	5	GFMA	brushing	
34-5-11.025	133596	7 Come 11	4	GFMA	brushing	
34-5-11.026	133597	7 Come 11	3	GFMA	brushing	
33-6-10.002	134078	---	39	GFMA	Brushing	T&E plant 2001 survey
33-6-19.002	134103	---	139	GFMA	Brushing	
33-6-19.006	134107	---	123	GFMA	Brushing	
33-6-19.010	133163	---	98	GFMA	Brushing	
33-6-31.006	134205		12	GFMA	Brushing	

33-6-31.012	135245	Malone Peak #8	33	GFMA	Brushing	
33-6-31.021	133188	---	7	GFMA	Brushing	
33-6-33.001	137295	Flume Descent #3	22	GFMA	100% brushing w/spacing, pruning	
33-6-33.012	132395	---	41	GFMA	100% brushing w/spacing	
33-6-34.001	131675	Mackin Gulch 2A/2B	35	GFMA	100% brushing w/spacing, pruning	
33-6-35.008	137294	Mackin Gulch 5	18	GFMA	100% brushing w/spacing, pruning	
33-7-33.002	134137	---	12	GFMA	Brushing	
34-6-1.011	135111	Salmon Creek #2	15	GFMA	Brushing, pruning	
34-6-1.012	135112	Salmon Creek #5	22	GFMA	100% brushing w/ spacing, pruning	
34-6-1.013	135113	Salmon Creek #6	22	GFMA	100% brushing w/spacing, pruning	
34-6-7.005	110278	Brimstone #23	13	GFMA	100% brushing w/spacing, pruning	
34-6-19.013	112728	Brimstone Return #8	10	GFMA	Brushing	T&E plant 1997 survey
34-6-19.018	112733	Brimstone Return #6	19	GFMA	Brushing	
33-7-7.006	137313	---	43	GFMA	Brushing	
33-7-9.002	137318	---	11	GFMA	Brushing	
33-7-13.014	137429	Sugarloaf #1	47	GFMA	Brushing	
33-7-13.015	135424	South Cow Salvage #1	5	GFMA	Brushing	
33-7-15.001	134128	---	24	CONN	Brushing	
33-7-17.001	134223	---	24	GFMA	Brushing	
33-7-33.304	115587	Archer McKnabe B/O #2	7	GFMA	Brushing	
33-7-34.304	116040	Archer McKnabe B/O #2	3	GFMA	Brushing	
34-7-1.009	113748	Angora Goat 1-2B	27	GFMA	Brushing	
34-7-3.009	112016	Archer McKnabe B/O #3	35	GFMA	Brushing	
34-7-3.010	112012	Archer McKnabe B/O #3	35	GFMA	Brushing	
34-7-3.011	113383	Archer McKnabe B/O #2	27	GFMA	Brushing	
34-7-4.001	112375	Centennial Ridge 4-1A+B	34	GFMA	Brushing, pruning	
34-7-4.006	115583	Archer McKnabe B/O #2	17	GFMA	Brushing	
34-7-15.002	110383	Angora Goat 15-4B	46	GFMA	Brushing	
34-7-15.010	112770	Butte Creek #7	11	GFMA	Brushing, pruning	
32-4-34.009	131902	Devils Flat	26	GFMA	Pct, pruning	
32-4-35.005	156263	Waggoner 35-6	45	GFMA	Pct, pruning	
32-4-35.009	156267	Wagner Gap	23	GFMA	Pct, pruning	
32-4-35.010	156268	Wagner Gap	45	GFMA	Pct, pruning	
32-4-35.013	156271	Waggoner 35-8	25	GFMA	Pct, pruning	
32-4-35.014	156272	Waggoner 35-8	7	GFMA	Pct, pruning	
32-4-35.018	156276	Waggoner 35-2	22	GFMA	Pct, pruning	
32-4-35.027	156285	Wagner Gap SSB	19	GFMA	Pct, pruning	
33-4-3.017	158575	Chance 3 #1	7	GFMA	Pct, pruning	Patchy stocking
33-4-3.019	158577	Waggoner 3-7	27	GFMA	Pct, pruning	
33-4-3.021	158579	Waggoner 3-1	11	GFMA	Pct, pruning	
33-4-3.025	158583	Chance 3 #1	4	GFMA	Pct, pruning	

33-4-9.016	158601	Boulder Removal #1	20	GFMA	Pct, pruning	
33-4-11.022	158704	Upper Grave Creek	22	GFMA	Pct, pruning	
33-4-11.038	160149	Swamp Divide	12	GFMA	Pct, pruning	
33-4-11.041	160152	Upper Grave Creek	2	GFMA	Pct, pruning	
33-4-15.001	158764	Grave Ford 2/3	57	GFMA	Pct, pruning	
33-4-15.010	158773	Grave Ford 8B	10	GFMA	Pct, pruning	
33-4-17.005	159205	Lil Boulder 17-5	31	GFMA	Pct, pruning	
33-4-17.008	159208	Little Boulder A	10	GFMA	Pct, pruning	
33-4-17.012	159212	Lil Boulder 17-4B	6	GFMA	Pct, pruning	
33-4-17.019	159219	---	37	GFMA	Pct, pruning	
33-4-21.001	158722	Gravey #8	41	GFMA	Pct, pruning	
33-4-21.006	158727	Gravey 7T/7C	148	GFMA	Pct, pruning	
33-4-29.001	158869	Slate Creek	26	GFMA	Pct, pruning	
33-4-29.008	158876	Grave 29	14	GFMA	Pct, pruning	
33-4-29.009	158877	Grave 29	12	GFMA	Pct, pruning	
33-4-30.001	158878	Baker Creek	17	GFMA	Pct, pruning	
33-4-31.014	158897	Baker Creek	15	GFMA	Pct, pruning	
33-4-33.033	158954	Blackeye Salvage	11	GFMA	Pct, pruning	
33-5-20.003	137476	---	26	GFMA	Pct, pruning	
33-5-20.017	137091	---	15	GFMA	Pct, pruning	
33-5-22.003	137690	Coyote Creek 3	6	GFMA	Pct, pruning	
33-5-22.012	137697	---	40	GFMA	Pct, pruning	
33-5-23.008	137761	King Mt. #1	22	GFMA	Pct, pruning	Contains test site
33-5-23.013	137657	Coyote Creek #6	20	GFMA	Pct, pruning	
33-5-26.010	137650	Coyote Creek #6	10	GFMA	Pct, pruning	
33-5-26.013	137652	Coyote Creek #15	17	GFMA	Pct, pruning	
33-5-26.018	133105	---	1	GFMA	Pct, 100% brush, pruning	Offsite pine
33-5-27.013	132345	Coyote Creek #13	13	GFMA	Pct, pruning	
33-5-28.001	134689	Peter's Pride B/O #1	36	GFMA	Pct, pruning	
33-5-31.014	133120	Sunny Bum Salvage	41	GFMA	Pct, pruning	
33-5-35.010	137641	St. Paul #1	10	GFMA	Pct, pruning	Offsite pine
34-5-9.004	116280	Daisy Grave 9-1	35	GFMA	Pct, pruning	
34-5-15.006	110216	McCoy's Grave 15-2C	18	GFMA	Pct, pruning	
34-5-15.016	110225	McCoy's Grave 15-15A	7	GFMA	Pct, pruning	
33-6-19.001	134102	---	54	GFMA	Pct, pruning	
33-6-27.002	134153	London Peak #2	22	GFMA	Pct, pruning	
34-6-1.014	135114	Salmon Creek #4	22	GFMA	Pct, pruning	
34-6-1.016	133274	---	7	GFMA	Pct, pruning	
33-7-15.003	134130	---	40	CONN	Pct, pruning	
33-7-15.011	136644	---	4	CONN	Pct, pruning	
33-7-21.003	137385	---	31	GFMA	Pct, pruning	T&E plant 2000 survey

33-7-25.006	137267	Sugarloaf#3	15	GFMA	Pct, pruning	
33-7-29.009	135302	Hungry Reuben #2	8	GFMA	Pct, pruning	
33-7-29.015	133254	Rock Creek A	10	GFMA	Pct, pruning	
33-7-33.305	115588	Archer McKnab B/O # 1&5	38	GFMA	Pct, pruning	
34-7-3.007	111386	---	19	GFMA	Pct, pruning	
34-7-5.007	113822	Centennial Ridge 5-3A	24	GFMA	Pct, pruning	
34-7-5.008	113823	Centennial Ridge 5-3B	19	GFMA	Pct, pruning	
34-7-6.005	116170	---	15	GFMA	Pct, pruning	T&E plant 1999 survey
34-7-11.011	113818	Angora Goat	16	GFMA	Pct, pruning	
34-7-13.020	112761	Brimstone 18	16	GFMA	Pct, pruning	
34-7-15.006	110385	Angora Goat 15-2	26	GFMA	Pct, pruning	
32-4-35.028	156286	Wagner Gap	49	GFMA	Pruning	
33-4-15.014	158777	Grave Ford 8A	65	GFMA	Pruning	Within fuels unit
33-4-9.015	158600	Lil Boulder 9-2	23	GFMA	Pruning	
33-4-11.002	158684	Waggoner 11-17	15	GFMA	Pruning	
33-4-11.015	158697	Swamp Divide #1	14	GFMA	Pruning	
33-4-33.016	158937	Blackeye Salvage	55	GFMA	Pruning	
34-4-7.020	155637	Lucky Toad II B/O 7-1	10	GFMA	Pruning	
34-4-7.021	155638	Lucky Toad II B/O 7-4A	18	GFMA	Pruning	
33-5-4.006	132267	Speaker Salvage	33	GFMA	Pruning	Within fuels unit
33-5-9.001	132278	Buckhorn SSC	6	GFMA	Pruning	
33-5-14.018	132306	Dutch Herman #15	16	GFMA	Pruning	
34-5-1.010	110188	Lucky Toad (J-Ville) 1-1	23	GFMA	Pruning	
33-6-33.004	137297	Flume Descent #6	25	GFMA	Pruning	
34-6-3.008	134804	Mackin Gulch 1A/1B	10	GFMA	Pruning	Douglas-fir, ponderosa pine, sugar pine
33-7-17.008	134229	Rock Creek #1	21	GFMA	Pruning	
33-7-33.898	115146	Lower Grave Fir LIM	8	GFMA	Pruning	

\* - Units would be re-evaluated prior to treatment to determine if prescribed treatment is still appropriate given current unit conditions.

**TABLE A-4a: PROPOSED FUELS TREATMENT UNITS: New Fuels Units**

Unit Name	Unit Number	Acres	Legal	Type of Treatment*				
				Slashing	Slashbuster	Hand Pile	Pile Burn	Underburn
COYOTE CREEK	cc-21-1	7	33S-05W-21	X	X	X	X	X
COYOTE CREEK	cc-22-1	7	33S-05W-22	X		X	X	X
COYOTE CREEK	cc-22-1	11	33S-05W-22	X		X	X	X
COYOTE CREEK	cc-23-1	24	33S-05W-23	X		X	X	X
COYOTE CREEK	cc-27-2	60	33S-06W-27	X		X	X	X
COYOTE CREEK	cc-27-3	47	33S-06W-27	X	X	X	X	X
COYOTE CREEK	cc-27-4	126	33S-05W-27	X	X	X	X	X
COYOTE CREEK	cc-28-1	20	33S-05W-28	X		X	X	X
COYOTE CREEK	cc-28-2	98	33S-05W-28	X		X	X	X
COYOTE CREEK	cc-31-2	14	33S-05W-31	X		X	X	X
COYOTE CREEK	cc-31-3	21	33S-05W-3	X		X	X	X
COYOTE CREEK	p-34-1	28	33S-05W-34	X		X	X	X
COYOTE CREEK	p-35-1	10	33S-05W-35	X		X	X	X
PLACER	p-1-1	49	34S-05W-1	X		X	X	X
PLACER	p-11-1	126	34S-05W-11	X		X	X	X
PLACER	p-11-2	35	34S-05W-11	X		X	X	X
PLACER	p-13-1	24	34S-05W-13	X		X	X	X
PLACER	p-15-1	40	34S-05W-15	X		X	X	X
PLACER	p-15-2	26	34S-05W-15	X		X	X	X
PLACER	p-20-1	29	34S-05W-20	X		X	X	X
PLACER	p-21-1	93	34S-05W-21	X	X	X	X	X
PLACER	p-3-1	30	34S-05W-3	X		X	X	X
PLACER	p-31-1	22	33S-05W-31	X		X	X	X
PLACER	p-32-1	11	33S-05W-32	X		X	X	X
PLACER	p-32-2	33	33S-05W-32	X		X	X	X
PLACER	p-32-3	16	33S-05W-32	X		X	X	X
PLACER	p-34-2	173	33S-05W-34	X		X	X	X
PLACER	p-35-2	7	33S-05W-35	X	X	X	X	X
PLACER	p-35-3	67	33S-05W-35	X	X	X	X	X

PLACER	p-35-4	72	33S-05W-35	X		X	X	X
PLACER	p-9-1	108	34S-05W-9	X	X	X	X	X
UPPER WOLF	uw-10-1	143	33S-05W-10	X		X	X	X
UPPER WOLF	uw-10-2	24	33S-05W-10	X	X	X	X	X
UPPER WOLF	uw-14-1	159	33S-05W-14	X	X	X	X	X
UPPER WOLF	uw-15-1	18	33S-05W-15	X		X	X	X
UPPER WOLF	uw-15-2	5	33S-05W-15	X		X	X	X
UPPER WOLF	uw-17-1	154	33S-05W-17	X	X	X	X	X
UPPER WOLF	uw-23-1	44	33S-05W-23	X		X	X	X
UPPER WOLF	uw-4-1	47	33S-05W-4	X		X	X	X
UPPER WOLF	uw-9-1	40	33S-05W-9	X	X	X	X	X
	<b>Total Acres:</b>	<b>2065</b>						

\* - Units would be re-evaluated prior to treatment to determine if prescribed treatment is still appropriate given current unit conditions.

**TABLE A-4b: PROPOSED FUELS TREATMENT UNITS: Fuels Maintenance Units**

Unit Name	Unit Number	Acres	Legal	Type of Treatment*				
				Slashing	Slashbuster	Hand Pile	Pile Burn	Underburn
ANGORA GOAT	11-4A	17	34S-07W-11					X
ANGORA GOAT	11-4B	27	34S-07W-11					X
BRIMSTONE RETURN	21B	13	34S-06W-7					X
COYOTE CREEK	2	11	33S-05W-22					X
COYOTE JUNCTION	1	46	33S-05W-22					X
COYOTE JUNCTION	2	9	33S-05W-22					X
COYOTE JUNCTION	3	18	33S-05W-22					X
COYOTE JUNCTION	4	7	33S-05W-22					X
COYOTE JUNCTION	5	11	33S-05W-22					X
COYOTE JUNCTION	6	3	33S-05W-22					X
COYOTE JUNCTION	7	9	33S-04W-26					X
COYOTE PETE	20-1	39	33S-05W-20					X
COYOTE PETE	21-2	5	33S-05W-21					X
COYOTE PETE	21-4	7	33S-05W-21					X
COYOTE PETE	22-11	33	33S-05W-22					X
COYOTE PETE	22-4A	69	33S-05W-22					X
COYOTE PETE	22-4B	40	33S-05W-22					X
COYOTE PETE	22-4C	23	33S-05W-22					X
COYOTE PETE	22-4D	14	33S-05W-22					X
COYOTE PETE	22-4E	24	33S-05W-22					X
COYOTE PETE	22-6	7	33S-05W-22					X
COYOTE PETE	22-9	19	33S-05W-22					X
COYOTE PETE	27-10A	12	33S-05W-27					X
COYOTE PETE	27-10B	14	33S-05W-27					X
COYOTE PETE	27-10C	9	33S-05W-27					X
COYOTE PETE	27-10D	14	33S-05W-27					X
COYOTE PETE	27-10E	5	33S-05W-27					X
COYOTE PETE	27-6B	42	33S-05W-27					X
COYOTE PETE	27-8A	22	33S-05W-27					X

COYOTE PETE	27-9A	37	33S-05W-27					X
COYOTE PETE	27-9B	15	33S-05W-26					X
COYOTE PETE	28-12	22	33S-05W-28					X
COYOTE PETE	28-13	33	33S-05W-28					X
COYOTE PETE	28-14	10	33S-05W-28					X
COYOTE PETE	30-2	14	33S-05W-30					X
COYOTE PETE	30-2A	3	33S-05W-30					X
COYOTE PETE	30-4A	10	33S-05W-30					X
GRAVE FORD	8A	62	33S-04W-15					X
KING WOLF	6-1	66	33S-05W-6					X
KING WOLF	7-1	16	33S-05W-7					X
KING WOLF	9-1	37	33S-05W-9					X
KING WOLF	9-1	5	33S-05W-9					X
KING WOLF	9-2	34	33S-05W-9					X
KING WOLF	9-3	30	33S-05W-9					X
KING WOLF	9-6	82	33S-05W-9					X
KING WOLF	10-1	9	33S-05W-10					X
KING WOLF	10-2	13	33S-05W-10					X
KING WOLF	11-2B	10	33S-05W-11					X
KING WOLF	14-9A	14	33S-05W-14					X
KING WOLF	14-9B	6	33S-05W-14					X
KING WOLF	15-3	5	33S-05W-15					X
KING WOLF	15-4	35	33S-05W-15					X
KING WOLF	15-6	9	33S-05W-15					X
KING WOLF	15-7A	29	33S-05W-15					X
KING WOLF	15-7B	43	33S-05W-15					X
KING WOLF	15-7C	26	33S-05W-15					X
KING WOLF	5-1A	78	33S-05W-5					X
KING WOLF	5-1B	124	33S-05W-5					X
KING WOLF	5-1C	122	33S-05W-5					X
KING WOLF	5-1D	19	33S-05W-5					X
KING WOLF	9-4A	43	33S-05W-9					X
LUCKY TOAD II	7-8	24	34S-04W-7					X
MACKIN GULCH	2	37	34S-06W-3					X

MACKINGULCH	4	113	34S-06W-3					X
MACKINGULCH	1A-B	11	34S-06W-3					X
MACKINGULCH	SSC	8	34S-06W-3					X
MCCOY CREEK	3	47	34S-05W-15					X
PEASE OVERLOOK	1	9	34S-04W-7					X
POOR ANGORAS FOLLY	3	11	33S-07W-10					X
POOR ANGORAS FOLLY	12	6	33S-07W-14					X
POOR ANGORAS FOLLY	20	14	33S-07W-17					X
POOR ANGORAS FOLLY	25	16	33S-07W-21					X
POOR ANGORAS FOLLY	29	12	33S-07W-27					X
POOR ANGORAS FOLLY	33	19	33S-07W-27					X
ROCK CREEK	7	19	33S-07W-29					X
SAWMILL	8	4	33S-7W-29					X
SEVEN COME ELEVEN	1	29	34S-05W-11					X
SPEAKER SALVAGE	1	30	33S-05W-4					X
SPEAKER SALVAGE	2	11	33S-05W-3					X
STARVEOUT CREEK	3	39	32S-04W-33					X
	<b>Total Acres:</b>	<b>2089</b>						

\* - Units would be re-evaluated prior to treatment to determine if prescribed treatment is still appropriate given current unit conditions.

**TABLE A-4c: PROPOSED FUELS TREATMENT UNITS: Fuels Maintenance on Harvest Units**

Unit Name	Unit Number	Acres	Legal	Type of Treatment*				
				Slashing	Slashbuster	Hand Pile	Pile Burn	Underburn
HIGH FIVE	12B	40	33S-06W-17					X
I-SHANK	11-1	23	34S-06W-11					X
I-SHANK	11-2A	26	34S-06W-11					X
I-SHANK	11-2B3A	17	34S-06W-11					X
I-SHANK	11-3B	5	34S-06W-11					X
I-SHANK	13-1	10	34S-06W-13					X
I-SHANK	13-2	40	34W-06W-13					X
I-SHANK	18-1	4	34S-05W-18					X
I-SHANK	18-2	73	34S-05W-18					X
I-SHANK	18-3	17	34S-05W-18					X
I-SHANK	23-1	39	34S-06W-23					X
I-SHANK	23-4	7	34S-06W-23					X
LOW FIVE	13	13	33S-06W-17					X
LOW FIVE	18	12	33S-06W-21					X
LOW FIVE	20-1	54	33S-06W-23					X
LOW FIVE	20-2	39	33S-06W-23					X
LOW FIVE	21-1	23	33S-06W-23					X
LOW FIVE	21-2	6	33S-06W-23					X
LOW FIVE	22-1	26	33S-06W-24					X
LOW FIVE	22-2	20	33S-06W-24					X
LOW FIVE	23	37	33S-06W-23					X
LOW FIVE	25	35	33S-06W-34					X
LOW FIVE	24A1	32	33S-06W-26					X
LOW FIVE	24A2A	8	33S-06W-26					X
LOW FIVE	24A2B	19	33S-06W-26					X
POOR ANGORAS FOLLY	7	7	33S-07W-11					X
POOR ANGORAS FOLLY	13	23	33S-07W-14					X
POOR ANGORAS	19	16	33S-07W-25					X

FOLLY								
POOR ANGORAS FOLLY	34A	6	33S-7W-35					X
POOR ANGORAS FOLLY	34B	8	33S-7W-35					X
POOR ANGORAS FOLLY	34E	10	33S-7W-35					X
POOR ANGORAS FOLLY	43B	15	34S-07W-3					X
TUNNEL VISION	7-1	11	34S-06W-7					X
TUNNEL VISION	7-2	7	34S-06W-7					X
TUNNEL VISION	7-4	19	34S-06W-7					X
TUNNEL VISION	13-15	7	34S-06W-13					X
TUNNEL VISION	13-3	8	34S-06W-13					X
TUNNEL VISION	17-01	26	34S-06W-17					X
TUNNEL VISION	17-2A	20	34S-06W-17					X
TUNNEL VISION	17-2B	3	34S-06W-17					X
TUNNEL VISION	19-1	37	34S-06W-19					X
	<b>Total Acres:</b>	<b>848</b>						

\* - Units would be re-evaluated prior to treatment to determine if prescribed treatment is still appropriate given current unit conditions.

**TABLE A-4d: PROPOSED FUELS TREATMENT UNITS: Future Fuels Maintenance on Uncut Harvest Units**

Unit Name	Unit Number	Acres	Legal	Type of Treatment*				
				Slashing	Slashbuster	Hand Pile	Pile Burn	Underburn
BONNIE AND SLYDE	1	24	33S-08W-1					X
COYOTE PETE	21-3	2	33S-05W-21					X
COYOTE PETE	22-2	4	33S-05W-22					X
COYOTE PETE	22-5	2	33S-05W-22					X
COYOTE PETE	22-8	5	33S-05W-22					X
COYOTE PETE	27-2	4	33S-05W-27					X
COYOTE PETE	27-3A	1	33S-05W-22					X
COYOTE PETE	27-4N	10	33S-05W-27					X
COYOTE PETE	27-4S	2	33S-05W-27					X
COYOTE PETE	27-6A	6	33S-05W-27					X
COYOTE PETE	27-7	1	33S-05W-27					X
COYOTE PETE	28-1	8	33S-05W-28					X
COYOTE PETE	28-11	7	33S-05W-28					X
COYOTE PETE	28-6	2	33S-05W-28					X
COYOTE PETE	28-8B	9	33S-05W-28					X
COYOTE PETE	28-9	5	33S-05W-28					X
COYOTE PETE	30-1A	7	33S-05W-30					X
COYOTE PETE	30-1C	3	33S-05W-30					X
KING WOLF	9-4	9	33S-05W-9					X
KING WOLF	9-4	2	33S-05W-9					X
KING WOLF	10-3	2	33S-05W-10					X
KING WOLF	10-4	5	33S-05W-10					X
KING WOLF	10-5	11	33S-05W-10					X
KING WOLF	10-7	10	33S-05W-10					X
KING WOLF	11-2	10	33S-05W-11					X
KING WOLF	13-2	7	33S-05W-13					X
KING WOLF	14-5	20	33S-05W-14					X
KING WOLF	14-8	34	33S-05W-14					X
KING WOLF	15-5	16	33S-05W-15					X

COTTONSNAKE	5A	18	33S-07W-10					X
SERPENTS GRAVE	1	9	33S-04W-19					X
SERPENTS GRAVE	4	19	33S-05W-13					X
SERPENTS GRAVE	5	9	33S-05W-13					X
SERPENTS GRAVE	6	25	33S-05W-13					X
SERPENTS GRAVE	7	13	33S-05W-24					X
SERPENTS GRAVE	10	5	33S-05W-24					X
SERPENTS GRAVE	13	16	33S-05W-31					X
SERPENTS GRAVE	17	13	33S-05W-32					X
SERPENTS GRAVE	20	95	33S-05W-34					X
SERPENTS GRAVE	22	11	33S-05W-35					X
SERPENTS GRAVE	28	4	34S-05W-11					X
SERPENTS GRAVE	32	10	34S-05W-15					X
SERPENTS GRAVE	33	20	34S-05W-15					X
SERPENTS GRAVE	34	2	34S-05W-15					X
SERPENTS GRAVE	35	38	34S-05W-17					X
	<b>Total Acres:</b>	<b>535</b>						

\* - Units would be re-evaluated prior to treatment to determine if prescribed treatment is still appropriate given current unit conditions.

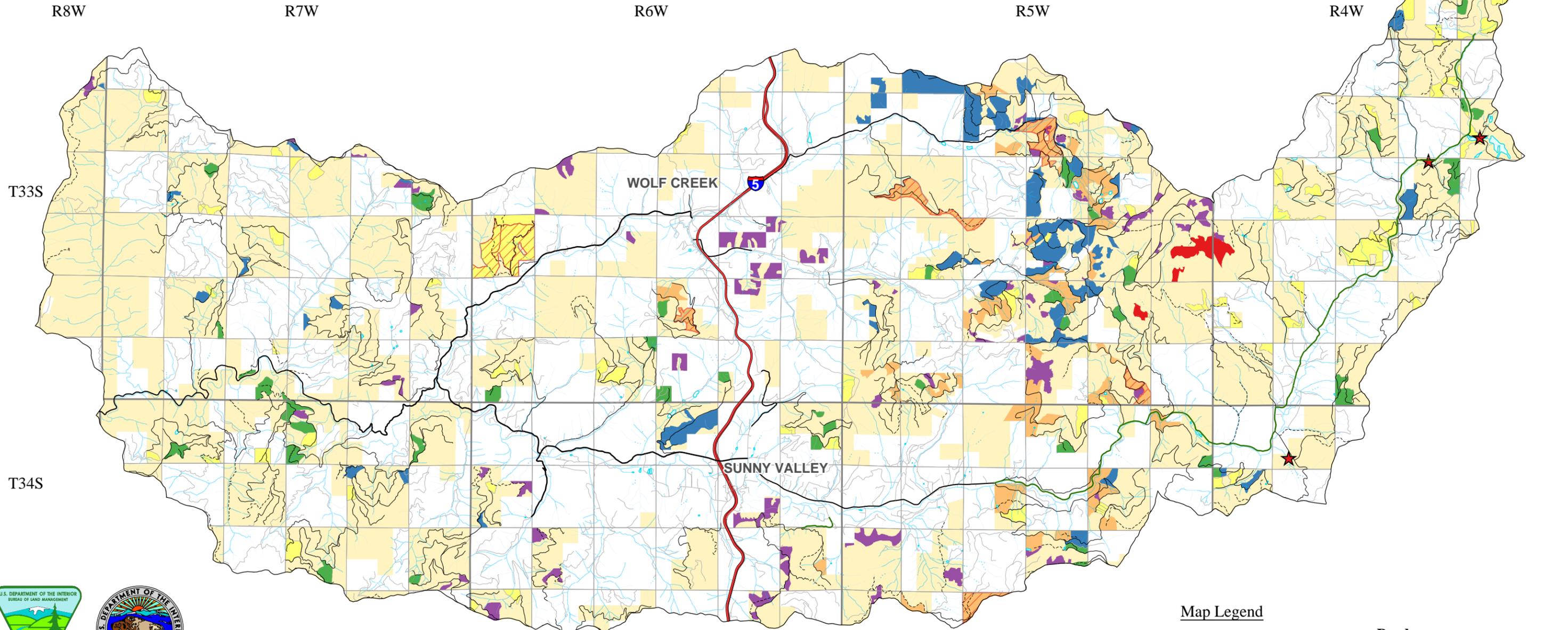
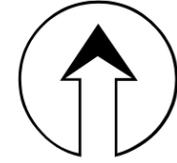
<b>Table A- 5: Utilization of Small Diameter Material</b>				
<b>Primary Treatment</b>	<b>TRSU</b>	<b>Unit Acres</b>	<b>Material to remove</b>	<b>Removal Method</b>
Fuels	33-5- 9,10,15	142	Smallwood	Hand and/or Machine
Fuels	34-5- 21	100	“	“
Fuels	33-5- 17,18,20,21	154	“	“
Fuels	33-5- 35	67	“	“
Vegetation	33-6- 19	414	“	“
Fuels	33-6- 27	47	“	“
<b>TOTAL</b>		924		

<b>Table A-6: Wildlife Restoration/Enhancement Projects</b>			
<b>Project Name</b>	<b>Legal Location</b>	<b>Objective</b>	<b>Proposed Treatment</b>
Fogcutter Mine	T33S, R4W, S15	Wetland Restoration	Riparian restoration of a former mining site; existing weir would be rebuilt; excavation of existing pond; and bank re-vegetation.
Grave Creek Headwaters	T33S, R4W, S11	Wetland Restoration	Riparian restoration with excavation and replacement of failed structure; gating to reduce wildlife and habitat disturbance.
Ditch Creek Wetland	T34S, R4W, S8	Wetland maintenance	Installation of a gate to reduce vehicle access and disturbance to the wetland located off the spur road in the SW1/4 of S8 which intersects with road#34-4-28.
King Mountain meadow restoration	T33S, R4W, S19 &S24	Meadow restoration	The large meadow complex on the side of King Mountain would be burned to reinvigorate meadow grasses and shrubs. Encroaching trees located on TPCC withdrawn lands may also be removed.

# Proposed Units and Activities

## Young Stand Management and Fuels Reduction Treatments within the Grave Creek Watershed

-  FTR Maintenance
-  New Fuel Units
-  Timber Sale Units
-  Silviculture Units
-  Proposed Precommercial Thin Units
-  Special Forests Products
-  Proposed Meadow Enhancement
-  Proposed Wetlands



**United States Department of the Interior**  
Bureau of Land Management  
Medford District, Glendale Resource Area  
3040 Biddle Road  
Medford, OR 97504

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1:100,000



### Map Legend

- |   |   |
|---|---|
|  Perennial Lake      |  Other Road            |
|  Perennial Stream    |  Interstate 5          |
|  Intermittent Stream |  BLM, Hard Surface     |
|  Township/Range      |  BLM, Rocked Surface   |
|  Sections            |  BLM, Other Surface    |
|  BLM Land            |  County, Hard Surface  |
|   |  County, Other Surface |