



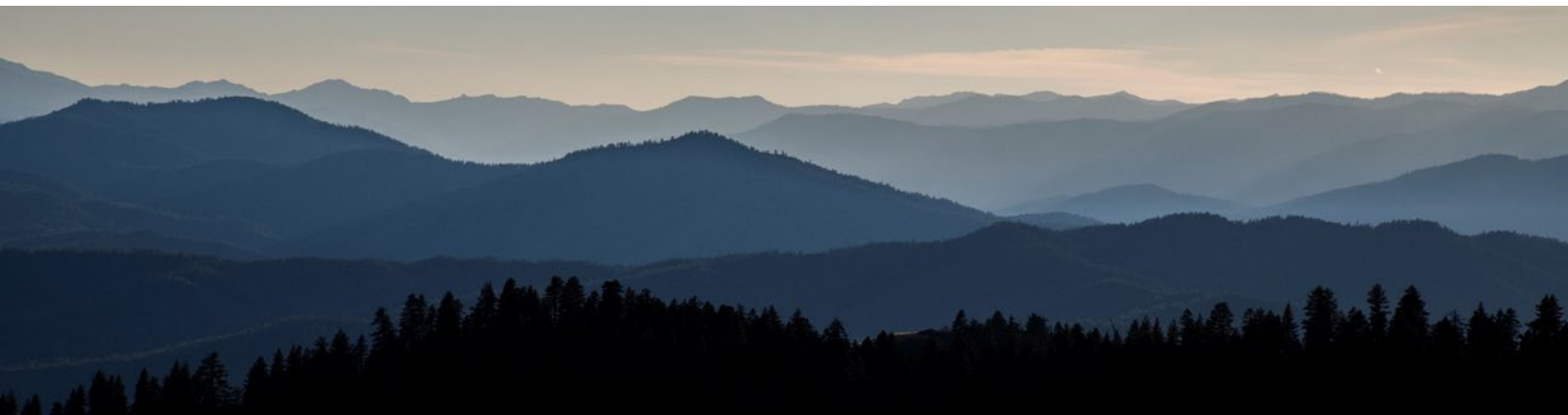
**U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
ASHLAND FIELD OFFICE**

**June 2023**

# **Rogue Gold Forest Management Project Environmental Assessment**

DOI-BLM-OR-M060-2021-0010-EA

Oregon/Washington  
Bureau of Land Management  
Ashland Field Office  
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Medford, Oregon 97504



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# Introduction/Purpose and Need

## Introduction

The Bureau of Land Management (BLM) is preparing this Environmental Assessment (EA) in accordance with National Environmental Policy Act (NEPA) requirements, the Council on Environmental Quality (CEQ) regulations for Implementing the Procedural Provisions of the NEPA (40 CFR Parts 1500-1508), and the Department of the Interior's regulations on implementing the NEPA (43 CFR part 46). This EA has been prepared to analyze and disclose any environmental consequences of the Rogue Gold Forest Management Project (Rogue Gold FMP), located within the BLM's Ashland Field Office.

### *1.1.1 Brief Overview of What the BLM is Proposing*

The BLM is proposing vegetation management actions that consist of commercial thinning and non-commercial fuels removal in Harvest Land Base (HLB)-Uneven-aged Treatment Areas (UTA), Late-Successional Reserve-Dry (LSR-Dry), District-Designated Reserves (DDR)- for both road corridors and Timber Production Capability Classification (TPCC), and Riparian Reserve-Dry (RR-Dry) land use allocations (LUA).

The BLM previously identified the Planning Area as needing treatment in a project proposed in 2016, the Galls Creek Forest Management Project. Although the Galls Creek Project was ultimately not pursued, the BLM had already conducted preliminary biological and botanical surveys, as well as field inspections of stands in preparation for the project and its accompanying NEPA document. The BLM inspections then and now identified stands in need of treatment in the Planning Area that are overstocked (Stands that have a Relative Density (RD) greater than 55 percent), across all LUAs, that are less resilient, less productive and facing imminent mortality. The selection of forest stands included for consideration and analysis in this project for commercial harvest treatment was based on stand composition and stocking, logging feasibility, and location in relation to existing road infrastructure that could support a technically and economically feasible timber harvest. Additionally, many of the stands identified for treatment in the Planning Area lack structural complexity and do not contain multiple layers. The BLM inspections today and in 2016 also identified that the stands in the HLB would be able to contribute sustainable timber volume to the allowable sale quantity (ASQ).

The proposed vegetation management actions include the removal of wood products in the form of timber volume through the commercial treatment of stands by selection harvest in HLB-UTA, LSR-Dry, and DDR or commercial thinning in RR-Dry and DDR-TPCC. Selection harvest is a method of uneven-aged management involving the harvesting of single trees from stands (single-tree selection) or in groups up to four acres in size (group selection) without harvesting the entire stand at any one time. Commercial thinning is a silvicultural management practice that reduces tree density to improve growth and vigor by selectively removing trees from a stand for timber. Forest management actions include activity fuels reduction through mechanical treatments which involves the use of chainsaws along with slashing, lop and scatter, or cutting and piling, and prescribed burning. The BLM would accomplish the various forest management treatments through a combination of commercial timber sale contract(s), service contracts or stewardship contracts. The BLM has identified roads that would be available for wet season haul depending on road surface type, their current condition, and the addition of adequate rock to the roadbeds. Section 2, Alternatives, contains a more detailed description of the action alternatives analyzed in detail, as well as other action alternatives considered.

### *1.1.2 Location of the Planning and Project Area*

The Rogue Gold FMP Planning Area (Planning Area) is located south and southeast of the city of Rogue

River, Oregon, south and southwest of Gold Hill, Oregon, and north and northwest of the city of Jacksonville, Oregon. See Appendix A, Figure A-1, for a map of the Planning Area and proposed treatment areas.

The Planning Area is in the Grants Pass-Rogue River, Gold Hill-Rogue River, and Bear Creek fifth field watersheds, which include the Foothills Creek, Galls Creek-Rogue River, Griffin Creek, Jackson Creek-Bear Creek, Sardine Creek-Rogue River, Savage Creek-Rogue River, and Ward Creek-Rogue River sixth field sub-watersheds in Jackson County northwest of Medford, Oregon.

The Planning Area is in the Willamette Meridian and includes all or portions of Townships: T36S R04W, T37S R04W, T36S R03W, T37S R03W, T38S R03W, T36S R02W, T37S R02W, and T38S R02W.

### 1.1.3 Planning Area Ownership and Land Use Allocation

The approximately 57,570-acre Planning Area consists of 17,782 acres of BLM-administered lands, and the remaining is a mix of private, and State lands. The Rogue Gold FMP would only be considering treatments on BLM-administered lands. As identified in Table 1-1.

Table 1-1: Land Ownership in Planning Area

Ownership-Management Agency	Acres
U.S. – BLM	17,782
State of Oregon	335
Private Property	39,451

Table 1-2 shows the percent BLM-administered lands in the Planning Area and their LUAs, as designated in the 2016 Southwest Oregon Record of Decision/Resource Management Plan (SWO ROD/RMP) (BLM 2016a).

Table 1-2: LUAs with acres and percentage of Planning Area.

LUA	Acres	Percentage
DDR	4,385	25
HLB-UTA	8,813	49
HLB-Low Intensity Treatment Area (LITA) <sup>a</sup>	21	<1
LSR-Dry	2,070	12
RR-Dry	2,493	14
Total in Planning Area	17,782	100

- <sup>a</sup> Commercial treatment in the HLB would only occur in HLB-UTA, as stated in 1.1.1. Treatment in the HLB-LITA would not occur under the Rogue Gold FMP for several reasons, including that the stands are not in need of harvest treatment at this time; access to the stands in the LUA would require a separate haul route that would not be cost effective (based on the cost of a road compared to the volume of timber that would come out); it is within the home range of an occupied northern spotted owl (NSO) site; and the access route would go through a known avoidance area within the Ashland Field Office

## **Purpose and Need**

### 1.1.4 Purpose and Need in HLB-UTA, LSR-Dry and RR-Dry to increase stand-level resistance to disturbance.

The Rogue Gold FMP purpose is to reduce stand susceptibility to disturbances such as a fire, stand replacing crown fires, windstorm, disease, or insect infestation through selection harvest, activity fuels and understory reduction in stands that would support operationally and economically feasible

commercial treatment. The BLM is proposing the Rogue Gold FMP treatments to increase stand resistance through the development and retention of large, open grown trees and multi-cohort stands (BLM 2016a, pp. 68, 72, 82-84).

In the dry mixed conifer forests of Southwest Oregon, overly dense forests resulting from fire exclusion, in conjunction with extended drought and climate change are contributing to widespread conifer mortality across low elevations on the Medford District. The high tree density increases vulnerability to insects and diseases, exacerbated by the effects of changing climate and drought as trees compete for limited water, resulting in a substantial increase in levels of tree mortality. The climate has been warming and drying with persistent hot droughts and studies have projected this trend to continue (Bumbaco and Mote 2010).

In the planning area there are 8,813 acres of UTA and 2,070 acres of LSR-Dry. The BLM identified 556 acres of LSR and 1,442 acres of HLB-UTA as suitable for selection harvest, based on their surpassing the critical threshold of 55 percent Relative Density (RD). These areas, deemed economically viable for treatment, face imminent tree mortality due to competition induced factors.

The stands in the RR- Dry that the BLM is proposing to treat are experiencing overly dense conditions (based on the Relative Density (RDI) or basal area) and are homogeneous, even-aged stands lacking large, mature conifer trees. High RDI in the range of 60-80 percent and 150-240 square feet of basal area is putting the stands at an elevated risk for stand-replacing crown fires. Of the 2,493 acres of RR-Dry in the Planning Area, the BLM has identified three RR-Dry stands, totaling about 6.5 acres, whose outer and middle zones are adjacent to commercial harvest units. The UTA and LSR units and adjacent RR-Dry stands need treatment because they are overly dense, display similar conditions to the adjacent uplands, and lack key fire-resistant attributes making them vulnerable to stand-replacement fire. As identified in the 2016 PRMP/FEIS, “(i)n general, stands with higher fire resistance have reduced surface fuel loading, lower tree density, large diameter trees of fire-resistant species, increased height to live crown (Brown et al. 2004, Peterson et al. 2005, USDI BLM 2008), and discontinuous horizontal and vertical fuels” (BLM 2016b, p. 243).

#### 1.1.5 Purpose and Need to contribute ASQ to the Medford District Sustained Yield Unit (SYU).

The Ashland Field Office is one of three field offices within the Medford District SYU, as defined in the SWO ROD/RMP (BLM 2016a, p. 5). The declared annual ASQ for the Medford SYU is 37 million board feet (MMbf) of timber per year (BLM 2016a, p. 5).<sup>1</sup> This project needs to contribute a minimum of 6.5 MMbf for Medford District SYU to reach annual ASQ.

The declared ASQ is the BLM’s contribution to supporting local communities and industry by providing a sustainable supply of timber (BLM 2016a, p. 7).

#### 1.1.6 Purpose and Need to Treat LSR Stands to Develop or Improve NSO habitat.

In stands that are not nesting-roosting (NR) habitat for the northern spotted owl (NSO), apply silviculture treatments to improve the quality of NSO nesting-roosting habitat in the stand or in the adjacent stand in the long-term (BLM 2016a, p. 72).

Within the LSR-Dry LUA of the Treatment Area, there are an estimated 267 acres in areas conducive to habitat development and persistence (i.e. cool bottom and midslope topographic positions and high relative habitat suitability (RHS; See Issue 4, EA p 47)) that are currently not functioning as nesting-roosting habitat for NSOs because they are currently foraging (F), dispersal-only (D), or capable habitat

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<sup>1</sup> The BLM can offer for sale in each SYU as much as 40 percent variation on an annual basis, and up to 30 percent over the entire decade (RMP, p. 6). For the Medford SYU, the BLM can offer for sale between 22 MMbf and 52 MMbf annually, and between 260 MMbf and 480 MMbf per decade (RMP, p. 6).

(See NSO Habitat Definitions, (Table D-1, Appendix D). These stands lack the diversity, structure, layering, large trees, high canopy cover, and other important habitat elements required to function as nesting-roosting habitat. Current general forest conditions are preventing or delaying development of such nesting-roosting habitat in many areas across the landscape. Without treatment, competition between trees slows their growth (Bennett and Main 2018, p. 4), delaying the development of large diameter trees, an important characteristic of nesting-roosting habitat.

The proposed thinning treatments in stands of high RHS non-NR habitat are expected to improve spotted owl nesting conditions across the landscape in the future. The proposed treatments would provide long term benefits by allowing trees to grow larger faster, and to develop other suitable wildlife habitat characteristics, such as large limbs and crowns. Additionally, these prescriptions would help develop multi-canopy stands, increase tree diameter growth, promote tree species diversity, and create more favorable roosting and foraging habitat conditions. As structural components used by spotted owls continue to develop, such as multiple canopy layers, large diameter trees and eventually large snags and coarse wood, the amount of spotted owl nesting habitat is expected to increase over time. These treatments would increase habitat patch size and connectivity across the landscape, particularly in areas with high RHS.

Treatments in low RHS stands in non-NR habitat may improve stand and habitat structure, but the treatments are in a location that would not support spotted owl occupancy and nesting (generally warmer upper third of the slope, ridges, or south facing). Low RHS areas would also be less likely to develop into nesting roosting habitat in the future due to many factors including, but not limited to soil type, hydrology, prevailing winds and associated microclimatic effects, and prey abundance (which ties back to all preceding factors). Therefore, as stands situated in low RHS are unlikely to ever develop the habitat characteristics associated with spotted owl nesting-roosting habitat, the above cited RMP management direction does not apply in these cases.

## **Scoping and Issue Identification**

The BLM initiated a 30-day public scoping period for the Rogue Gold FMP on September 24, 2021. The BLM sent over 1,100 scoping postcards and emails to adjacent landowners on record, permittees, agencies, tribes, and other interested parties. A legal notice appeared in the Medford *Mail Tribune* on September 30, 2021. The postcards, emails, letters to the tribes (Confederated Tribes of Grand Ronde, Confederated Tribes of Siletz Indians, and Cow Creek Band of Umpqua Tribe of Indians), and legal notice directed the interested public to ePlanning (BLMs NEPA register website) for more information that was in the Scoping Overview published on the website. The BLM extended the scoping period end date to October 29, 2021, due to ePlanning access issues the public had during the scoping period. The BLM received approximately 47 comment letters by email, on the ePlanning website and by mail during the formal scoping period. No scoping comments were received from the tribes, see Section 4.2. The BLM also received interest response forms from five individuals. The scoping comment letters, emails and interest response forms received are in the project record.

The BLM interdisciplinary team (IDT) reviewed the scoping comments and used the relevant comments to help identify issues and develop alternatives and project design features (PDF). Issues are points of discussion, dispute, or debate about the environmental effects of the proposed action. The BLM took into consideration issues and concerns raised by the IDT and the public in the formulation of alternatives, PDFs, and/or environmental effects. Some comments were not related to the Rogue Gold FMP, expressed procedural concerns, or already decided by law, regulation, policy, or direction.

### ***1.1.7 Issues not Analyzed in Detail***

BLM did not analyze in detail issues raised by the public or BLM during scoping that did not relate to

how an alternative responded to the purpose and need and did not point to a potentially significant environmental effect beyond what BLM analyzed in the Proposed Resource Management Plan/Final Environmental Impact Statement for the Resource Management Plans for Western Oregon (2016 PRMP/FEIS),

#### *1.1.8 Issues Identified for Detailed Analysis*

##### Issue 1: (Timber)

What would the estimated volume of timber be from the Harvest Land Base in this project? How would this volume contribute to the achievement of the declared Allowable Sale Quantity for the Annual Medford Sustained Yield Unit in Fiscal Year 2023?

##### Issue 2: (Hydrology & Fisheries)

How would the potential changes in erosion rates, sediment transport, and turbidity resulting from timber haul, winter timber haul, road maintenance, road building, and other related activities affect water quality and aquatic habitat?

##### Issue 3: (Fuels)

How would the Rogue Gold proposed vegetation management actions affect stand level fire resistance (or fire hazard)?

##### Issue 4: (Wildlife)

Would Rogue Gold FMP's proposed forest management treatments in foraging, dispersal and capable NSO habitats that are in areas conducive to habitat development and persistence (i.e., cool bottom and midslope topographic positions and high RHS stands) within the Late-successional Reserves-Dry reduce the time of development or improve the quality of these spotted owl habitats to meet the requirements of nesting-roosting habitat at the stand level? Would these treatments also not preclude or delay by 20 years or more the development of nesting-roosting habitat in foraging, dispersal and capable NSO habitat compared to BLM leaving these stands untreated?

##### Issue 5: (Recreation)

How would the proposed actions maintain setting characteristics and meet the recreation objectives, and not interfere with the recreational opportunities of the 3 RMAs located in the project area?

- Grants Pass Peak Non-motorized Trails ERMA.
- Rogue Timber ERMA
- Left Right Center Foothills ERMA

#### **Land Use Conformance, Relationships to Statutes, Regulations, Manuals and Other Plans**

The BLM signed the SWO ROD/RMP on August 5, 2016. The Rogue Gold FMP project is in conformance with the SWO ROD/RMP, which addresses how the BLM would comply with applicable laws, regulations, and policies in western Oregon including, but not limited to the: Oregon and California (O&C) Act, the Federal Land Policy and Management Act (FLPMA), Endangered Species Act (ESA), NEPA, National Historic Preservation Act (NHPA), Archaeological Resources Protection Act, Clean Air Act, and Clean Water Act.

#### **Decision to be Made by BLM**

Once the BLM completes the EA and signs the Finding of No Significant Impact, the BLM Ashland Field Manager would decide whether to implement the actions outlined in one or more of the action alternatives described in Chapter 2. The BLM would determine whether to sign a Decision Record to implement one

or more sales of timber on identified harvest units, based on the alternatives analyzed in the EA. The Decision Record for the one or more sales of timber would specify design features, implementation of new and temporary road construction; maintenance and renovation of existing roads; use of existing quarries for rock; the commercial and non-commercial treatment of activity fuels; the commercial or non-commercial treatment of riparian areas; and the hauling of timber during the wet season.

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## Section 2: Alternatives

### Description of the Alternatives

Identified below are a range of potential Alternatives the decision maker would consider in determining a final action. The decision maker has the flexibility to select one or a combination of several of the Alternatives, as well as to combine various components of different Alternatives to form a final Alternative selected by the decision maker. For instance, the decision maker may opt to exclude timber harvest or fuel treatment implementations within designated timber harvest or fuel treatment units.

#### 2.1.1 Alternative 1: No Action Alternative

Alternative 1, the No Action Alternative, “provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives” (CEQ 1981: question 3). The No Action Alternative provides the baseline environmental condition to compare to the other alternatives. The No Action Alternative would not meet the project’s purpose and need described in Section 1.2.

Under the No Action Alternative, the application or implementation of silvicultural treatments, activity fuels treatments, forest management and follow-up fuels reduction activities would not occur within the Planning Area at this time. Existing activities in the Planning Area would continue and the present environmental conditions and trends in the Planning Area would continue.

The No Action Alternative does not suggest that the BLM would stop implementing the SWO ROD/RMP. The proposed treatment areas contain lands designated as HLB by the SWO ROD/RMP. If the No Action Alternative were selected, it is reasonably foreseeable that the units scheduled for commercial treatment would be placed back into outyear planning as potential units for harvest. The selection of units for treatment may be as part of the same treatment units as Rogue Gold or grouped with other units to create a new project area. Since the units were already identified as being ready for harvest; an ASQ estimate determined; and biological surveys started or completed it is therefore likely the Ashland Field Office would implement a commercial timber harvest in this area within the next five to ten years with the selection of the No Action alternative or if the project is cancelled.

#### 2.1.2 Common To All Action Alternatives

All action alternatives would retain all trees that are both  $\geq 36$  inches diameter at breast height (DBH) and that the BLM identifies were established prior to 1850 except where falling is necessary for safety or operational reasons and no alternative harvesting method is economically viable or practically feasible. If such trees need to be cut for safety or operational reasons, retain cut trees in the stand.

#### 2.1.3 Alternative 2:

Alternative 2 proposes commercial and non-commercial forest management activities on approximately 1,400 acres of BLM-administered lands. Management activities proposed are within the HLB UTA, LSR-Dry, and RR-Dry LUA. Commercial selection harvest treatments would occur in HLB-UTA and LSR-Dry. Commercial thinning would occur in the middle and outer zone of RR-Dry. Non-commercial treatment of activity fuels would occur within all the commercially treated LUAs (HLB-UTA, LSR-Dry and RR-Dry).

Compared to the other action alternatives, Alternative 2 proposes the lowest intensity of harvest in that it prescribes treatments at the highest end of the post-harvest RDI range allowed in the RMP (40-45 percent stand average RDI in HLB-UTA and LSR-Dry). Alternative 2 prescribes group selection openings of up to 2 acres in HLB with group selection openings up to 10 percent of the treatment areas and no group selection harvest in LSR-Dry. Skips would be in 15-25 percent of the stand for retention. In RR-Dry,

Alternative 2 proposes a canopy cover of 45-60 percent and 60 trees per acre. The BLM is proposing the above treatments in the HLB-UTA and LSR-Dry for the improvement of stand resistance through the development and retention of large, open grown trees and multi-cohort stands.

BLM would defer treatment of LSR stands that are currently nesting-roosting habitat. The LSR prescriptions would also include treatments that would modify and maintain current foraging, dispersal, and capable habitat. Where possible (usually stands with high RHS), treatments of current foraging, dispersal, and capable habitat in the LSR-Dry LUA would speed or improve the development of NSO nesting-roosting habitat by reducing tree competition within the stands. Here, the term modify refers to the treatment defined when an action or activity in nesting-roosting, foraging, or dispersal-only habitat removes some trees or reduces the availability of other habitat components but does not change the current function of the habitat because the conditions that would classify the stand as NR, F, or dispersal-only habitat would remain post-treatment. Activity fuels treatments in LSR-Dry LUA would in all cases retain down woody material at levels specified in the SWO ROD/RMP (BLM 2016a, pp. 71). See section 2.2.1.4 for more information.

Forest management treatments of RR-Dry in Class I subwatersheds includes commercial stand thinning in the Outer and Middle Zones of intermittent, non-fish-bearing that are adjacent to timber harvest units where merchantable timber is accessible. Alternative 2 stand thinning treatments would maintain 45 to 60 percent canopy cover and leave 60 trees per acre across the treated portion.

*(Appendix F-1 identifies, unit by unit, the proposed management treatments for Alternative 2.)*

#### 2.1.4 Alternative 3:

Alternative 3 proposes commercial and non-commercial forest management activities on approximately 1,700 acres of BLM-administered lands. Management activities proposed are within the HLB UTA, LSR-Dry, and RR-Dry LUA. Treatments of the various LUAs would be with selection harvest (UTA and LSR-Dry), Riparian Reserve thinning (RR-Dry). Non-commercial treatment of activity fuels would occur within all the commercially treated LUAs (HLB-UTA, LSR-Dry and RR-Dry).

The commercial treatments in the LSR-Dry for the improvement of NSO habitat would maintain nesting-roosting habitat. In areas conducive to habitat development and persistence (i.e., cool bottom and midslope topographic positions and high RHS) the treatment of foraging, dispersal and capable would occur to improve or maintain NSO habitat. Alternatively, in less productive areas such as ridges and warm midslopes or low RHS, treatments of foraging, dispersal, and capable habitat would occur for stand resistance. Commercial thinning within the RR-Dry would maintain canopy cover at 30 percent and leave 60 trees per acre across the treated portion.

Alternative 3 proposes treatments at the higher end of the post-harvest RDI range allowed in the SWO ROD/RMP (30-40 percent in HLB-UTA and 40-45 percent stand average RDI in LSR-Dry) and prescribes fewer group selection openings than Alternative 4, but more than Alternative 2. Group selection openings could be up to two acres in size with group selection openings up to 30 percent in HLB\_UTA and less than 10 percent in LSR-Dry of the treatment areas. Alternative 3 also proposes the treatment of RR-Dry in Class I subwatersheds as proposed and identified in Alternative 2. The difference is that Alternative 3 stand thinning treatments would maintain 30 percent canopy cover and leave 60 trees per acre across the treated portion.

*(Appendix F-2 identifies, unit by unit, the proposed management treatments for Alternative 3.)*

### 2.1.5 Alternative 4:

Alternative 4 proposes commercial and noncommercial forest management activities treatments on 1,700 acres of BLM-administered lands. Management activities proposed are within the HLB UTA, LSR-Dry, and RR-Dry LUA. Treatments of the various LUAs would be with selection harvest (UTA and LSR-Dry), and commercial thinning (RR-Dry). Non-commercial treatment of activity fuels would occur within all the commercially treated LUAs (HLB-UTA, LSR-Dry and RR-Dry).

In HLB target conditions would be 20-30 percent RDI, with group selection openings up to and including 30 percent of the treatment areas. Group selection openings would be up to 4 acres in size and the stand would have the minimum retention in skips at 10 percent.

While in LSR-Dry, treatments would treat between 20-45 RDI. Stands could have up to 25 percent of the stand in group selection openings. In existing nesting-roosting habitat treatments would maintain habitat function either treating and or using those embedded habitat as skips. Otherwise, areas that are foraging or capable would look to improve or maintain habitat in areas conducive to habitat development and persistence (i.e., cool bottom and midslope topographic positions and high RHS). In stands that are low in RHS and on ridges and warm midslopes, treatments would focus on treating for stand resistance to fire, insect, disease, and overall stand health to provide more shade intolerant and drought resistance species as ponderosa pine, sugar pine, white and black oak. In stands that are plantations of ages from 40 to 70 years old, treatments would increase growing space and add structural complexity. Removal of dispersal habitat may occur in keeping with the open resilient theme of Alternative 4.

Alternative 4 proposes commercial thinning within the RR-Dry to maintain canopy cover at 30 percent and leave 60 trees per acre across the treated portion, the same as Alternative 3.

*(Appendix F-3 identifies, unit by unit, the proposed management treatments for Alternative 4.)*

2.1.6 *Table 2-1: Alternative Summary and Comparison of Commercial Harvest Treatments*

Land Use Allocation (LUA); Harvest Land Base (HLB); Late Successional Reserve (LSR); Riparian Reserve (RR); Relative Density Index (RDI); Northern Spotted Owl (NSO); Nesting, roosting (NR); Foraging (F); Dispersal (D); Capable (C); Relative Habitat Suitability (RHS).

LUA and Treatment	Alternative 2	Alternative 3	Alternative 4
HLB-UTA – Selection Harvest	<ul style="list-style-type: none"> <li>• 40-45 percent RDI Target.</li> <li>• &lt; 10 percent of stand in group select openings.</li> <li>• Variably sized group selection openings up to 2 acres.</li> <li>• 15 –25 percent of stand in skips.</li> </ul>	<ul style="list-style-type: none"> <li>• 30-40 percent RDI Target.</li> <li>• &lt; 30 percent of stand in group select openings.</li> <li>• Variably sized group selection openings up to 2 acres.</li> <li>• 10-15 percent of the stand in skips.</li> </ul>	<ul style="list-style-type: none"> <li>• 20-30 percent RDI Target.</li> <li>• ≤ 30 percent of stand in group select openings.</li> <li>• Variably sized group selection openings up to 4 acres.</li> <li>• 10 percent of the stand in skips.</li> </ul>
LSR-Dry – Selection Harvest Low and High RHS	<ul style="list-style-type: none"> <li>• 40-45 percent RDI Target.</li> <li>• No group selection.</li> <li>• 30 percent of stand area in skips.</li> <li>• Defer NR NSO habitat.</li> <li>• Treat and maintain current NSO habitat function as F, D, and C.</li> </ul>	<ul style="list-style-type: none"> <li>• 40-45 percent RDI Target</li> <li>• &lt; 10 percent of the stand in group selection openings.</li> <li>• Group selection openings up to 2 acres.</li> <li>• 20 – 25 percent of stand area in skips.</li> <li>• Maintain NR</li> <li>• Improve or maintain F, D, and C in High RHS stands.</li> <li>• Treat for stand resistance in low RHS stands with F, D, and C.</li> </ul>	<ul style="list-style-type: none"> <li>• 20-45 percent RDI Target</li> <li>• &lt;25 percent of the stand in group selection openings.</li> <li>• Group selection openings up to 4 acres.</li> <li>• 10-15 percent of stand area in skips.</li> <li>• Maintain NR</li> <li>• Improve or maintain F, and C in High RHS, stands.</li> <li>• Remove all D-only habitat.</li> <li>• Treat for stand resistance in low RHS stands with F, D, and C.</li> </ul>
RR-Dry – Stand Thinning in the Middle and Outer Zones of Intermittent Streams in Class I subwatersheds	<ul style="list-style-type: none"> <li>• Maintain canopy cover 45-60 percent and 60 trees per acre across the treated portion of the riparian reserve using commercial timber harvest treatments.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain 30 percent canopy cover and 60 trees per acre across the treated portion of the riparian reserve using commercial timber harvest treatments.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain 30 percent canopy cover and 60 trees per acre across the treated portion of the riparian reserve using commercial timber harvest treatments.</li> </ul>

## Project Elements Within Action Alternatives

Proposed timber harvests, treatment prescriptions, treatment of activity fuels, various types of roadwork, and timber haul all occur within action alternatives though the type and amount may differ by alternative (Table 2-1).

The action alternatives do not include manual or mechanical reforestation activities. Reforestation activities would be on a case-by-case basis, usually depending on the status of natural reforestation, and if the BLM determines that there is a need for reforestation activities in a stand, the BLM will complete a subsequent NEPA document.

### 2.1.7 Vegetation Treatments in Action Alternatives

The action alternatives have the following three categories of vegetation treatments: commercial harvest, small diameter fuels (<8" DBH) thinning and activity fuels mitigation.

Commercial treatment refers to removing trees from the stand for timber volume and an assessed monetary value. The implementation of commercial harvest is through a variety of mechanisms, including timber sale contracts, stewardship agreements, or other types of contracts (BLM 2016a, p. 62). Follow up small diameter fuels thinning would occur in stands where canopy base height remains less than 5 feet after commercial thinning.

#### 2.1.7.1 Activity Fuel Treatments

The activity fuels treatments further described below is common to all action alternatives and proposed within the HLB-UTA, LSR-Dry, and RR-Dry land use allocations.

##### Activity Fuels Treatments (BLM 2016a, p. 91):

Following commercial thinning actions, the BLM would conduct fuels treatments within each unit for reduction of residual activity fuels generated from thinning. A field assessment would be conducted within each unit to determine the type of treatment necessary based on the amount of residual surface fuel left after harvest, expected fire intensity and location (e.g., aspect, slope, access, proximity to values, etc.).

- In cases where the activity fuels remaining in the units after commercial thinning would support low intensity surface fire (e.g., flame lengths <4 feet) under typical fire weather conditions lop & scatter of activity fuels may occur. Branches and trunks 3-8 inches in diameter would be cut into >3-foot lengths and left on the ground. The depth of the slash would not exceed 18 inches.
- If the activity fuels remaining in the units after commercial thinning would result in flame lengths >4 feet under typical fire weather conditions, activity fuels would be cut, piled and burned, at the discretion of the decision maker (except as otherwise required by PDFs).

The burning of piles would occur in the fall, winter, or spring. Four mil polyethylene sheeting would cover all piles to facilitate rapid and efficient ignition and consumption of fuels to minimize residual smoke (Aurell et al, 2016), as indicated in Oregon Smoke Management Plan Emission Reduction Techniques section (ODF 2019, OAR 629-048-0210) (See NAID Issue).

Activity Fuels treatments in RR-Dry and LSR-Dry LUAs would have the additional requirement to retain down woody material at levels specified in the ROD/RMP (BLM 2016a, pp. 71, 76). See section 2.2.1.4 for more information.

#### 2.1.7.2 Commercial Harvest

Commercial harvest operations involve pairing various methods of felling timber and skidding or yarding

it to a landing. This project proposes the use of both manual and mechanized felling, ground-based skidding, and both cable and helicopter yarding. Commercial treatments would occur as selection harvest in HLB-UTA, LSR-Dry, and DDR, or as commercial thinning in DDR-TPCC in RR-Dry. Under all alternatives and in all LUAs, BLM would retain all trees in the stand that are >36 inches and established prior to 1850 except where falling is necessary for safety or operational reasons and no alternative harvesting method is economically viable or practically feasible. If such trees need to be cut for safety or operational reasons, retain cut trees in the stand.

- HLB-UTA: Within the UTA, integrated vegetation management includes the use of a combination of vegetation treatments and fuels management activities. Activities include selection harvest, group selection harvest, and prescribed fire (to reduce activity fuels) SWO ROD/RMP (BLM 2016a, pp. 68-69). BLM would not create group selection openings on more than 30 percent of the stand area (p. 68).
- LSR-Dry: Lands designated as LSR-Dry LUA would use integrated management treatment activities identified in the SWO ROD/RMP. Integrated vegetation management includes the use of a combination of vegetation treatments and fuels management activities. Activities could include commercial stand thinning, selection harvest (single tree selection or group selection harvest), snag creation, and prescribed fire (to reduce activity fuels). All treatments would retain the required ground cover, snags and canopy cover metrics listed in the SWO ROD/RMP (BLM 2016a, pp. 70-75). The BLM would not create group selection openings on more than 25 percent of the LSR stand area (p. 72). The BLM would ensure gap sizes do not exceed the maximum level identified, based on stand size, in the SWO ROD/RMP (BLM 2016a, p. 72). Under Alternatives 3 and 4 the Rogue Gold FMP would maintain NSO NR habitat. The BLM would defer timber harvest treatments in NSO NR habitat under Alternative 2.
- RR-Dry: Within lands designated as Riparian Reserve -Dry, commercial treatments would consist of commercial stand thinning would only occur in the outer zone and middle zone of non-fish bearing and intermittent streams that are class I sub watersheds that are adjacent to timber harvest units where merchantable timber is accessible. Under all alternatives treatments would retain 60 trees per acre across the treated portion within each of the RR-Dry stands and maintain a canopy cover of 30% within stands under all alternatives consistent with the SWO ROD/RMP (BLM 2016a, pp.82-84).
- DDR: Maintain the values and resources for which the BLM has reserved these areas from sustained-yield timber production SWO ROD/RMP (pg. 54). Maintain roads and facilities by removing hazard trees and blowdown. Such logs may be retained as down woody material, moved for placement in streams for fish habitat restoration, or removed through a commercial harvest or special forest products sale.
- DDR-TPCC: Manage areas identified as unsuitable for sustained yield timber production through the timber production capability classification system, for other uses are compatible with the reason for which the BLM has reserved these lands SWO ROD/RMP (BLM 2016a, pg. 55)

#### 2.1.8 Treatment Prescriptions

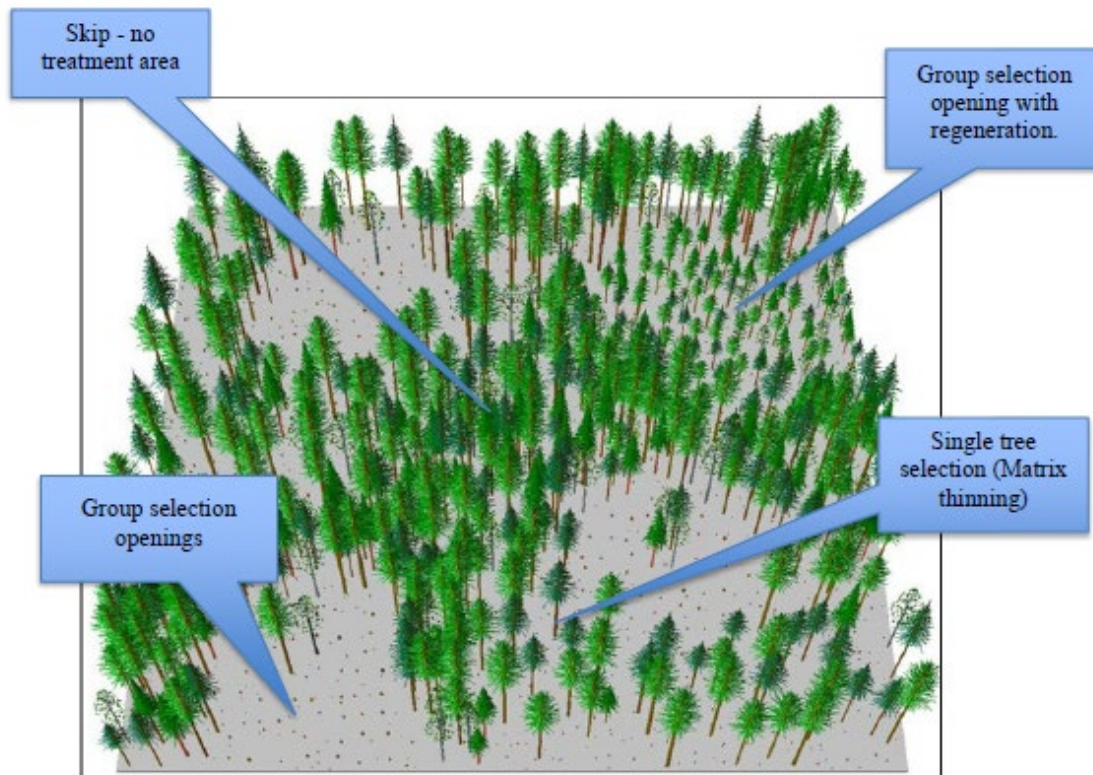
Treatment prescriptions consider changes in the potential vegetation based on factors such as aspect, slope, available moisture, and soil type, in addition to species composition and stand density. The following sections describe the silvicultural prescriptions used to accomplish commercial and non-commercial treatments. Tables B.2.1 to B.2.6 in Appendix B.2 (To be added later) identifies the vegetation management treatments for the proposed units, and Appendix B.3 (To be added later) for detailed treatment prescriptions for commercial units.

#### *2.1.8.1 Commercial Harvest Treatment Prescriptions*

Selection Harvest (SH): This prescription applies to units within the HLB-UTA and LSR-Dry. Selection harvest is the removal of single trees from stands (single-tree selection) and/or in groups (group selection), without harvesting the entire stand at any one time. This stand prescription would target low vigor trees over healthy trees for removal to encourage a diversity of stocking levels and size classes within and among stands. Stands harvested or treated would have a wide range of basal area or density targets across a forest stand. This prescription would contain one, or all, of the following components illustrated in Figure 2-1.

- Single Tree Selection (STS): Synonymous with individual tree selection. Individual trees are removed between the 8 and 36 inches (and not established before 1850 for pine and Douglas fir), except where falling is necessary for safety or operational reasons and no alternative harvesting method is economically feasible. Tree selection looks to retain older more structurally complex and fire adapted species. Trees would be retained in different size and age classes to create more heterogenous stands that increase diversity of stocking levels and size classes.
  - This treatment would be employed by itself or outside the group selection and skips prescribed for the units. The prescription would leave retention trees in a variable pattern, with an overall average density (residual basal area) varying depending on the vegetation type and conservation measures identified for the treated stand. Relative density indices and basal area targets would depend on the action alternative.
  - The best-formed trees that are insect/disease/damage free, with full crown would have a preference for individual tree retention, except where other resource concerns may exist.

Figure 2-1: Illustration of Selection Harvest treatments to include Skips, Group Selection openings, Group Selection openings with regeneration and Single Tree Selection.



- Group Selection (GS): Defined as an area of the stand with less than two live trees per acre greater than 7 inches DBH. Roads, landings, yarding corridors, and skid trails do not count as group selection openings.
  - GS opening size and percent allowed in a stand are dependent on the action alternative described. These areas can be irregular in shape following the variability of the stand biotic and abiotic conditions. Group Selection treatments look to establish a new cohort or cohorts by creating growing space for shade intolerant species; helping to create more structurally complex stands. GS would also target stands where legacy pines, black oaks, and Douglas-fir exist and to radial thin around them to protect the structurally complex characteristics of the stand.
  - A post-harvest assessment would occur in commercial units to determine the need for tree planting and scalping in Group Selection Openings. The BLM is not proposing any tree planting or scalping under this EA. This EA will address tree planting and scalping as a future foreseeable action under those issues affected by them (Chapter 3).
- Skips: Defined as portions of the treated stand with no prescribed timber harvest. Exceptions occur when a cable corridor must pass through a skip area and there is a need for the removal of select trees to allow access to areas lower on the slope within the harvest unit. This event would require approval by Contract Administrator. Skips would occur on at least 10 percent of the treatment unit acres but do not require a defined size. Skip size and percent allowed to each stand differ between the action alternatives. (See Table 2-1). Skips would also apply to small-diameter (<8" DBH) fuels thinning implementation, unless it would compromise the ability to implement future prescribed

fire (e.g., within 200 feet of unit boundary).

#### 2.1.8.2 Snag Creation

Snag Creation would occur under all action alternatives in accordance with management direction in LUAs designated as LSR and Riparian Reserve (BLM 2016a, pg. 73) as follows:

“When conducting commercial harvest, in stands with less than 64 snags per acre > 10 inches DBH and less than 19 snags per acre > 20 inches DBH on average across the harvest unit, the BLM would create 1 new snag per acre >20 inches DBH and 1 new snag per acre >10 inches DBH within 1 year of completion of yarding the timber in the timber sale. If insufficient trees are available in the pre-harvest stand in the size class specified, use trees from the largest size class available. Meet snag creation levels as an average at the scale of the harvest unit; the SWO ROD/RMP does not require the attainment of snag creation levels on every acre. When creating the required number of snags, locate them according to the following criteria:

- Create snags in a variety of spatial patterns, including aggregated groups and individual trees.
- Do not create snags within falling distance of power lines, structures, or roads that would remain open after harvesting activities are complete. If it is not possible to create snags beyond the falling distance of power lines, structures, or roads that would remain open after harvesting activities are complete, cut trees equivalent to the required number of snags and retain as down woody material within the harvest unit.
- Concentrate the creation of snags in areas of the stand where the BLM does not presently anticipate skidding or yarding would occur within 20 years.
- Meet snag creation levels with trees from any species.

#### 2.1.8.3 Timber Harvest Practices and Design Features in Alternatives 2, 3 and 4.

The BLM would incorporate the following timber harvest practices and design features under all action alternatives:

- Harvest contractors may fell trees with chainsaws (manual) or with specialized equipment (mechanized). Manually felled trees may be de-limbed and bucked into log form prior to skidding or yarding. Optionally, the contractor may whole-tree-yard or yard the trees with their tops attached, depending on the harvesting method and equipment used. Mechanized felling uses a hot saw or feller-buncher which cuts and bundles whole trees to prepare them for skidding. In some cases, cutting and processing of trees into log form would occur in the woods prior to transporting them to the landing.
- Log landings are areas where a contractor processes trees into logs, stacks them in decks, and loads them onto trucks. If existing landings are unavailable, then the construction of new landings to support the timber harvest would be necessary. Ground-based and skyline landings are typically 0.5-acre or less, and are located on stable locations, such as roads, ridgetops, benches, or flat areas, in accordance with PDFs (Appendix B). Construction of any new landings would require prior approval by the Contract Administrator.
- The wheeled or tracked machines used for ground-based skidding are diverse. The operator would select skidding patterns within a harvest unit with the approval of the Contract Administrator. During skidding operations, equipment drives along skid trails to the felled logs or trees and skids them to the landing. The operator would be required to use existing skid trails

whenever operationally feasible. The skidding operator would use winches or grapples to obtain one-end suspension on the leading end of the logs. Skid trails vary in length and are 12 to 15 feet wide, except where they converge. Water-barring, de-compacting, barricading, or camouflaging of skid trails and landings may occur after harvest is complete.

- Cable yarding is a system that partially suspends and pulls logs to a landing using a stationary machine, or yarder. The operator selects the yarder settings, and the Contractor Administrator approves them. Generally, cable yarding systems extend downhill into the harvest unit and extract logs uphill towards roads and landings. In some cases, the BLM may identify the need for a narrow yarder wedge of public or private land adjacent to harvest units to allow yarders to reach units separated from their landing. Cable yarding may occur where the ground is too steep for ground-based skidding (>35 percent slope) but BLM may authorize yarding on slopes <35 percent. Cable corridors are 12-15 feet wide except where multiple settings converge on one landing. Cable yarding systems also need large enough trees at each end of the cable system to hold cable yarder equipment in a stationary location with the use of guy line trees and tailhold anchors. Where the slope is convex, there might be a need for the rigging of trees, in the middle of the cable system, with intermediate supports to allow for one end suspension of logs while yarding. The Operator must obtain approval by the Contract Administrator for the use of all tail hold, guy line, and intermediate support trees.
- The BLM is proposing Helicopter Yarding in the Rogue Gold Project Area where access to harvest units is unavailable by roads because of one or more of the following reasons:
  - The BLM could not acquire legal ground access across private lands,
  - construction may cause unacceptable disturbance (due to noise and harvest activity) to NSO nest sites,
  - Bureau Special Status plant buffers or soil avoidance buffers prevented new road construction,
  - steep topography would require highly complex and costly road construction, or
  - where there is a need for significant new road construction to access scattered, individual units.

Helicopter yarding is a system that lifts bundles of cut and processed logs vertically out of a harvest unit and flies them to a landing. Factors contributing to helicopter landing size include safety considerations with aerial yarding, the rapid pace and high production of helicopter logging, and the need for decking room. Helicopter landings are typically a minimum of 1 acre in size and are located as close to the harvest unit as possible, around 1 mile or less, to reduce flight time. Helicopters may also require a separate service landing where maintenance and refueling occurs. The map in Figure A-3 (Appendix A) shows proposed helicopter landings in relation to proposed haul routes with their current seasonal restrictions.

#### 2.1.9 Transportation Management Activities Common to Action Alternatives 2, 3 and 4.

The BLM proposes to renovate, maintain, and improve road conditions used for timber haul as described below. The proposed transportation management activities identified would provide road access to areas in need of forest management treatment. These management activities include road maintenance and renovation to bring existing roads back to their original design standard. It includes road improvements to bring a road beyond its original design standard such as rocking a native surfaced road, widening a road, or upgrading culvert size or spacing). Roads identified to no longer be needed for this or future treatments shall be proposed for decommissioning. Timber haul could occur during the wet season on paved roads or roads with adequate surfacing.

The BLM also proposes to construct new roads to provide access to select timber harvest units (Table 3). Road construction would be either temporary or permanent, as described below. The BLM also proposes to open existing roads that were previously, and are currently, barricaded and then put them back to their previous state upon completion of harvest treatments.

Complete descriptions of Road Maintenance and Renovation; Temporary Road Construction; Permanent Road Construction; Road Opening, Renovation and Long-Term Closure (Decommissioning); and Access to Service Landings are in the sections below. The BLM would apply Best Management Practices (BMPs) to provide stable, well-draining roads that protect water quality and accommodate harvest operations during all stages of the project (see Appendix B: PDFs).

#### *2.1.9.1 Road Renovation, Maintenance, and Improvements*

The basic maintenance and renovation of existing roads used for forest management activities would involve but is not limited to: blading and/or rolling the road surface, blading ditches, cleaning or enlarging catch basins and outlets, cleaning the entire barrel of all culverts, replacing culverts that are undersized or have met or exceeded their lifespan and/or installing new culverts to reduce road-related erosion, maintaining and/or constructing water dips, maintaining and/or constructing armored water dips with 4" minus screened rock, spot rocking, and the removal of encroaching vegetation including brush, limbs, and trees less than 6 inches DBH along the roadways and growing near culvert inlets or outlets to improve sight distance and allow for proper road maintenance. When necessary (as identified in Table 2-5), road maintenance and renovation would also include the following activities:

- Road Surfacing or Resurfacing: On roads where the BLM has identified that the road surface would not support wet or winter hauling the purchaser would have the option to surface or resurface the roads. Road surfacing is placing rock the full width and desired length of the road. Surfacing includes grading and reshaping the road subgrade, then hauling, placing, and compacting the new surfacing material on the prepared subgrade. These would occur on roads identified in Table 2- 5 as "Natural" in the "Existing Surface" column or as "Rock is very thin" in the "Comments" column. Spot rocking involves placing rock on the road in areas as needed to help control erosion and maintain the road surface. This restores the road surface and road condition making it suitable for driving and hauling. Inadequately surfaced road sections used for hauling timber would have crushed aggregate material placed on them.
- Roadside Vegetation Management: The BLM has identified roads for the removal of large vegetation and trees that have grown along BLM roads that prevents maintenance equipment from maintaining and improving proper road drainage patterns. The large vegetation and trees create berms on the outside shoulder of the road, which causes water to flow down the road in a concentrated flow instead of allowing water to disperse off the road at the earliest possible point.

The BLM is proposing roadside vegetation management under all Action Alternatives (including commercial and non-commercial treatments) by removing encroaching trees and vegetation including trees greater than 6 inches DBH (up to 36 inches DBH). Road numbers identified for roadside vegetation management and under which alternative are in the "Roadside Vegetation Management" column of Table 2-5. The removal of trees and vegetation would occur six feet horizontal distance away from the edge of the outside shoulder of the road on the fill slope side, and from the centerline of the drainage ditch (or the hinge point if no ditch) to three feet horizontal distance away from the top edge of the cut slope side of the road. The overall horizontal distance on the uphill side of the road would vary based on the height and angle of the cut slope. In cases where tree stumps would interfere with roadside grading, BLM is proposing the uprooting or grinding of stumps to a depth of six inches below the road surface or ditch line. A BLM fuels specialist would assess debris and trees that are not merchantable or desired for

firewood cutting and would have it hand piled and burned, clipped, or lopped and scattered, depending on the location. Typically, within 90 days after the completion of the vegetation management project, fuel reduction would begin as conditions allow.

#### 2.1.9.2 Temporary Road Construction

The BLM proposes to construct temporary roads to allow operators temporary access to treatment units where no previous roads exist. Where topography allows, roads would be located on stable areas such as ridges, stable benches, and gentle to moderate slopes. The BLM would authorize the construction of access routes to standards that would facilitate safe and efficient operations. Construction would include clearing, grubbing, removing, and disposing of vegetation and debris from within and adjacent to the temporary road. Work could also include the construction of a subgrade by excavating, leveling, grading, and outslipping.

Since the construction of temporary roads would only be for the access into timber harvest units identified as being in this project, the BLM would fully decommission temporary roads at the completion of timber harvest related activities. Fully decommissioning temporary roads would include subsoiling the surface to a depth of 12 to 18 inches or to a point where 10 inches diameter stones are the dominant substrate (whichever is shallower). Where it is determined by the Authorized Officer that subsoiling the temporary roads would cause unacceptable damage to soil or the root systems of residual trees along most of the temporary roads (i.e., within the dripline of trees), they may allow the use of intermittent subsoiling, or scarification instead. Equipment must be able to avoid rocky areas and adapt to changes in rock depth. The placement of slash, boulders, and other debris along each road's entire length would be determined by availability of materials to provide ground cover and discourage mechanized use. Blockage at the entrance of each road would consist of placing logs, slash, boulders, earthen berms, and other material to camouflage the entrance for a minimum distance of 100 feet and to preclude vehicle use. Seeding with approved native seed species and mulching with weed-free straw or approved native materials would occur within 100 feet of each road entrance.

Table 2-2: Distances (miles) of Temporary Roads listed by Alternative and Land Use Allocation.

New Temporary Roads	UTA	LITA	LSR	DDR	RR	Total
All Alternatives	0.25	0.0	0.11	0.16	0.0	

#### 2.1.9.3 Permanent Road Construction

The BLM proposes to construct new permanent roads to allow access to an area treated under this project as well as for future forest management. Where topography allows, roads would be located on stable areas such as ridges, stable benches, and gentle to moderate slopes. On slopes greater than 60 percent, end hauling of material would occur and disposed of on stable areas outside of riparian areas that would minimize risk of sediment delivery to streams and other waterways.

Table 2-3: Distances (miles) of New Permanent Roads listed by Alternative and Land Use Allocation.

Permanent Road Construction	UTA	LITA	LSR	DDR	RR	Total
All Alternatives	0.54	0.0	0.07	0.82	0.0	

#### 2.1.9.4 Road Opening, Renovation and Long-Term Closure (Decommissioning)

The BLM is proposing to open existing roads that were previously and are currently barricaded. The roads would be unbarricaded and renovated (see Road Renovation) to allow for timber haul. Once no longer required for haul, the BLM would place back the road into a long-term closure (decommissioned) state by effectively blocking and winterizing the roads prior to the wet season. The BLM would leave the

roads in an erosion-resistant condition by establishing cross drains, eliminating diversion potential at stream channels, and stabilizing or removing fills on unstable areas. Work may consist of water barring roads, removing culverts (armor, if necessary), seeding with native grasses, and mulching with weed-free mulch. Blockage at the entrance would consist of placing logs, slash, boulders, earthen berms, and other material to camouflage the entrance for a minimum distance of 100 feet or as needed to prevent unauthorized vehicle use. These would remain BLM system roads that are in a storage status.

Table 2-4: Distances (miles) of Decommissioned Roads by Alternative and Land Use Allocation.

Long Term Closure of Existing Roads	UTA	LSR	DDR	RR	Total
All Alternatives	0.87	0.51	0.84	0	2.23

#### 2.1.9.5 *Seasonal Restrictions (for log hauling)*

Seasonal Restrictions for Log Hauling are divided into three categories in Table 2-5.

- No restrictions.
- Hauling restricted between October 15 and May 15 are based on current surface condition. If conditions are unseasonably dry then a waiver would be issued allowing haul within this date range, and if conditions are unseasonably wet then the restriction would be extended outside of the date range. The Authorized Officer would wave restrictions during extended dry periods, when the haul is on sufficiently rocked roads, hauling over snow (R095), or during frozen conditions.
- Winter Haul allowed in accordance with SWO ROD/RMP BMPs (BLM 2016a, p. 18, Appendix C): R093, R094, R095, and R097.

Note: Prior to the wet season, generally October 15 through May 15, if BLM or the purchaser elects to furnish and place additional rock as per BLM specifications, the Authorized Officer may modify road specific seasonal haul.

#### 2.1.9.6 *Table 2-5: Proposed Haul Roads in the Project Area*

Table 2-5 describes the existing surface, if used for haul in each of the alternatives, any seasonal restrictions, and comments on the construction, closure, if it is in the roads system and availability of aggregate roads for winter haul. The Map in Figure A-3(Appendix A) shows helicopter landings in association with haul roads.

Road Number	Existing Surface	Seasonal Restriction (for Log Hauling)	Roadside Vegetation Management	Comments
36 S 03 W 30.00	Aggregate	Hauling restricted between Oct. 15 and May 15	All Alternatives	Rock is very thin
36 S 03 W 31.00	Aggregate	Hauling restricted between Oct. 15 and May 15	All Alternatives	Rock is very thin
37 S 03 W 02.00A	Aggregate	Hauling restricted between Oct. 15 and May 15	All Alternatives	Rock is very thin
37 S 03 W 02.00B	Aggregate	Hauling restricted between Oct. 15 and May 15	All Alternatives	Rock is very thin
37 S 03 W 09.00A	Aggregate	Winter haul allowed	No Treatment	
37 S 03 W 09.01A1	Aggregate	Winter haul allowed	No Treatment	
37 S 03 W 09.01A2	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 09.01B1	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 09.01B2	Aggregate	Winter haul allowed		
37 S 03 W 09.01B3	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 09.01C1	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 09.01C2	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 09.01D	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	

Road Number	Existing Surface	Seasonal Restriction (for Log Hauling)	Roadside Vegetation Management	Comments
37 S 03 W 09.01E	Natural	Hauling restricted between Oct. 15 and May 15	All Alternatives	
37 S 03 W 09.02A1	Natural	Hauling restricted between Oct. 15 and May 15	All Alternatives	
37 S 03 W 09.02A2	Natural	Hauling restricted between Oct. 15 and May 15	All Alternatives	
37 S 03 W 09.02B	Natural	Hauling restricted between Oct. 15 and May 15	All Alternatives	
37 S 03 W 09.02C	Natural	Hauling restricted between Oct. 15 and May 15	All Alternatives	
37 S 03 W 09.02D	Natural	Hauling restricted between Oct. 15 and May 15	All Alternatives	
37 S 03 W 11.00A	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 11.00B	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 11.00C	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 11.00D1	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 11.04	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	
37 S 03 W 12.00	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Long Term Closure
37 S 03 W 13.00	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	
37 S 03 W 15.01A	Aggregate	Hauling restricted between Oct. 15 and May 15	No Treatment	
37 S 03 W 15.01B	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	
37 S 03 W 15.01C	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	
37 S 03 W 15.01D	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	
37 S 03 W 15.01E	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	
37 S 03 W 15.03A	Aggregate	Winter haul allowed	No Treatment	
37 S 03 W 15.05A	Aggregate	Winter haul allowed	No Treatment	
37 S 03 W 15.05B	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Long Term Closure
37 S 03 W 17.00	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 21.00A	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 21.01A	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 21.01B	Aggregate	Winter haul allowed	All Alternatives	
37 S 03 W 21.02A	Aggregate	Hauling restricted between Oct. 15 and May 15	No Treatment	Rock is very thin
37 S 03 W 21.05	Natural	Hauling restricted between Oct. 15 and May 15	All Alternatives	
37 S 03 W 25.00B	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	
37 S 03 W 25.00C	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	
37 S 04 W 04.00A	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 04.00B1	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 04.00B2	Aggregate	Winter haul allowed	All Alternatives	

Road Number	Existing Surface	Seasonal Restriction (for Log Hauling)	Roadside Vegetation Management	Comments
37 S 04 W 04.01A	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 04.01B	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 04.01C	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 05.01A1	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 05.02	Aggregate	Hauling restricted between Oct. 15 and May 15	All Alternatives	Rock is very thin
37 S 04 W 05.05A	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 09.02	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Long Term Closure
37 S 04 W 12.00A	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 12.00B1	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 12.00B2	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	
37 S 04 W 13.00	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 15.00A	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 15.00B	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 15.00C1	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 15.00C2	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 15.00C3	Natural	Hauling restricted between Oct. 15 and May 15	All Alternatives	
37 S 04 W 21.00	Natural	Hauling restricted between Oct. 15 and May 15	All Alternatives	
37 S 04 W 21.01	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 21.02	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	
37 S 04 W 22.00A1	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 22.00A2	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 22.00B1	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 22.00B2	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 22.00C1	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 22.00C2	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 27.01A	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 27.01B	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 27.02	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 27.04A1	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 27.04A2	Aggregate	Winter haul allowed	All Alternatives	
37 S 04 W 27.04B	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 28.00	Aggregate	Winter haul allowed	No Treatment	
37 S 04 W 34.00A	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	
NS 36 S 04 W 27.00	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Non-System Road
NS 37 S 03 W 08.00A	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Non-System Road
NS 37 S 03 W 08.00B	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Non-System Road
NS 37 S 03 W 10.01	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Non-System Road, Private owned reopen and close upon completion of haul

Road Number	Existing Surface	Seasonal Restriction (for Log Hauling)	Roadside Vegetation Management	Comments
NS 37 S 03 W 15.06	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Long Term Closure, Non-System Road
NS 37 S 03 W 19.00	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Non-System Road
NS 37 S 03 W 20.00	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Non-System Road
NS 37 S 04 W 05.07	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Long Term Closure, Non-System Road
NS 37 S 04 W 15.00D	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Non-System Road
NS 37 S 04 W 21.04	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Non-System Road
NS 37 S 04 W 28.04	Aggregate	Winter haul allowed	No Treatment	Non-System Road
NS 37 S 04 W 34.00B	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Non-System Road
NS 37 S 04 W 34.00C	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Non-System Road
NC 37 S 03 W 17.01A	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Proposed Permanent Construction
NC 37 S 03 W 19.00B	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Proposed Permanent Construction
NC 37 S 03 W 5.00	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Proposed Permanent Construction
NC 37 S 03 W 8.00C	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Proposed Permanent Construction
NC 37 S 04 W 34.00D	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Proposed Permanent Construction
TR 1-2	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Proposed Temporary Construction
TR 15-2	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Proposed Temporary Construction
TR 15-3	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Proposed Temporary Construction
TR 21-3	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Proposed Temporary Construction
TR 9-5	Natural	Hauling restricted between Oct. 15 and May 15	No Treatment	Proposed Temporary Construction

#### 2.1.9.7 Access to Helicopter Service Landings

Fuel and service vehicles would access helicopter landings from existing roads.

#### 2.1.9.8 Existing Rock Quarry Activities

The BLM identifies two proposed rock quarries available for contractor to remove and process aggregate for use on road surfaces.

The BLM proposes to remove rock within the existing developed footprint of the Birdseye West Quarry (#480). Activities within the existing developed quarry includes clearing and grubbing of all vegetation within the development area and drilling and shooting within the perimeters of the proposed development. The BLM would allow the re-opening of the existing access to the quarry benches. Birdseye West Quarry

would have new safety bench constructed at the top. The BLM estimates the processing of 13,100 cubic yards of material from the Birdseye West Quarry. The quarry development would primarily provide crushed rock for placement on roads in the Birdseye Creek area. The quarry would also provide oversized boulders for road barricades and road repairs or armoring within the Birdseye Creek area.

The BLM proposes to remove rock within the existing developed footprint of the Galls Creek Quarry (#501). Activities within the existing developed quarry includes clearing and grubbing of all vegetation within the development area and drilling and shooting within the perimeters of the proposed development. The BLM would allow the re-opening of the existing access to the quarry benches. The BLM estimates the processing of 21,000 cubic yards of material from the Galls Creek Quarry. The quarry development would primarily provide crushed rock for placement on roads in the Galls Creek area. The quarry would also provide oversized boulders for use as road barricades and for road repairs, or armoring, within the Galls Creek area.

#### 2.1.10 Tables Comparing all Proposed Action Treatments by Alternative:

2.1.10.1 Table 2-6: Timber Harvest Treatment by Acres of Land Use Allocation

Management Action (Treatment)	Land Use Allocation	Alternative 2	Alternative 3	Alternative 4
Selection Harvest	HLB-UTA	1,168	1,211	1,211
Selection Harvest	LSR-Dry	218	450	450
Selection Harvest	DDR	37	44	44
Stand Thinning*	DDR-TPCC	12	17	17
Stand Thinning	RR-Dry	7	7	7
Total Acres of Commercial Units (Timber Harvest)	All	1,413	1,698	1,698
Small diameter (<8" DBH) thinning	All	1,413	1,698	1,698

\*Scattered incidental amounts included for operations, safety, or to refine stand type delineations.

2.1.10.2 Table 2-7: Transportation Management Activities in Miles all Action Alternatives

The BLM approximated all mileages to within a mile.

Transportation Management Activity (Roads)	All Action Alternatives
Road Maintenance and Renovation	60 miles
Temporary Road Construction	1 mile
Permanent Road Construction	2 miles
Long-Term Closure	3 miles
Timber Haul	62 miles
Wet Season Haul	33 miles
Roadside Vegetation Management	33 miles

2.1.10.3 Table 2-8: Helicopter Landing Ownership and Numbers by Alternative

A map of the helicopter landings is in Appendix A, Figure A-3

Helicopter Landing Ownership and Type	Alternative 2 Total Number	Alternative 3 Total Number	Alternative 4 Total Number
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BLM Existing Landings	3	4	4
BLM New Landings	8	13	13
Private Existing Landings	2	3	3
Private New Landings	3	4	4
Total Landing by Alternatives	16	24	24

### Alternatives Considered but Eliminated from Detailed Analysis

The BLM considered the alternatives below but did not analyze them in detail because they met one of the criteria listed below (See BLM NEPA Handbook H-1790-1 (2008), Section 6.6.3). See Appendix E for further details.

- It is ineffective (it would not respond to the purpose and need).
  - It is technically or economically infeasible.
  - It is inconsistent with the basic policy objectives for the management of the area (such as not in conformance with the SWO ROD/RMP).
  - Its implementation is remote or speculative.
  - It is substantially similar in design to an alternative that is analyzed.
  - It would have substantially similar effects to an alternative that is analyzed.
- 1) Non-Commercial (natural hazardous fuels) treatments within the HLB, LSR-Dry and RR-Dry as part of the Rogue Gold FMP.
  - 2) An Alternative that withdraws all Nesting, Roosting foraging NSO habitat (across all LUAs) to maintain habitat and reduce barred owl competition.
  - 3) An Alternative to that creates the minimum percentage of skips (10 percent) and the maximum percentage of gaps (30 percent) using Group Selection Harvest in HLB.
  - 4) An Alternative where there is no removal of trees over 20 inches.
  - 5) An Alternative to conduct understory thinning only, no overstory thinning.
  - 6) An Alternative that increases the construction of roads to reduce helicopter yarding.
  - 7) An Alternative with no helicopter logging operations.
  - 8) An Alternative with no new roads
  - 9) An Alternative to reduce road density by full decommissioning and obliteration of decommissioned, permanent, and new roads.

## **Section 3: Affected Environment & Environmental Consequences**

This chapter identifies and describes the current condition and trend of elements or resources in the human environment which may be affected by the potential alternatives in Section 2. The Affected Environment is the same for all alternatives.

### **Issue 1: What would the estimated volume of timber be from the Harvest Land Base in this project? How would this volume contribute to the achievement of the declared Allowable Sale Quantity for the Annual Medford Sustained Yield Unit in Fiscal Year 2023?**

#### ***3.1.1 Background***

Under the Oregon and California Railroad Act of 1937, the BLM is mandated to manage the O&C lands to provide for timber production on a sustained yield basis to achieve the acts myriad purposes. 43 U.S.C. § 2601. The Medford Sustained Yield Unit (SYU), under the 2016 Southwest Oregon RMP, includes the Ashland, Butte Falls, and Grants Pass Field Offices.

#### ***3.1.2 Analytical Process***

This analysis focuses on answering how well the alternatives meet the purpose and need for conducting timber harvest within the selected stands in the Harvest Land Base (HLB) to produce timber to contribute to the attainment of the declared ASQ for the Medford SYU for fiscal year (FY) 2023. The unit of measure used in this analysis is volume of timber in million board feet. In the SWO ROD/RMP, the BLM declared the annual ASQ for the Medford SYU to be 37 million board feet (MMbf) (see Section 1.5 and USDI 2016c, pp. 5-6). Per the RMP, the BLM can offer for sale in each SYU as much as 40% variation on an annual basis, which equates to between 22 MMbf and 52 MMbf annually (USDI 2016c, p. 6). For the purposes of this analysis, the BLM used 37 MMbf, the midpoint value of the allowable annual ASQ range, to calculate the percentage of volume each alternative would contribute. The BLM also notes whether each alternative would produce timber volume within the allowable annual range and how much.

#### ***3.1.3 Assumptions***

Other planned projects with proposed timber harvest in the HLB for the coming fiscal year in 2023 for the Medford SYU include: Dead West and Cabin Paradise for the Butte Falls Field Office; and Rum Creek Hazard and Salmon Run for the Grants Pass Field Office, Lower Sterling Salvage and Lickety Split Salvage for the Ashland Field Office. Based on the Medford District's Annual Timber Sale Plan, the projected volume from these other projects is estimated to be 27.7 MMbf of the total contribution to the Medford District's declared ASQ for FY 2023. These projected volume contributions would remain the same for all alternatives.

Harvest levels for Rogue Gold project range from 4.6 Mbf per acre to 8.2 Mbf per acre, with 6.4 Mbf per acre for the average. Each alternative looks at different harvest levels that align with the model of different relative densities. Baseline numbers were estimated using recent cruise data within the Medford District and extrapolated on the stand modeling discussed in this EA.

##### ***3.1.3.1 Summary of Analytical Methods***

The measurement indicator for evaluating this project's contribution to the declared ASQ for the stated fiscal years is the anticipated percent of the SYU's ASQ offered volume expected to be produced during implementation of the Rogue Gold Project. The estimated volumes are based on proposed harvest in the HLB. The BLM is proposing timber harvest in other land use allocations, therefore, non-ASQ volume

would result from this project in LSR and RR, but that volume is not analyzed here.

### 3.1.4 Affected Environment

The Ashland Field Office is one of three field offices on the Medford District that contributes timber volume towards meeting the declared ASQ for the Medford SYU. Butte Falls and Grants Pass Field Offices would offer up the following sales to help achieve ASQ for the Medford SYU: Dead West, Cabin Paradise, Lower Sterling Salvage, Rum Creek Hazard, Lickety Split Salvage, and Salmon Run.

#### Spatial Scale:

This analysis evaluates only acreage in the Harvest Land Base within the project boundary for proposed treatment that were identified for commercial treatment. The Ashland Field Office has only HLB- Uneven-Aged Timber areas within the project boundary. The 21 acres of HLB-Low Intensity Timber Area (LITA) were determined to be unsuitable for treatment at this time for commercial thinning or regeneration harvest (SWO RMP pgs. 64-65).

#### Temporal Scale:

Fiscal Year 2023 (October 1 – September 30)

### 3.1.5 Environmental Consequences

Table 3.1: Estimated Timber Volume Available, Other Planned Medford SYU Projects for Each Rogue Gold Alternative.

	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Volume (MMbf)	0	5.4	7.8	10.0
Percent of Total BLM Medford District SYU declared in FY 23	0%	25%	37%	47%
Combined Medford District SYU Volume (MMbf) for FY23	21.2	26.6	29.0	31.2
Percentage of the SYU (37 MMbf) Medford Declared in FY 23	58%	72%	78%	84%

#### 3.1.5.1 Alternative 1

Under Alternative 1, the implementation of a timber harvest would not occur at this time. This alternative would not provide timber to contribute volume to the SYU and therefore would not contribute ASQ. Other projects in the Medford District would continue as planned. Based on the current sale schedule the Medford would be just shy of the 40% variation in declared ASQ for fiscal year 2023.

#### 3.1.5.2 Alternative 2

At the scale of the SYU for fiscal year 2023, Alternative 2 would contribute approximately 5.4 MMbf to the Medford SYU's ASQ requirement based on the annual variation range of the declared ASQ (Refer to Table 3-1). If the offered timber sales take place on the currently planned schedule, the BLM would implement timber sales from the Rogue Gold project and other planned projects in the Medford SYU, and these projects would all contribute to the cumulative ASQ volume. The approximately 5.4 MMbf estimated to be produced in Alternative 2, combined with the approximately 21.2MMbf from other planned projects in the Medford SYU would contribute a total of approximately 26.6 MMbf to the fiscal year ASQ for 2023. The cumulative effect of these projects, combined with the timber harvest proposed under Alternative 2, would 25% of the Medford SYU declared ASQ for fiscal year 2023.

#### 3.1.5.3 Alternative 3

At the scale of the SYU for fiscal year 2023, Alternative 3 would contribute approximately 7.8 MMbf to the Medford SYU's ASQ requirement based on the annual variation range of the declared ASQ (Refer to Table 3-1). If the offered timber sales take place on the currently planned schedule, the BLM would implement timber sales from the Rogue Gold project and other planned projects in the Medford SYU, and these projects would all contribute to the cumulative ASQ volume. The approximately 7.8 MMbf estimated to be produced in Alternative 3, combined with the approximately 37.0 MMbf from other planned projects in the Medford SYU would contribute a total of approximately 29.0 MMbf to the fiscal year ASQ for 2023. The cumulative effect of these projects, combined with the timber harvest proposed under Alternative 3, would contribute 37% of the Medford SYU declared ASQ for fiscal year 2023.

#### 3.1.5.4 Alternative 4

At the scale of the SYU for fiscal year 2023, Alternative 4 would contribute approximately 10.0 MMbf to the Medford SYU's ASQ requirement based on the annual variation range of the declared ASQ (Refer to Table 3-1). Assuming that the offered timber sales take place on the currently planned schedule, the BLM would implement timber sales from the Rogue Gold project and other planned projects in the Medford SYU, and these projects would all contribute to the cumulative ASQ volume. The approximately 10.0 MMbf estimated to be produced in Alternative 4, combined with the approximately 21.2 MMbf from other planned projects in the Medford SYU would contribute a total of approximately 31.2 MMbf to the fiscal year ASQ for 2023. The cumulative effect of these projects, combined with the timber harvest proposed under Alternative 4, would contribute 47% of the Medford SYU declared ASQ for fiscal year 2023.

### **Issue 2: How would the potential changes in erosion rates, sediment transport, and turbidity resulting from timber haul, road maintenance, road building, and other ground disturbing activities proposed within Riparian Reserves affect water quality and aquatic habitat?**

#### 3.1.6 Background

Ground disturbing activities have the potential to expose soil, displace soil, break down soils or aggregates, and increase compaction, all of which could result in increased rates of erosion. Increased erosion in or directly adjacent to stream channels could result in direct inputs of sediment into aquatic habitat, and displaced soils (fine sediment) in upland areas could be indirectly conveyed downslope towards aquatic habitat during precipitation events. On compacted surfaces such as roads, run-off capable of transporting fine sediment is much more likely to occur than from undisturbed ground. Where disturbances are connected to aquatic features (hydrologic connectivity), the probability for fine sediment to be input into aquatic habitat is increased. Sediment transported to aquatic habitats may either settle into the aquatic substrate or result in increased turbidity, depending on the sediment particle size, stream gradient and flow velocity, and nature and timing of the inputs. Both sediment and turbidity can be detrimental to aquatic organisms and their habitats in excessive amounts or durations.

Ground disturbing activities proposed in this project include felling and yarding of timber, follow up slash treatments, temporary and permanent new road and landing construction and use, road maintenance, and log haul. Of these activities, road maintenance and log haul would have direct hydrologic connectivity with aquatic habitats. All other disturbance would occur in upland areas outside of or in the middle and/or outer zones of Riparian Reserves, where 7 acres of commercial thinning is proposed.

#### 3.1.7 Methodology

The Rogue Gold Forest Management Project is proposed primarily in the southern portion of the Gold

Hill-Rogue River Watershed. One unit is proposed in the Grants Pass-Rogue River Watershed, and 2 units are proposed in the Bear Creek Watershed. Additionally, portions of haul routes near ridge lines include short segments that are within the Middle and Lower Applegate Watersheds; however, these ridgetop roads do not have hydrological connection with any stream channels. The Rogue Gold Aquatic Analysis Area (see map, Appendix A, Figure A-7) includes all seventh field Hydrologic Unit Code (HUC-7) drainages where project activities are proposed that have hydrologic connectivity with streams. This area includes the Birdseye, Foothills, Kane and Galls Creek catchment basins, as well as the smaller drainages of Little Savage Creek, Schieffelin Gulch, Millers Gulch, and headwater areas within the Jackson Creek and Willow Creek catchments in the Bear Creek Watershed. All of these streams are distinct HUC-7 drainages, with the exception of the Foothills Creek catchment, which includes 5 drainages. Analysis of effects to aquatic habitat and water quality from ground disturbing activities is focused on those activities that have hydrological connectivity to aquatic habitat and assumes that Riparian Reserves are effective at precluding off-site sediment transport from ground disturbance in upland areas from reaching aquatic habitat. Upland (i.e., outside of Riparian Reserves) ground disturbing activities that are hydrologically disconnected, such as harvest and timber yarding, temporary and permanent road construction, and construction and use of proposed landings would have little potential to contribute sediment to aquatic habitat or affect water quality (see assumptions, below).

In this project, portions of the haul routes and roads proposed for maintenance have direct hydrological connectivity to aquatic habitats and therefore these activities have the greatest potential to contribute sediment to streams. Analysis of sediment from haul utilizes a study conducted in the coast range of Oregon (Luce and Black 2001) which quantified sediment production from winter season haul. Haul routes for this project were identified in GIS, and all paved routes discounted as there is no probability that hauling on paved surfaces would result in increased erosion or sediment/turbidity transport to aquatic environments. Analysis of haul routes includes county roads and excludes paved routes on BLM, so haul route miles utilized for this analysis would not match haul route miles reported in table 2.7. The number of stream crossings each unpaved haul route would cross was calculated, and the area of hydrologically connected road and number of truck crossings was then estimated for each stream crossing within each HUC 7 to provide an estimate of the potential volume of sediment contributed to aquatic habitat from haul under each of the action alternatives.

The BLM inventoried streams in the planning area to ensure all areas needing Riparian Reserve protection were identified. The BLM assessed stream duration and location and documented the location of wetland and unstable areas to assure that sensitive areas are excluded from commercial treatment units and would successfully filter sediment from transporting off-site.

### 3.1.8 Assumptions

This analysis assumes that Riparian Reserves are effective at precluding sediment transport to aquatic habitat from upland areas of disturbance. Rashin et al. (2006) found that sediment delivery to streams is unlikely when erosion features (e.g., yarding corridors) are greater than 32 feet (10 meters) from the channels. In this project, Riparian Reserve widths are 165 feet for streams, 100 feet for lakes, natural ponds, reservoirs, wetlands larger than 1 acre, and 25 feet for ponds, constructed water impoundments, and wetlands smaller than 1 acre (including springs). Only log haul, road maintenance, commercial thinning of small portions of middle and outer zones, and construction of one new helicopter landing (outer zone) are proposed within Riparian Reserves in this project. The buffer widths incorporated into this project are in excess of the 10 meters reported by Rashin as being effective at protecting aquatic habitat from sediment inputs, and commercial thinning in middle/outer zones of Riparian Reserves would occur well beyond 10 meters from stream channels.

The analysis of sediment contributed by haul in this EA assumes that all haul would occur during the wet season, that an average log truck load is 4,000 board feet of timber, that there is hydrological connectivity

at every point the haul routes cross aquatic habitats, that the portion of the road most likely to deliver sediment to the stream is the 200 feet of road uphill of and adjacent to the crossing point, and that 2,106 pounds of wet sediment equates to one cubic yard of sediment. It also assumes a constant rate of aggregate break down, and that all sediment generated by haul within 200 feet of each crossing is conveyed to the stream during wet weather. Because this analysis assumes wet season haul only, and the 2001 Luce and Black study which it relies on was conducted in a much wetter climate, this methodology would tend to result in overestimation of sediment transport to aquatic habitat. Acknowledging that this analysis may not accurately predict sediment production or contribution to aquatic habitats from this project, it does show the potential differences in magnitude between the alternatives.

#### 3.1.8.1 Measurement Indicators

The measurement indicator for this analysis is pounds of sediment contributed to aquatic habitat by haul. It is also expressed volumetrically as cubic yards.

#### 3.1.9 Affected Environment

The aquatic analysis area includes 13 HUC-7 drainages where timber harvest and/or through which hydrologically connected haul routes are proposed (Appendix A map A-3). The analysis area includes 38.9 miles of fish bearing streams, the majority (36.3 miles) of which are on private lands. Proposed project activities are concentrated in drainages within the southern portion of the Goldhill-Rogue River Watershed, and within this area, Foothills, Birdseye, Galls, and Kane Creeks are known to be important summer steelhead spawning and rearing streams (Everest 1973), and historically supported some of the highest observed summer steelhead spawning densities in the Middle Rogue River Basin. The lower reaches of these streams are also accessible to and are occasionally used by Coho Salmon, when favorable conditions occur (high stream flows coinciding with spawning migrations).

Summer rearing habitat is limited in many of these streams in most years however, as numerous reaches are prone to drying up during the late summer months. Millers Gulch is also fish-bearing and provides habitat for Steelhead and Cutthroat trout. Other native aquatic organisms commonly found in the analysis area streams include sculpin, Signal Crayfish, Pacific Giant Salamanders, and Cutthroat Trout which are often found in the furthest upstream reaches. Units and haul routes in the Bear Creek Watershed are located well upstream of fish use in the Willow and Jackson Creek drainages, and the lone unit in the Grants Pass Rogue River Watershed is likewise located well upstream of fish use in the Little Savage Creek drainage, but these streams do provide at least seasonal habitat for steelhead and trout in their lowest reaches. Streams that support anadromous fish (Coho and Steelhead) are considered Coho Critical Habitat (CCH) for Endangered Species Act listed threatened Coho Salmon.

Coho require a year of juvenile freshwater residency (typically in smaller streams as opposed to the mainstem Rogue River) as part of their life cycle, and because many of the analysis area streams seasonally dry up in the lower, Coho accessible reaches, the streams in the analysis area currently provide only limited rearing habitat for Coho. These streams are important summer steelhead spawning streams however, and may provide valuable over-winter habitat to other species, such as juvenile Coho seeking refuge from high flows in the mainstem Rogue River. Oregon Department of Fish and Wildlife (ODFW) has in recent years operated fry traps and performed fish salvage as area streams have dried up due to drought in several of the analysis area streams, and they have observed thousands of trout fry (assumed to be steelhead), but only a limited number of salmon fry (ODFW 2022).

Table 3-2. Represents miles of fish bearing streams within the aquatic analysis area. Trout miles are inclusive of Steelhead and Coho, and Steelhead miles are inclusive of Coho, as these species all overlap in lower stream reaches.

Table 3-2: Miles of fish bearing streams within the aquatic analysis area.

Stream	Fish Bearing Stream Miles		
	Coho	Steelhead	Trout
L savage	0	0.3	0.3
Birdseye	1.5	4.5	5.8
Foots	4	12.7	15.1
Galls	2.6	6.1	7.2
Kane	0	5.9	7
Millers	0	1	1
Willow	0	2.5	2.5
<b>Total</b>	<b>8.1</b>	<b>33</b>	<b>38.9</b>

Aquatic habitat in the analysis area is generally characterized by narrow, channelized streams in the valley bottoms, where past activities including gold mining and development of the land have resulted in straightened, single-channeled streams that have incised and become disconnected from their historic floodplains. Instream habitat features through these reaches are dominated by fast water habitats, and large wood and deep pools are lacking. Riparian corridors in the valley bottoms are narrow, as the streams are closely bordered by roads, homes, and agricultural fields. The amount of water allocated for diversion exceeds minimum stream flows, and extensive pumping of ground water occurs to supply water to the numerous residences located in the lower portions of the watershed. The lack of surface water availability during the late summer and into fall is the biggest limiting factor for aquatic habitat and aquatic organisms in these areas.

Upper portions of the watershed drain steep forested slopes where timber management of private and BLM lands is the dominate land use. Streams in these upper areas are naturally steeper and constrained by topography. Riparian corridors are wider, and large wood is more commonly found in stream channels throughout the forested reaches. Surface water is generally more available throughout the summer season in perennial stream reaches in these areas. An extensive network of forest roads exists to facilitate timber harvest, and these roads are sources of sediment delivery to the watershed streams. Excessive sediment has not been documented as a primary limiting factor to aquatic organisms in Foots and Galls Creeks when analysis area streams were surveyed by the ODFW in 1991.

Surveys included observations of substrate compositions and documented that substrates are dominated by gravels and cobbles in surveyed reaches (primarily located on private lands) of Foots, Birdseye, and Galls Creeks. BLM surveys documented that Kane Creek substrate is dominated by fine sediment (decomposed granite), which was found to account for 70% of all substrates on a BLM reach of Kane Creek (USDI 2005). Sediment levels in Kane Creek are very high, and result from roads and Off Highway Vehicles (OHV) trails which were built through areas of highly erodible granitic soils. Fine sediment levels in Millers Gulch were also documented as being high (40-60%) on a surveyed perennial reach on BLM (USDI 2001). The high sediment levels in Millers Gulch may result from the presence of a large silica mine, which several stream channels historically drained through.

High road densities in the drainage basin may also be a contributing factor. Sediment levels were also found to be high (30-60%) on several surveyed reaches of the Left Fork of Birdseye Creek on BLM lands (USDI 2003). An adjacent riparian road had evidence of past culvert failures and road erosion with deep runs on the road surface, some of which led directly to streams. This road has since been storm proofed to improve its drainage and to disconnect it to the extent possible from aquatic habitat in Birdseye Creek. No analysis area streams are listed as water quality limited for sediment, however.

### *3.1.10 Environmental Effects*

#### *3.1.10.1 No Action Alternative*

Under the No Action Alternative, there would be no direct or indirect effects to aquatic habitat from increased erosion rates, sediment transport, or turbidity resulting from haul, or any related timber sale activities, as there would be no timber sale, and hence no associated ground disturbing activities. Therefore, there would be no causal mechanism to increase erosion rates. Aquatic habitat would continue to be impacted from non-natural sediment and turbidity inputs from past and ongoing disturbances, notably from hydrologically connected roads and disturbances in areas of sensitive soils. Because there would be no direct or indirect effects to erosion and sediment/turbidity transport rates, there would be no cumulative effects to aquatic habitat resulting from selection of the No Action Alternative.

There has been recent timber harvest in many of the analysis area streams, and associated activities including road construction/re-construction and timber haul have occurred in the Foots, Kane, and Galls Creek analysis areas. These activities are projected to continue in the foreseeable future, and road use to facilitate harvest of timber on private lands will continue to input sediment into analysis area streams. As a foreseeable future action, the Oregon Dept. of Forestry is in the process of implementing rule changes that would affect how logging of private lands is conducted (OFRI 2022). These changes are scheduled to go into full effect in 2024 and are proposed to reduce impacts to fish and amphibian species and include larger stream buffer widths (this rule will go in effect in July of 2023), upgrading standards for culverts on forest roads, additional rule modifications for new road construction to reduce sediment impacts to aquatic habitat, and modifying rules for logging of steep slopes to reduce erosion potential. These changes would ultimately reduce sediment inputs to streams from logging on private lands relative to current conditions, and these changes would likely be in effect before implementation of the proposed Rogue Gold Forest Management Project.

Fuels treatments are another foreseeable future action that is likely to occur, including within the Riparian Reserves of some streams, within the analysis area, but would require 60 foot no treatment buffers adjacent to perennial and fish streams; intermittent streams could be treated throughout the entire Riparian Reserve. Fuels treatments typically are implemented during the wet winter and spring months, when live fuels are still moist, resulting in a mosaic of burned and unburned areas. The riparian areas are the wettest areas within any given fuels unit and therefore are the areas likely to burn with the least intensity, resulting in higher percentages of unburned areas. Unburned live vegetation and litter would remain in the riparian areas following treatments. For these reasons, it is unlikely that fuels treatments would result in detectable inputs of sediment or ash to aquatic habitats.

#### *3.1.10.2 Common to All Action Alternatives*

The footprint of proposed actions would be similar under each of the action alternatives, with minor variations between unit acres treated for commercial harvest, and harvest intensity, and a few units which are proposed under Alternatives 3 and 4 would not be harvested under Alternative 2. All action alternatives propose varying levels of harvest across slightly varying acres of project units, post-harvest activity fuels treatments, yarding of timber, construction and use of new temporary and permanent roads (total 2 miles in length), long term road closures (totaling 2.7 miles), and use and construction of existing and new skid trails and landings as described in Chapter 2 of this EA. All new road construction and long-term road closures would occur on ridge tops far from any stream channels and construction and use of new landings would occur outside of Riparian Reserves except for one proposed new helicopter landing (discussed below). No harvest or yarding of timber is proposed within inner zones of Riparian

Reserves. All of these activities would be hydrologically disconnected from aquatic habitats. For this reason, sediment mobilization to aquatic habitat is unlikely to occur from these project activities.

Under each alternative, one new helicopter landing is proposed within a designated Riparian Reserve of a small intermittent stream which is captured by the Gold Hill Irrigation Canal. This area is an old mine site which was been levelled and compacted and is now a large open space located on a bench approximately 100 feet north of the small stream. The proposed expansion of this area would occur to the north and away from the stream on the bench which is sloped away from the stream and existing vegetation between the landing and the stream is not proposed to be disturbed. For these reasons expansion and use of the existing open area is not likely to result in additional sediment transport to the small intermittent stream.

Under each action alternative, road maintenance and log haul would occur, and these activities would have hydrological connectivity with aquatic habitat, and therefore have potential to contribute sediment to analysis area streams. Roads proposed for maintenance and haul are the same for each alternative.

#### *3.1.10.3 Road Maintenance*

Road maintenance is proposed to occur on road segments to be utilized for haul, as described in Section 2. Ground disturbing road maintenance activities would be restricted to the dry season and all activities would be suspended during precipitation events (i.e., rare thunderstorms).

There is little probability that repairing drainage of existing roads would contribute sediment to streams. Though reshaping the road surfaces (installation of water bars or rolling dips or creating out slopes or crowns) would involve disturbance to the road surface, the intent of these activities is to disconnect the road from the stream system to the extent possible, yielding a long-term reduction in sediment transport to streams. Maintenance activities would only occur during the dry season. Any displaced sediment resulting from maintenance activities not stabilized prior to the onset of fall rains could potentially be transported down the road prism; however, drainage structures on the road prism are engineered to turn water and sediment carried by it off the road prism and into downslope forest vegetation, where it would be filtered out prior to reaching active stream channels.

Grading has potential to increase sediment production, because grading can break up armor layers on the road surface, temporarily increasing road surface erosion. However, Luce and Black (1999) noted that blading of only the travel-way yielded no increase in sediment production whereas blading of ditches, which often occurs during grading operations, substantially increased sediment yield. BLM is proposing only spot treatments in ditchlines as necessary to improve drainage, and ditch approaches to stream crossings would not be treated. Furthermore, this work would occur during the dry season, and disturbed ground would be stabilized prior to the onset of the wet season. For these reasons, road maintenance activities as proposed are not likely to result in detectable inputs of sediment to aquatic habitats. These activities should, as indicated, result in less sediment input to streams as the roads are improved regarding increased armoring and capacity to shed water.

#### *3.1.10.4 Log Haul*

Log haul is proposed under each of the action alternatives and includes routes where winter (wet season) hauling would be permitted, and routes where hauling would be restricted to the dry season only (see table 2-5). Non-paved county routes, which are not included in the proposed haul and transportation management tables, are included in the following analysis. These county routes have rocked surfaces and would be available for wet season haul.

Haul is known to accelerate erosion rates on roads through the breakdown of surface material and creation

of erosion features, such as ruts. Roads are more susceptible to disturbance when they become saturated. During such periods, they are more likely to develop ruts which can expose the subgrade. Dry-season use is less damaging, as ruts are unlikely to result, but heavy use (even in the dry season) would result in increased erosion of the road surface through the breakdown of aggregate or native surfaces. Because haul increases erosion rates, portions of haul routes with connectivity to streams would be expected to contribute some amount of sediment to the aquatic system.

Weathering of road surfaces can lead to sediment and turbidity contributions to aquatic habitats, and haul can accelerate rates of erosion, particularly during the wet season (Luce and Black 1999; Reid and Dunne 1984). Where roads are hydrologically connected to streams, eroded sediment from road surfaces can be input directly to the channel. Hydrological connectivity is present at any point where roads and streams interface. Connectivity changes in response to climatic conditions, with the greatest road-stream hydrological connectivity occurring during the wettest period of the year, when soil moisture contents are high, groundwater tables elevated, and runoff more likely (Furniss et al. 2000). For this reason, wet season use of a given road system has a higher potential to contribute impacts to aquatic habitat than dry season use.

Under each of the action alternatives, proposed non-paved and hydrologically connected haul routes total 69 miles, and would cross a total of 155 streams, the majority of which (135) are intermittent. Crossing structures are primarily culverts, with bridges over the larger streams. There are no fords over streams on any of the proposed haul routes. The main access routes would be the Foothills Creek, Birdseye Creek, Galls Creek, and Kane Creek roads. Routes would cross 9 fish bearing streams, including 1 crossing over the Right Fork of Birdseye Creek, 3 crossings over the Right Fork of Foothills Creek, one crossing over the Left Fork of Foothills Cr, and one crossing over Galls Creek, all of which are documented steelhead streams at the crossing locations. The other 3 fish crossings are over cutthroat habitat in smaller tributary streams. Effects from haul would vary in magnitude by alternative, as each alternative proposes different levels of haul in different areas, and therefore different levels of use and correlated erosion of road surfaces.

The estimated amount of sediment that predicted to be contributed to analysis area streams from haul uses sediment production rates described in a study by Luce and Black (2001) which found that a volume of haul equivalent to 12 daily truck loads per workday for one month (240 total truck loads) on rocky roads during the wet season in the coast range of Oregon increased sediment production from the road surface by ~ 380 kg/km of road. Applying this erosion rate to the assumed 200 feet of hydrologically connected roads to each of the 155 stream crossings results in an estimated 31,000 linear feet of hydrologically connected routes spread across the entire analysis area. Each crossing in GIS was then assigned an estimated haul volume value (number of truck crossings) based on the estimated unit volume accessed by each crossing for each alternative. The result of the analysis estimates pounds of sediment contributed to channels in Analysis Area streams from haul, which in turn can be expressed volumetrically as cubic yards. Inputs were estimated site specifically for each analysis area drainage for each alternative. Estimates are a function of both the number of stream crossings, which act as an effect multiplier, and with the estimated haul volume, and are presented by major stream catchment and alternative below (Table 3-3).

Table 3-3: Miles of Haul Routes, Number of Stream Crossings, and Estimated Sediment Contributed to Aquatic Habitat by Alternative and Analysis Area catchment.

Stream Catchment	Haul Route Miles	Number of Stream Crossings	Estimated Pounds of Sediment		
			Alt 2	Alt 3	Alt 4

L Savage	1.1	2	2	2	2
Schieffelin	0.3	2	20	33	36
Birdseye	7.6	24	293	293	293
Foots	27.1	61	1149	2120	2950
Millers	3.7	6	23	175	339
Galls	20.3	35	2034	3558	4647
Kane	6.1	16	209	309	474
Willow	0.8	0	0	0	0
Jackson	1.9	9	474	1619	1007
<b>TOTAL</b>	<b>68.9</b>	<b>155</b>	<b>4204</b>	<b>8109</b>	<b>9748</b>

#### 3.1.10.5 Alternative 2

##### *Direct and Indirect Effects*

An estimated 1,486 log truck loads would be required to haul off harvested as proposed under Alternative 2, which proposes the least amount of harvest of all the action alternatives, and therefore would result in the least amount of sediment contributed to aquatic habitat by haul, estimated at 4,204 pounds, or approximately 2 cubic yards of sediment.

#### 3.1.10.6 Alternative 3

##### *Direct and Indirect Effects*

An estimated 2,481 log truck loads would be required to haul harvested timber as proposed under Alternative 3, resulting in an estimated input of 8,109 pounds (approximately 3.9 cubic yards) of sediment to aquatic habitats.

#### 3.1.10.7 Alternative 4

##### *Direct and Indirect Effects*

An estimated 3,289 log truck loads would be required to haul harvested timber as proposed under Alternative 4, which proposed the highest amount of timber harvest, and therefore would result in the highest amount of sediment contributed to aquatic habitat by haul, resulting in an estimated input of 9,748 pounds (approximately 4.6 cubic yards) of sediment to aquatic habitats.

#### Summary of Direct and Indirect Effects

Selection of any of the action alternatives would result in small inputs of fine sediment/turbidity to aquatic habitat to Analysis Area streams resulting from log haul. Effects to aquatic habitat and water quality are similar by alternative; only the magnitude of sediment anticipated to be contributed by haul would vary by alternative. Table 3-3 displays the differences in expected sediment contributions from haul by alternative. Because 87% of the analysis area streams crossed by the proposed haul routes are seasonally dry for most of the year, most sediment inputs would only occur during the wet season, when stream flows are elevated. During these conditions the nature of the inputs would be as turbid water, as accumulated fine sediment washes off the roads used for haul. Sediment/turbidity inputs would be highest under Alternative 4, and lowest under Alternative 2, reflective of the lower volume of timber harvest and associated hauling proposed under Alternative 2. Under each of the action alternatives, sediment inputs would be concentrated in the Foots and Galls Creek catchments due to the higher haul volume that would occur within these analysis area drainages, and because haul routes would cross more streams in these areas. Inputs would be spread spatially across a very large area, and over the length of the timber sale contract, typically 3 years. Under all alternatives the majority of sediment inputs would occur to

intermittent stream channels located upstream of fish habitat. The large spatial and temporal scale would reduce inputs to any given piece of aquatic habitat at any one time to very small amounts, undetectable beyond background levels. Very little (less than 0.2 cu yds each reach) sediment from haul is estimated to be input into the stream reaches in the Kane, Millers, and Birdseye drainages identified as currently having high sediment levels.

For other hydrologically connected proposed project activities, such as road maintenance, The Rogue Gold FMP was designed to maintain water quality or would reduce impacts to the point that they would be minor and undetectable beyond background levels, consistent with the impacts anticipated and accounted for in the FEIS for the RMPs for Western Oregon (2016 PRMP/FEIS, pp. 401-408). Water quality would be maintained using PDFs when completing roadwork (renovation and improvement) for access and timber haul. Examples of PDFs to maintain water quality during roadwork include restricting the work to be completed during the dry season, suspending work during forecasted rain events, and stabilizing disturbed areas during work suspension (see PDFs Appendix B). Therefore, by following BMPs included within the PDFs, it is extremely unlikely that sediment input from these activities would be detectable above background levels. Over the long-term, road renovation on haul routes would reduce road-related sediment inputs where the BLM adds rock to depleted areas and natural surface roads. Improving drainage would also reduce sediment inputs by reducing erosion to the road surface and ditchlines.

Because water quality would be maintained on streams within the planning area, there would be no effect to drinking water (within the range of natural variability for meeting ODEQ water quality standards), ODEQ-designated Source Water Protection watersheds, or 303(d) listed streams.

#### 3.1.10.8 Cumulative Effects

Under each action alternative, it is assumed that forest harvest operations on private lands and high road densities would continue to result in elevated inputs of non-naturally derived sediment and turbidity to analysis area streams. Proposed rule changes (expanded riparian buffers and new rules for logging on steep ground) soon to take effect would result in less sediment input to aquatic habitat from private forest operations than currently occurs, and upgrading of culvert standards on private forestry lands would result in fewer failures and associated sediment pulses to aquatic habitats in the analysis area streams during future flood events.

Specific fine sediment input into aquatic habitat that could result from selection of an Action Alternative is described above. Sediment input into analysis area channels is anticipated to result from log haul. Selection of any of the action alternatives would result in cumulative additions of sediment on top of those currently occurring from all other sources. Inputs resulting from this project are estimated to range from 2 cubic yards under Alternative 2, to 4.6 cubic yards (Alternative 4). Much of the sediment is predicted to be input into the drainages in the Galls and Foots Creek catchments. Other contributions would be spread spatially and temporally across the rest of the analysis area drainages. These small contributions would be spread across a large landscape and over a period of years and would be undetectable in aquatic habitat beyond background sources and turbidity levels.

#### Summary of Water Resources, Fisheries, and Aquatic Habitat Issue 1

Although the implementation of any of the action alternatives would have a high likelihood of contributing additional sediment to aquatic habitat, given the small overall magnitude and the spatial and temporal distribution of the inputs, and the seasonal timing of inputs, sediment and turbidity contributed to aquatic habitats and water quality by this project would be undetectable behind background levels in fish habitat, and therefore would not result in measurable adverse effects to fish, fish habitat, or water quality.

### **Issue 3: How would the Rogue Gold forest management actions affect stand level fire resistance (or fire hazard)?**

#### ***3.1.1 Background***

In the frequent fire-adapted dry forest, there are important stand attributes that improve resistance to stand-replacing fire, reducing “the likelihood of atypical large-scale crown fires (Agee and Skinner 2005; Jain et al. 2012; Franklin et al. 2013). In general, stands with higher fire resistance have reduced surface fuel loading, lower tree density, large diameter trees of fire-resistant species, increased height to live crown (Brown et al. 2004; Peterson et al. 2005; USDI BLM 2008a), and discontinuous horizontal and vertical fuels” (USDI BLM 2016a, p. 243). Patchy stand composition in vegetation or fuel patterns representative of frequent-fire dry forest low-mixed fire regime fuel loading contributes toward stand resistance to replacement fire (USDI BLM 2016a, pp. 225-226) by disrupting fuel profiles which may inhibit the spread of crown fires, creating variability in litter fall and surface fuel accumulations, and promoting regeneration of diverse species to respond to disturbance (e.g., wildfire, drought, and insects). In these fire-resistant stands, it is more likely that a “...wildfire can burn through...without substantially altering its structure, composition, or function (Franklin et al. 2013).” (USDI BLM 2016a, p. 242). These principles are consistent with those articulated in the Rogue Valley Integrated Fire Plan (RVIFP) (CWPP 2019, Table 5-1, p. 103).

Fire hazard refers to the ease of ignition, potential fire behavior (surface, passive or crown fire), and resistance to control of wildland fuels (i.e., surface, ladder, and canopy fuels), which directly influences suppression tactics, for example, crown fires present the greatest resistance to control (USDI BLM 2016a, p. 254-255, Appendix H. 1321-1322). The primary fuel characteristics associated with potential fire behavior and crown fire potential are canopy base height, canopy bulk density, and surface fuel loading (Scott and Reinhardt 2001).

Fire resistance is inversely related to fire hazard; when fire resistance increases, fire hazard decreases.

#### ***3.1.2 Analytical Process***

In this analysis section, the BLM tiers to the assumptions and results from the PRMP/FEIS (Issue #2 pp. 243-252, Appendix H) to assess effects of the alternatives on the fuel profile continuity and thus the relative resistance to stand-replacement fire rating (i.e., expected fire behavior). The PRMP/FEIS found that implementation of the PRMP/FEIS would reduce the acreage in the low or moderate resistance to stand-replacement fire categories within the dry forest, from nearly 50% to 30%, across the Medford District after 50 years. After 50 years, the majority of acres would be in the Mixed fire resistance category (USDI BLM 2016a, p. 249), (USDI BLM 2016a, Figure 3-29, p.246).

In the PRMP/FEIS, the BLM assumed that vegetation structural stage is an important component affecting resistance to stand replacing fire, and assigned forest structural stages (USDI BLM 2016a, Appendix C pp. 1203-1206) to a relative ranking of resistance to stand-replacement fire (USDI BLM 2016a, p. 243 Table 3-32), based on assumptions regarding horizontal and vertical fuel profile continuity (USDI BLM 2016a, Appendix H pp. 1320-1321). These categories range from low fire resistance (i.e., greater tendency for a stand-replacement) to moderate to high fire resistance (i.e., less probability of a stand-replacement). Very simply put, a crown fire or a very intense surface fire would result in stand-replacement. The PRMP/FEIS also identified a mixed fire resistance category, which indicates the potential to exhibit the full range of resistance categories (low, moderate, or high), for example, the PRMP/FEIS acknowledged that some structural stages in certain landscape locations can harbor conditions more likely to result in lowered fire severity (USDI BLM 2016a, Appendix H pp. 1320-1321). The PRMP/FEIS analysis did “...not account for the complex interaction among fuels (including vertical

and horizontal composition and moisture), topography (e.g., slope, topographic position, elevation, and aspect), and weather (e.g., wind, temperature, relative humidity, fuel moisture, and drought) that influence fire behavior, resultant burn severity, and fire effects (Andrews and Rothermel 1983, Scott and Reindhardt 2001) and the specific conditions related to crown fire initiation (stand-replacement fire) and spread (Van Wagner 1977)” (USDI BLM 2016a, p. 243). The PRMP/FEIS concluded that “ultimately, fire behavior in the “mixed category” would result from several factors, including weather, fuel moisture, and topographic influences, along with the vertical and horizontal continuity of the fuel profile” (USDI BLM 2016a, Appendix H p. 1320). In short, fire behavior is a product of fuels, weather, and topography. To provide an informative analysis of this EA’s alternatives effects in the “mixed” relative resistance to stand-replacing fire category, the BLM considered the vertical and horizontal continuity of the wildland fuel profile (i.e., canopy, ladder and surface fuels, and fuel heterogeneity). The BLM then compared fuel profiles among alternatives within the Nexus 2.1 crown fire model program under typical fire weather conditions (90th percentile), as assumed in the PRMP/FEIS (p. 228), and 50 percent slope (see Appendix H for more details).

Nexus links separate models of surface and crown fire behavior, to calculate indices of relative crown fire potential (e.g., crowning index [CI] and torching index [TI]). The BLM used a standard approach to derive a relative resistance to stand-replacement fire for Mixed relative resistance to stand-replacing fire categories, based on CI and TI. The rating was as follows: if CI is less than 20 mph, relative resistance is Low, however if TI is greater than 30 mph, relative resistance is High/Low conditional; if CI is between 20-30 mph, relative resistance is Moderate, however, if TI is greater than 30 mph relative resistance is high/moderate conditional; and if predicted CI is greater than 30 mph, relative resistance is High, unless the TI is less than 30 mph, then resistance would be moderate. However, if TI is greater than CI and greater than 30mph, this indicates that within-stand crown fire initiation is unlikely and these stands are categorized as high resistance, however the conditions may support crown fire spread from adjacent areas (i.e., independent crownfire) at the relative rating, based on CI.

The BLM analyzed effects of relative stand-level resistance to replacement fire within proposed commercial units, the term “stand” used throughout this issue refers to the unit scale. For cumulative effects, the BLM considered the incremental impact of proposed actions when added to other past, present, and reasonably foreseeable future actions and natural disturbance and climatic factors.

### 3.1.3 Assumptions

#### 3.1.3.1 Fuel Continuity (Appendix H contains additional supporting information regarding assumptions)

The BLM assumed the following metrics define continuity of the wildland fuel profile (Figure 3-1): canopy fuels (canopy connectivity (canopy cover and canopy bulk density)), ladder fuels (canopy base height), surface fuels (surface fuel models) (Scott and Burgan 2005) and fuel heterogeneity and thus influence fire resistance (or fire hazard) (see Appendix H for additional details).

- The BLM assumed LANDFIRE (LF) (USGS 2020) data represents Canopy Base Height (CBH) and surface fuels in the affected environment.
- The BLM assumed that the No Action Alternative short-term (up to 20 years) fuel profile would be the same as the current condition.
- The BLM assumed CBH and surface fuel models resulting from the proposed actions (small diameter thinning and prescribed burning) would reflect outcomes indicated by local Medford District monitoring data (USDI BLM 2021b), literature, assumptions in the Rogue Basin Strategy for post-treatment fuel transitions (Metlen et al. 2017; Metlen et al 2021), LANDFIRE post-disturbance rules, and professional local knowledge.



Figure 3-1: Forest fuel profile: surface, ladder and canopy fuels. Image from the Idyllwild Fire Protection District, Idyllwild, CA  
<https://idyllwildfire.com/defensible-space.html>

#### **Connectivity of Canopy fuels (Canopy Bulk Density and Canopy Cover)**

For commercial thinning and group selection actions in Mixed relative resistance to stand-replacement category, the BLM derived post-harvest canopy bulk density from estimated post-harvest canopy cover, based on prescriptive RD targets (Appendix H) using LANDFIRE lookup tables (Metlen et al. Appendix 7, Metlen et al 2021). The BLM assumed existing vegetation height in all stands to be greater than 75 feet (25 meters).

#### **Ladder fuels (Canopy Base Height)**

In areas of only handpile burning, proposed actions would result in CBHs of approximately 8 feet on average. Where prescriptions would maintain NSO Nesting-roosting habitat function, CBHs would be relatively low (less than 5 feet on average).

In the 2016 PRMP/FEIS, the BLM incorporated post-harvest tree planting into the vegetation modeling and subsequent post-harvest structural stages (USDI BLM 2016a, Appendix C), thus the 2016 PRMP/FEIS analysis of structural stage resistance to stand-replacement fire, which this analysis tiers to (see Methodology) accounts for presumed post-harvest replanting. Additionally, the moderate-term effects analysis in this issue accounts for re-growth of understory vegetation (i.e., accumulation of surface and ladder fuels), including the varied effects of reforestation within gaps and this EA is not proposing revegetation actions.

## **Surface fuels (Fire Behavior Fuel Model)**

Following handpile burning, *moderate to very high* load surface fuels would shift to *moderate* load surface fuels in the short-term, (up to 20 years).

The BLM assumed a range of short-term (up to 20-years) surface fuel models resulting from proposed actions. Based on examination of local monitoring (USDI, the BLM assumed a mix of low to moderate grass-shrub and hardwood litter surface fuel models in stands with <40 percent canopy cover; and a mix of low to moderate timber understory and timber litter surface fuel models in stands with >40 percent canopy cover for short-term (up to 20 years).

The BLM assumed CBH and surface fuel models resulting from the proposed actions (small diameter thinning and prescribed burning) would reflect outcomes indicated by local Medford District monitoring data (USDI BLM 2021), literature, assumptions in the Rogue Basin Strategy for post-treatment fuel transitions (Metlen et al. 2017; Metlen et al 2021), LANDFIRE post-disturbance rules, and professional local knowledge.

### **Commercial Thinning and Selection Harvest:**

Commercial thinning would shift forest structural stage from young stands – High Density to young stands – Low Density and thus shift resistance rating from low to moderate (USDI BLM 2016a, Table 3-32 p. 243, Appendix H pp. 1320-1321). Commercial thinning and group selection openings conducted in Mature structural stages would not shift those structural stages within the moderate-term (<30 years).

### **Activity Fuel Treatments:**

The effects of the temporary increase (1-2 years) in risk from residual activity fuels are within the scope of those effects analyzed for in the PRMP/FEIS (USDI BLM 2016a, pp. 260 and 263, Figure 3-380). That analysis, which is incorporated here by reference, concluded that immediately following commercial harvest, residual activity fuels left on the forest floor (e.g., tree tops and limbs) would increase surface fuel loadings and have the potential to increase surface fire behavior and pose a risk to the residual stand and other human values (i.e. WDAs), if not adequately treated (USDI BLM 2016a, p. 269).

Common to all action alternatives, the BLM would conduct an assessment to determine the need for treatment of residual activity fuels generated from commercial thinning based on remaining surface fuel loading and location (e.g. aspect, slope, access and proximity to values). As needed, activity fuels would be treated (e.g., lop and scatter, prescribed fire, removal, or via pyrolysis) to result in expected flame lengths less than 4 feet under typical fire weather conditions within 1-2 years, thus any increase in surface fuel loading would be temporary (1-2 years) (see 2.1.7.1).

## **Fuel Heterogeneity**

Dry forest stand reconstruction reference sites in low-mixed severity fire regimes provide a guide for vegetation patterning representative of the functioning fire regime, where gap sizes were historically less than 2 acres and generally less than 1 acre.

### **3.1.3.2 Resistance to Other Disturbance**

Consistent with the PRMP/FEIS, to which this issue tiers, the BLM assumes that relative stand-level fire resistance ratings would also apply to stand-level resistance to drought and insect disturbance, as increased fire resistance often also increases resistance to drought and insects (USDI BLM 2016a, p. 201). The combined effects of reducing stand density and reintroducing fire in drought-prone and fire-prone regions, can increase water availability and tree growth and vigor (Halofsky et. al 2016; Hood et. al

2018), allowing individual trees to better withstand drought and insect attacks (Hood et. al 2015) (see Appendix H for additional detail).

#### 3.1.3.3 Maintenance

Treatment maintenance would not be needed in the short-term (up to 20-years). This is supported by local plot data and locally conducted Fuel Treatment Effectiveness Monitoring (FTEM) of recent wildfire and treatment interactions on nearly 9,000 acres of previously treated areas burned in a wildfire between 2008-2022 (see Appendix H for more details). Treatments were found to be effective in some areas for up to 14 years (USDI BLM 2021b, Figure 14), up to 17 years in fuel treatments intersected in the Rum creek wildfire (2022), and up to 22 years as found by Lydersen and others (2014).

Most treated areas would require maintenance every 10 to 30 years to maintain high to moderate relative stand level resistance. This maintenance timeframe is consistent with estimates of local historic fire-intervals, as Metlen and others (2018) found 90 percent of historic fire return intervals to be between 3 and 30 years, with median return intervals of 8 years. Maintenance treatments would be needed approximately every 10-20 years after “initial entry” treatments, to maintain high resistance to stand-replacement fire. Maintenance treatments would be needed approximately every 20-30 years after “initial entry” treatments, to maintain moderate resistance to stand-replacement fire. While higher levels of overstory cover, are associated with increased potential for crown fire, the additional cover may restrict or delay understory regeneration and allow more time between maintenance treatments, thus maintenance would be needed more frequently in stands with canopy cover less than 40%, and less frequently in stands with canopy cover greater than 40% (Agee 2000, USDI BLM 2021b).

#### 3.1.3.4 Summary of Analytical Methods

The BLM summarized current and past wildfire activity for the affected environment across the Rogue Gold Planning area geography. To assess environmental effects by alternative the BLM calculated the percent distribution of maximum proposed action acreage in relative resistance to stand replacement fire categories by alternative as a measurement indicator. This rating is based on likely fire behavior, given the structural stage and fuel profile continuity (see Methods and Assumptions sections, above). The BLM also analyzed change in small-scale heterogeneity patterns consistent with fuel loadings and arrangements associated with frequent fire, dry forest low and mixed severity fire regimes.

The BLM evaluated direct and indirect stand-level short-term (up to 20 years) effects after implementation of proposed actions. Direct and indirect effects are discussed at short-term, up to 20-years after proposed actions and moderate-term time frames at the stand scale. The discussion of cumulative effects is at the stand scale over time considering the incremental impact of proposed actions when added to other past, present, and reasonably foreseeable future actions or natural disturbance for cumulative effects.

#### 3.1.4 Affected Environment

Within the project area, landscape patterns of wildfire size distribution and occurrence have shifted overtime (Table H-3). Historically, wildfire was more frequent and burned more acreage within the project area, than in recent years, however wildfires do still occur within the project area (see Appendix H). Much of the Rogue Gold planning area lies within a quarter mile of Communities at Risk (CaR) from wildfire and nearly 33 percent of the maximum proposed action extent (570 acres) is within the CaR (See map, Figure A-2, Appendix A). The BLM has previously completed past fuel treatment actions within the planning area and proposed action, including handpile burning on approximately 570 acres 10 to 20 years ago.

Within the maximum footprint of proposed action acres, 85 percent of the acreage has a high amount of

canopy fuels with greater than 60 percent canopy cover (Table 3-4). The current canopy base height is low, less than 5 feet across 76 percent of maximum proposed action acreage (Table 3-5). The majority (87 percent) of proposed action acreage is best represented by very high load forest surface fuel models (Table 3-6). The general current condition of vegetation illustrates the current abundance and connectivity of canopy, ladder, and surface fuels and lack of structural and spatial heterogeneity departed from historic frequent-fire conditions in forested. (See Appendix H for additional detail).

Table 3-4: Estimated Canopy Bulk Density (kgm3) and approximate canopy cover distribution across proposed commercial units. *Data acquired from LANDFIRE (LF 2020).*

Canopy Bulk Density (kgm3)	Approximate Canopy Cover (%)	Acres	Percent Distribution
0	Non-forested	69	4%
0.05	10-30	4	0%
0.06-0.08	40-50	88	5%
0.09-0.11	50-60	95	6%
>0.12	>60	1,444	85%

Table 3-5: Current distribution of canopy base height (feet) across maximum footprint extent of proposed action units. *Canopy base height data acquired from LANDFIRE (LF 2020).*

CBH (ft)	Acres	Percent Distribution
0 to <2	230	14%
2 to <5	1,046	62%
5 to <8	318	19%
8 to <12	71	4%
12+	35	2%

Table 3-6: Approximate acres of surface fuel fire behavior models grouped by loading category descriptions and corresponding Standard Fire Behavior Fuel Models codes (in parentheses) (Scott & Burgan 2005) across the maximum footprint extent of proposed actions. *Data is from data acquired from LANDFIRE (LF 2020).*

Fuel Loading Description Categories (Fire Behavior Fuel Models)		
	Acres	Percent Distribution
Non-burnable (91)	66	4%
Low load grass (102)	3	0.2%
Moderate load grass-shrub (122)	6	0.4%
High load shrub (147)	7	0.4%
Moderate load mixed conifer - hardwood (162,183, 186, 188)	142	8%
High load conifer (184)	4	0.2%
Very High load mixed conifer-hardwood/understory (165,189)	1,471	87%

### 3.1.5 Environmental Consequences

### 3.1.5.1 *No Action Alternative*

#### **Short-term (up to 20 years) Direct and Indirect Effects (stand-resistance rating, fuel heterogeneity, and large trees).**

The No Action Alternative would have no short-term direct effects to the fuel profile or indirect effects to stand level fire resistance or fire hazard. Activities comprising the proposed action would not be implemented and would not directly alter the vertical and horizontal fuel profile continuity (i.e., surface, ladder, or canopy fuels or heterogeneity). Fire resistance would remain low for 80 percent of the unit acres, moderate for 10 percent and high for 10 percent (Table 3-7). A portion (20 percent) of the area would support crown fire from adjacent stands, but initiation of crown fire within the planning area would be unlikely. The lack of small-scale patchiness (or heterogeneity) would persist as described in Appendix H.

Table 3-7: No Action Alternative Short-Term (up to 20 years) Relative Resistance to Stand Replacement Fire Ratings and Percentage Distribution Across the Treatment Area.

Estimated Canopy Cover (wind adjustment factor)	Fire Behavior Model Inputs			Fire Behavior Model Outputs		Relative Resistance Rating	Distribution among proposed action acreage
	Canopy Bulk Density (kg/m3)	Canopy Base Height (ft)	Surface Fuel Model	Crowning Index (mph)	Torching Index (mph)		
40-50 (0.15)	0.06	6 to 8	TL3	33	>100	HIGH	170 (10%)
50-60 (0.1)	0.09	5 to 8	TU2	23.7	27	MODERATE	170 (10%)
>60% (0.1)	0.12	<5	TU5	19.9	0	LOW	1,358 (80%)

Rating is based on CI and TI: CI <20 mph = *low*, unless TI > 20 mph, then = Moderate; CI 20-30 mph = *moderate*; CI >30 mph = *high*, unless TI <30 mph, then = Moderate.

### 3.1.5.2 *Moderate term and Cumulative Effects*

Based on climate and wildfire trends discussed in Appendix H, wildfire and drought would continue to challenge the persistence of forested stands in southwestern Oregon. Heterogeneity representative of low-mixed severity fire regimes and fire resistant species would continue to decline, and vegetation would continue to accumulate and die, increasing fuel loading and threatening the persistence of large fire-resistant trees; these aspects, coupled with expected climatological changes, such as increased background tree mortality, due to longer periods of hot drought (USDI BLM 2016a, p. 185), increase the likelihood for larger proportions of high severity fire (Mote et al. 2019) and reduced stand resistance to replacement fire or increased hazard.

### 3.1.5.3 *Direct and Indirect Short-Term (up to 20 years) Effects Common to All Action Alternatives*

Under all action alternatives, combined direct effects from proposed forest management actions would reduce (surface, ladder, and canopy fuels), reduce fuel profile continuity, and increase heterogeneity, over the No Action Alternative. These changes to the fuel profile would indirectly increase wildfire resistance or reduce wildfire hazard.

#### ***Canopy fuels*** (canopy connectivity (canopy cover and canopy bulk density) and large trees)

Thinning of canopy fuels would decrease the likelihood of tree-to-tree crown fire spread under typical fire weather indices (Scott and Reinhardt 2001).

Thinning and group selection openings would indirectly increase surface wind gusts. Bigelow and North (2012) found evidence of this, observing moderate increases in average wind gusts in thinned stands (up to 1.5 mph) and greater increases in openings (up to 5.6 mph in openings of 2 acres). The sheltering effect

vegetation has on surface wind speeds is well established in predictive fire behavior modeling (Albini and Baughmann 1979; NWCG 2021) and has been incorporated in the weather inputs in analysis of this issue based on projected post-harvest canopy cover.

### **Surface fuels and Ladder fuels**

Thinning of small diameter trees and handpile burning of activity fuels would reduce surface fuels and increase canopy base heights. The changes to the wildland fuel profile would help to keep flames from ascending into tree crowns and from spreading through the tree canopy.

Short-term surface fuels would shift from high loading to moderate loading grass-shrub (GS1), and timber litter (TL3) and timber understory (TU2) surface fuel models; average canopy base height would rise to approximately 8 feet after handpile burning, except when maintaining NSO habitat (i.e., 60+ percent canopy cover), where canopy base height would be 5 ft (Table 3-8, see also assumptions).

### **Heterogeneity (Species Composition and structural diversity)**

Proposed actions to create openings and leave untreated skips would introduce heterogeneity in uniform stands, promote a disruption of horizontal fuel connectivity and alter patterns of litter fall and surface fuel accumulation. Increased spatial heterogeneity would contribute toward disrupting vertical and horizontal fuel continuity, alter potential fire behavior (Finney 2001), improve stand-level fire resistance and the ability to respond to other disturbances and climatic influences (Jain et al. 2012).

An increase in variable sized openings would promote species diversity and growing space for fire adapted species, such as pine and oak. Grulke and others (2020) observed a greater improvement in ponderosa pine vigor two years following a patchy harvest prescription over an even harvest prescription, even amidst a drought period.

The area in un-thinned skips, would contribute toward heterogeneity through retention of continuous canopy fuels, low CBHs, and existing surface fuel loading. These skips would result in lower relative stand-level fire resistance to group torching of trees during a wildland fire or a prescribed fire. However, these untreated areas, either burned or unburned, would contribute toward heterogeneous vegetative patterns at the stand scale.

### **Direct and Indirect Short-Term (up to 20 years) Effects Specific to Action Alternatives**

Proposed actions in mature structural stages would result in short-term (up to 20 years) refinements to the mixed relative resistance to stand-replacement fire rating among action alternatives (see Analytic Process and Assumptions) (Table 3-8).

Table 3-8: Action Alternatives Short-Term (up to 20 years) Relative Resistance to Stand Replacement Fire Ratings and Percentage Distribution Across the Treatment Area.

Estimated Canopy Cover (wind adjustment factor)	Fire Behavior Model Inputs			Fire Behavior Model Outputs		Relative Resistance Rating	Proposed action acreage
	Canopy Bulk Density (kg/m3)	Canopy Base Height (ft)	Surface Fuel Model	Crowning Index (mph)	Torching Index (mph)		
Alternative 2 - 1,414 acres of proposed action							
30-40% (0.15)	0.05	8	GS1/TL6	38.2	38/100	HIGH	25

40-50 (0.15)	0.06	8	TU1/TL3	33.1	38/>50	HIGH	373
50-60 (0.1)	0.09	8	TU1/TL3	25.5	>100	MODERATE	715
>60% (0.1)	0.12	<5	TU2	19.9	28	MODERATE	301
<b>Alternative 3 - 1,697 acres of proposed action</b>							
30-40% (0.15)	0.05	8	GS1/TL6	38	38/100	HIGH	56
40-50 (0.15)	0.06	8	TU1/TL3	33	38/>50	HIGH	782
50-60 (0.1)	0.09	8	TU1/TL3	25.5	>100	MODERATE	496
>60% (0.1)	0.12	<5	TU2	19.9	28	MODERATE	363
<b>Alternative 4 - 1,698 acres of proposed action</b>							
30-40% (0.15)	0.05	8	GS1/TL6	38	38/100	HIGH	753
40-50 (0.15)	0.06	8	TU1/TL3	33	38/>50	HIGH	243
50-60 (0.1)	0.09	8	TU1/TL3	25.5	>100	MODERATE	179
>60% (0.1)	0.12	<5	TU2	19.9	28	MODERATE	523

Stand level Resistance Rating is based on CI and TI: CI <20 mph = *low*, unless TI > 20 mph, then = Moderate; CI 20-30 mph = *moderate*; CI >30 mph = *high*, unless TI <30 mph, then = Moderate.

#### 3.1.5.4 Alternative 2 (continued from above)

In the short-term, 23 percent of proposed acres would have high relative fire resistance, and 60 percent moderate relative fire resistance.

Where proposed (<10 percent of HLB stands), creation of variable sized openings up to 2 acres would introduce heterogeneity reflective of fuel loadings and arrangements comparable to low and mixed severity fire regimes, (USDI BLM 2016a, pp. 225-226; Churchill et al. 2013; Hesburg et al. 2015), where gaps were variable in size, typically less than 2 acres and most were less than 1 acre (Appendices F, G, and H).

No openings are proposed in LSR-Dry, so heterogeneity reflective of fuel loading and arrangement comparable to low-mixed severity fire regimes (USDI BLM 2016a, pp. 225-226; Churchill et al. 2013; Hesburg et al. 2015), where gaps were variable in size, typically less than 2 acres and most were less than 1 acre (Appendices F, G, and H) would not be created.

Alternative 2 retains the greatest amount of untreated skips, with 1—25 percent of the stand in HLB and 30 percent of the stand in LSR-DRY.

#### 3.1.5.5 Alternative 3 (continued from above)

In the short-term, 49 percent of proposed acres would have high relative fire resistance, and 51 percent moderate relative fire resistance.

Where proposed (<30 percent of HLB stands and <10 percent of LSR-Dry), creation of variable sized openings up to 2 acres would introduce heterogeneity reflective of fuel loadings and arrangements comparable to low and mixed severity fire regimes, (USDI BLM 2016a, pp. 225-226; Churchill et al. 2013; Hesburg et al. 2015), where gaps were variable in size, typically less than 2 acres and most were less than 1 acre (Appendices F, G, and H).

Alternative 3 proposes retention of skips in 10-15 percent of HLB stands and 2—25 percent of LSR-dry stands.

#### 3.1.5.6 Alternative 4 (continued from above)

In the short-term, 59 percent of proposed acres would have high relative fire resistance, and 41 percent moderate relative fire resistance. Where proposed, creation of variable sized openings (<30 percent of HLB stands and <25 percent of LSR-Dry stands) up to 4 acres would introduce heterogeneity, but not as reflective of fuel loadings and arrangements comparable to low and mixed severity fire regimes, (USDI

BLM 2016a, pp. 225-226; Churchill et al. 2013; Hesburg et al. 2015), where gaps were variable in size, typically less than 2 acres and most were less than 1 acre (Appendices F, G, and H ). Alternative 3 proposes retention of the least number of untreated skips, 10 percent of HLB stands and 10—15 percent of LSR-dry stands.

### 3.1.6 Moderate-Term (up to 50 years) Effects Common to All Action Alternatives

In 50 years, all treated stands would shift to Mixed relative resistance stand-replacement fire, which can exhibit the range of Low to Moderate to High relative resistance to replacement fire, depending on cumulative effects of vegetation re-growth, wildfire interactions, and maintenance actions implemented under other projects.

### 3.1.7 Cumulative Effects at the Stand-Level

The potential cumulative effects would be a result of the proposed actions, combined with reasonably foreseeable actions at the stand-level and recent and future trends of wildfire and fire suppression efforts.

Direct and indirect short-term effects have considered the incremental cumulative effect of prior stand condition, combined with commercial thinning, small diameter thinning and prescribed burning (handpile burning). The upcoming foreseeable IVM River Hill Natural Fuels Reduction project (Appendix C) may provide additional short to moderate term cumulative effects of maintaining stand-level resistance with application of prescribed fire and stands could benefit from adjacent treatments designed to increase fire resistance and reduce hazard. There would be no additional short-term cumulative effects at the stand scale, unless intersected by a wildfire, which would provide fuel maintenance and re-set conditions to short-term effects.

Without frequent maintenance disturbance, understory fuels would re-grow (including natural or artificial regeneration), vegetation would also die, and surface and ladder fuels would re-accumulate. Vegetation growth is dependent on a variety of factors including variables such as, but not limited to, available sunlight and moisture, which can be influenced by large climatic patterns, soil structure, and nutrient cycling (Wayman and North 2007). As part of its standard, ongoing silvicultural program practices, the BLM would monitor and evaluate natural regeneration in treated stands to ensure stocking rates meet RMP direction and plant trees as appropriate under future projects (Appendix C). This accumulation of fuel would contribute toward reducing stand-level fire resistance over time and require frequent low-moderate intensity disturbance to maintain low-moderate loading surface fuel profiles, remove regrowth of ladder fuels, and raise CBH.

Treated areas would require maintenance every 10 to 30 years to maintain high to moderate relative stand level resistance. This maintenance timeframe is consistent with estimates of local historic fire-intervals, as Metlen and others (2018) found 90 percent of historic fire return intervals to be between 3 and 30 years, with median return intervals of 8 years. While higher levels of overstory cover, are associated with increased potential for independent crown fire, the additional cover may restrict or delay understory regeneration and allow more time between maintenance treatments (Agee et al. 2000). Areas thinned to open canopy conditions could contribute toward more rapid live fuel loading accumulation, shifting surface fire behavior fuel models from moderate timber litter to moderate timber understory or grass-shrub (Agee et al. 2000) (Appendix H). Local FIREMON plot data is consistent with this, indicating that areas with less than 40 percent canopy cover often have a greater understory regrowth response (see Appendix 5 – Maintenance for additional details).

Maintenance actions, such as low intensity prescribed underburning, or thinning and handpile burning, if enough time has passed, would contribute toward maintaining high to moderate relative stand-level fire resistance and return stand-resistance to short-term conditions, as in the IVM River Hill Natural Fuels foreseeable action mentioned above and in Appendix C. As each treatment stage is completed, the stand's

resistance to fire would increase and reflect short-term effects.

The Action Alternatives would vary in the need for maintenance (Table 3-9).

Table 3-9: A Side-by-Side comparison of estimated maintenance frequency needed to maintain high to moderate stand-level relative fire resistance over 50 years on maximum proposed action acres by action alternative for incremental cumulative effects of foreseeable actions.

Alternative Target Canopy Cover (%)	Relative Stand-level Fire Resistance Rating	Maintenance Frequency (average number of entries over 50 years)	Proposed Action Acreage
<b>Alternative 2 - 1,414 acres of proposed action</b>			
30-40%	HIGH	10-20 yr (4)	25
40-50%	HIGH	10-20 yr (2)	373
50-60%	MODERATE	20-30 (1.5)	715
>60%	MODERATE	20-30 (1.5)	301
>60%	LOW	N/A	248
<b>Alternative 3 - 1,697 acres of proposed action</b>			
30-40%	HIGH	10-20 yr (4)	56
40-50%	HIGH	10-20 yr (2)	782
50-60%	MODERATE	20-30 (1.5)	496
>60%	MODERATE	20-30 (1.5)	363
<b>Alternative 4 - 1,698 acres of proposed action</b>			
30-40%	HIGH	10-20 yr (4)	753
40-50%	HIGH	10-20 yr (2)	243
50-60%	MODERATE	20-30 (1.5)	179
>60%	MODERATE	20-30 (1.5)	523

Based on climate and wildfire trends discussed in Appendix H, wildfire and drought will continue to challenge the persistence of forests in southwestern Oregon. However, proactive treatments designed to moderate fire behavior, so that a wildfire can burn through a stand without detrimental consequences can help minimize uncharacteristic high severity fire. Thus, low intensity wildfires can also provide maintenance of treated areas.

The Action alternatives vary in the frequency of low-moderate severity maintenance that would be needed to sustain stand-level fire behavior relative resistance (Table 3-9), where Alternative 2 would require the least amount of maintenance to maintain majority moderate stand-level resistance. Alternative 3 would require a balance of moderate frequency maintenance to sustain a balance of high and moderate stand level resistance, while Alternative 3 would require the most frequent maintenance to sustain high stand-level resistance.

#### 3.1.7.1 *Summary of Alternatives*

Under all action alternatives, combined direct effects from proposed forest management actions would reduce (surface, ladder, and canopy fuels), reduce fuel profile continuity, and increase heterogeneity, over the No Action Alternative. These changes to the fuel profile would indirectly increase wildfire resistance or reduce wildfire hazard.

Alternative 2 would result in majority short-term *moderate* stand-level fire resistance and would only introduce some heterogeneity in HLB compared to the No Action Alternative. Alternative 2 would

require the least amount of maintenance to sustain moderate stand-level fire resistance over 50 years (moderate-term).

Alternatives 3 and 4 would result in majority high stand-level fire resistance in the short-term. Alternative 3 would introduce heterogeneity in fuel composition more closely aligned with frequent fire regime structure than Alternative 4. Alternative 4 would require more frequent maintenance of proposed action acreage to sustain high relative stand-level fire resistance than Alternative 3 over the moderate-term (50 years) (Table 3-10).

The difference in magnitude of maintenance actions that would be required to sustain high fire resistance acreage between Alternative 3 and Alternative 4 is an important distinction, particularly when considering 33% of the proposed action acreage is within a quarter mile of Communities at Risk, a focused component of the Wildland Urban Interface (CWPP, 2019; Metlen et al., 2017) (See map, Appendix A, Figure A-2) and 81% is within one mile of Wildland Developed Areas (WWRA 2013). Ultimately, maintenance of high to moderate stand-level fire resistance in the frequent-fire adapted dry forest, hinges on frequent low-moderate intensity disturbance.

Alternative 3 best meets the purpose and need related to this analytic issue, when considering direct, indirect, and cumulative stand-level effects.

Table 3-10: Summary of metrics associated with short-term and cumulative effects to stand-level fire resistance: relative stand-level fire resistance rating, structural heterogeneity consistent with fire regime, and maintenance frequency needed to sustain relative resistance (i.e. stand-level cumulative effects).

Metrics associated with short-term effects to Stand-level Fire Resistance		ALTERNATIVE (proposed action acres)		
		Alternative 2 (1,414 acres)	Alternative 3 (1,698 acres)	Alternative 4 (1,698 acres)
Relative Stand-level Fire Resistance Rating	LOW	17%	0%	0%
	MODERATE	60%	51%	41%
	HIGH	23%	49%	59%
Structural Heterogeneity Aligned with Fire Regime		less consistent	most consistent	less consistent
Maintenance Frequency to Maintain Stand-level Resistance	High	1%	3%	44%
	Moderate	26%	46%	14%
	Low	60%	51%	41%

**Issue 4: Would Rogue Gold FMP’s proposed forest management treatments in foraging, dispersal and capable NSO habitats that are in areas conducive to habitat development and persistence (i.e., cool bottom and midslope topographic positions and high RHS stands) within the Late-successional Reserves-Dry reduce the time of development or improve the quality of these NSO habitats to meet the requirements of nesting-roosting habitat at the stand level? Would these treatments also not preclude or delay by 20 years or more the development of nesting-roosting habitat in foraging, dispersal and capable NSO habitat compared to BLM leaving these stands untreated?**

### ***3.1.8 Background***

This project area is located within the range of the NSO, which is listed as threatened under the Endangered Species Act. NSOs prefer coniferous forest with multiple layers of vegetation; a variety of tree species and age classes; and the presence of large down, woody material (to serve as habitat for prey species) and large diameter live and dead trees (snags) for nesting-roosting habitat. NSO nesting-roosting and foraging habitat in southwest Oregon is mixed-conifer habitats with recurrent fire history, patchy habitat components, and higher incidences of woodrats. NSOs also utilize younger stands with closed canopies for foraging and dispersing. Based on studies of owl habitat selection, including habitat structure and use, and prey preference throughout the range of the owl, NSO habitat consists of three components: nesting-roosting, foraging, and dispersal (See NSO Habitat Definitions, Appendix D, Table D-1) (Thomas et al., 1990).

When a purpose and need of a project is to speed the development of or improve NSO habitat, BLM must ensure that treatment does not preclude or delay by 20 years or more the development of said habitat, as compared to development without treatment (2016 ROD/RMP, BLM 2016a). In the Rogue Gold FMP, this purpose and need applies to stands in the LSR-Dry LUA that are currently not functioning as NSO NR-habitat and are in areas that contain the abiotic characteristics conducive to habitat development.

### ***3.1.9 Methodology***

The analysis for this issue assesses how the proposed commercial treatments in the LSR-Dry LUA under each alternative meet the following LSR LUA Management Direction:

“In stands that are not NSO nesting-roosting habitat, apply silvicultural treatments to speed the development of NSO nesting-roosting habitat or improve the quality of NSO nesting-roosting habitat in the stand or in the adjacent stand in the long term. Limit such silvicultural treatments (other than forest pathogen treatments) to those that do not preclude or delay by 20 years or more the development of NSO nesting-roosting habitat in the stand and in adjacent stands, as compared to development without treatment. Allow silvicultural treatments that do not meet the above criteria if needed to treat infestations or reduce the spread of forest pathogens.” (BLM 2016c, p. 72).

All commercial treatment units proposed for the Rogue Gold FMP underwent field habitat evaluations and silviculture stand examinations during the early planning stages of the project. Based on these habitat evaluations, all units were categorized into three NSO habitat categories: nesting-roosting, foraging, and dispersal-only habitat, as well as two categories representing conditions currently not functioning as NSO habitat (capable and non-habitat). This analysis used the three types of NSO habitat: nesting-roosting, foraging, and dispersal-only habitat (See Appendix D, Table D-1 for detailed definitions) to evaluate the present and future conditions of the modeled stands.

For this analysis, two representative stands were selected from the Rogue Gold treatment area to model the effects of the proposed prescriptions on non-nesting NSO habitat in the LSR LUA under each

alternative to determine the ability of treatments to comply with the RMP management direction listed above. The stands used in this effects analysis were commercial units that were classified by field evaluations as either foraging or dispersal-only habitat and do not currently function as NSO nesting-roosting habitat. These stands were also selected because they have high Relative Habitat Suitability (RHS; see Appendix D-4 for detailed definitions) and contain abiotic variables conducive to nesting-roosting habitat development. The pre-treated habitat conditions of these stands are representative of the other Rogue Gold FMP units in the foraging and dispersal-only categories. These stands are lacking in diversity of age and size classes and lack the diversity of conifer species that would be suitable for nesting-roosting. These stands are above 3,000 feet and are north and northwest facing. Other LSR stands in this project area are also similar to the ones modeled.

The BLM compiled stand-level inventory plot data for these two selected stands and modeled future changes to the stands using the Forest Vegetation Simulator (FVS), a tree growth and yield simulator. Growth for each representative stand was modeled through time under a no-treatment scenario and three treatment scenarios based on the proposed alternatives. The models used a prescription of thinning throughout diameters, which removed a range of tree sizes during the simulated treatments. Metrics for nesting-roosting habitat were used to determine when these stands would reach nesting-roosting conditions when modeled into the future. The treated stands were modeled for an additional 20 years of growth to determine if treatment would cause a delay longer than 20 years in the development of nesting-roosting habitat when compared to the no action alternative.

The BLM did not analyze stands in low RHS under this issue because NSO are unlikely to use those stands for nesting or roosting. The low RHS stand treatments in non-nesting-roosting habitat may improve stand and habitat structure, but the treatments are in a location that would not support NSO occupancy and nesting (generally warmer upper third of the slope, ridges, or south facing). Low RHS areas would also be less likely to develop into nesting-roosting habitat in the future, due to many factors including, but not limited to: soil type, hydrology, prevailing winds and associated microclimatic effects, and prey abundance (which ties back to all preceding factors). Therefore, as stands situated in low RHS are unlikely to ever develop the habitat characteristics associated with NSO nesting-roosting habitat, the above cited RMP management direction does not apply in these cases.

#### 3.1.9.1 Assumptions

The stand modeling applied several assumptions to the treated and untreated stands:

- Outside influences that could occur in the future (e.g., mortality from insects/disease, fire, windthrow, or new land management policies) were not included because these were unknown and impossible to predict.
- Stands were modeled to include artificial regeneration of ponderosa and sugar pine at 5 and 10 years post treatment accounting for regeneration that contributes towards layering.
- The BLM modeled only one single entry of selection harvest during the analysis timeframe (2023-2123). No additional understory small diameter thinning, or prescribed fire treatments were applied to the stand modeling. The PRMP/FEIS "modeling team modeled the application of a combination of group selection (patch cut) harvests and thinning to various stand components at intervals of 40-50 years, depending on site productivity" (2016 PRMP/FEIS, BLM 2016b p. 1196).
- Skips and group selection openings would be factored into the overall residual relative density at the stand level. At least 10 percent of the stand would be in skips and no more than 25 percent of the stand would be in group selection openings (BLM 2016a, p. 72) in stands that are 10 acres or greater in size.

### 3.1.9.2 *Summary of Analytical Methods*

As described above, the BLM used stand metrics such as canopy cover, basal area, tree size, trees per acre, and canopy layering to describe and define NSO habitat. Habitat elements, such as tree DBH, canopy cover, basal area, and large tree DBH metrics are available in FVS and BLM used them to analyze this issue because they are important habitat elements to predict spotted owl use. As noted in the Medford Integrated Vegetation Management (IVM) EA, Appendix 6, in southwestern Oregon nesting-roosting habitat are conifer stands with a multi-layered, multispecies canopy dominated by large conifer overstory trees, canopy cover  $\geq 60$  percent, overstory tree diameter of  $>21$  inches DBH,  $>12$  trees with 20 inches or greater DBH trees/acre, quadratic mean diameter (QMD)  $>15$  DBH, basal area from 180 to 240 feet<sup>2</sup>/acre (most often greater than 240 feet<sup>2</sup>/acre), and a basal area from larger trees of  $> 30$  feet<sup>2</sup> for trees  $> 26$  inches DBH (USDI 2022, Appendix 6). The BLM would use these metrics to determine when the analyzed stands would develop into nesting-roosting habitat after treatment, compared to no treatment. The effects descriptions below summarize the ability of the treatments to improve the development of nesting-roosting habitat, while ensuring the treatments would not delay the development of NR habitat by 20 years, as directed in the 2016 ROD/RMP.

### 3.1.10 *Affected Environment*

There are approximately 463 acres of LSR LUA on BLM-administered lands within the Rogue Gold FMP. Within these, an estimated 267 acres of habitat are in stands conducive to habitat development and persistence (i.e. cool bottom and midslope topographic positions and high RHS). Current NSO habitat conditions in these stands are 33 acres of NR habitat and 234 acres of non-NR habitat (foraging, dispersal-only, capable, or non-habitat). (Table 3-11)

Table 3-11: Acres of High-RHS Spotted Owl Habitat in the Rogue Gold project LSR-Dry Treatment Area

	Nesting-Roosting	Foraging	Dispersal-Only	Capable/Non-Habitat
<b>Pre-treatment Acres</b>	33 acres	161 acres	71 acres	2 acres

The 234 acres of high RHS non-NR habitat mentioned above currently function as foraging, dispersal-only, or non-habitat and do not display the characteristics of spotted owl nesting-roosting habitat (Appendix D, Table D-1). These stands lack the diversity, structure, layering, large trees, higher canopy cover, and other important habitat elements required to function as nesting-roosting habitat. Based on landscape location (aspect and slope position), these stands proposed for treatment have the potential to develop into nesting-roosting habitat and to be used by NSOs for nesting and roosting in the future. This indicates sufficient site productivity and preferred locations on the landscape for NSO use.

The current forest conditions limit the extent of nesting-roosting habitat, increase the risk of their loss to wildfire, and delay and hinder the development of new nesting-roosting habitat. As described in Section 1, the proposed treatment areas are characterized by densely stocked small diameter trees. The average QMD across LSR stands in the treatment area is less than 10 inch DBH, which indicates that the trees are smaller than necessary for spotted owl nesting and roosting. The average relative density of 78 percent is above the point at which competition between trees causes self-thinning ( $>60$  percent RD) (Long and Daniel 1990, Davis and Johnson 1987). These stands have reduced tree vigor and are at increased risk of insect outbreaks and disease (Fettig et al 2007). Competition between trees slows their growth (Bennett and Main 2018, p. 4), delaying the development of nesting-roosting habitat characteristics.

All proposed Rogue Gold FMP commercial treatment units received field habitat evaluations during the early planning stages of the project and prior to harvest unit delineation. One unit proposed for selection harvest in the LSR contains inclusions of nesting-roosting habitat within the unit which would be incorporated as skips and would maintain habitat function post-treatment. All LSR commercial

prescriptions would promote and retain large trees, increase or maintain species diversity, maintain hardwoods, retain coarse woody material, and retain and create snags, which would improve nesting-roosting habitat (see PDFs, Appendix B, and RMP Management Direction BLM 2016a, p.70-75).

Based on landscape position and vegetation growth modeling, all the modeled stands are within high RHS and have some potential to develop into nesting-roosting habitat and to be used by NSOs for nesting and roosting in the future. Both units selected for modeling are located on north-facing slopes, which is important because the preferred location on the landscape for NSOs to nest are generally north-facing and in the lower third of the slope. Due to the NSOs' nesting habitat preference these sites represent a higher potential of NSOs being present and offers a greater representation of potential impacts.

As indicated above, the BLM selected units 27-1 and 31-4 to model the effects of the proposed treatments in LSR because they do not currently function as nesting-roosting habitat. Unit 27-1 is characterized as foraging habitat and the stand is approximately 66 years old. Unit 31-4 is predominately an even mix of foraging and dispersal-only habitat, but also includes an inclusion of nesting habitat which would be incorporated as a skip. Additional current condition stand metrics for these stands are provided in Tables 3-12 – 3-14 below.

### 3.1.11 *Environmental Consequences*

#### 3.1.11.1 *Alternative 1*

As described in Section 2, the No Action alternative would not implement any aspect of the action alternatives in the treatment area. Therefore, vegetation growth rates, stand densities, fuel conditions, the ratio of open and closed forest, would continue to change based on current existing forces and disturbance, or lack thereof. Since the analysis of this issue is at the stand scale, the No Action Alternative describes the results of the two modeled stands under a no treatment scenario, which includes no selection harvest. Under the No Action Alternative, the modeled foraging stand (Unit 27-1) would take 50 years to develop into nesting-roosting habitat without treatment and 20 years for the foraging/dispersal stand with the nesting habitat inclusions (Unit 31-4) (Table 3-12a, and b). Modeling showed that over time, these stands exhibited growth in basal area, and number of large trees per acre similar to nesting-roosting habitat metrics.

Table 3-12a: FVS Stand Metrics for Unit 27-1 Modeled to Nesting-Roosting Conditions with No Treatment

Unit 27-1 Foraging	Canopy Cover (%)	Basal Area (ft <sup>2</sup> )	Overstory Mean Diameter	Quadratic Mean Diameter	Trees > 20” DBH/Acre	Basal Area Trees ≥ 26” DBH
<b>Nesting-Roosting Target Conditions</b>	≥ 60%	180- 240ft <sup>2</sup>	≥ 21”	≥ 15”	≥ 12	≥ 30ft <sup>2</sup>
<b>Current Condition</b>	57	202	26.4	10.8	37.9	89ft <sup>2</sup>
<b>No Treatment</b> NR conditions met in 2073	60	339	27	19	43	107ft <sup>2</sup>

Table 3-12b: FVS Stand Metrics for Unit 31-4 Modeled to Nesting-Roosting Conditions with No Treatment

Unit 31-4 Foraging/Dispersal Mix with Nesting	Canopy Cover (%)	Basal Area (ft <sup>2</sup> )	Overstory Mean Diameter	Quadratic Mean Diameter	Trees > 20” DBH/Acre	Basal Area Trees ≥ 26” DBH
<b>Nesting-Roosting Target Conditions</b>	≥ 60%	180- 240ft <sup>2</sup>	≥ 21”	≥ 15”	≥ 12	≥ 30ft <sup>2</sup>

<b>Current Condition</b>	68	252	19.4	14.5	13.8	28ft <sup>2</sup>
<b>No Treatment</b> NR conditions met in 2043	68	288	21.6	53	56	33ft <sup>2</sup>

### 3.1.11.2 *Alternative 2*

Under Alternative 2, the proposed action in the LSR LUA would thin non-nesting-roosting stands to a relative density of 40-45 percent and treatment would be deferred for LSR stands that are currently nesting-roosting habitat. Therefore, the likelihood of setting the stand back in the development of nesting-roosting habitat is low, because moderate canopy cover, canopy layering, higher basal area, and large trees would still be present after treatment. These elements would provide the important structure for the future development of nesting-roosting habitat function.

The following summary compares the representative units modeled with Alternative 2 treatments compared to the No Treatment alternative (See Tables 3-13 a and b). Relative density targets were modeled at 45 percent. For Unit 27-1, the stand would meet all minimum habitat elements to function as nesting-roosting around the same temporal scale as the No-Treatment model. Unit 31-4, when modeled with alternative 2 treatments, would reach all nesting-roosting metrics except for the overstory mean diameter approximately 10 years earlier than the no-treatment model. The treatment of these stands under Alternative 2 would not delay or preclude the development of nesting-roosting habitat by 20 years or more when compared to development without treatment.

Table 3-13a: FVS Stand Metrics for Unit 27-1 Modeled to Nesting-Roosting Conditions with Alternative 2 Compared to No Treatment

<b>Unit 27-1</b> Foraging	<b>Canopy Cover (%)</b>	<b>Basal Area (ft<sup>2</sup>)</b>	<b>Overstory Mean Diameter</b>	<b>Quadratic Mean Diameter</b>	<b>Trees &gt; 20" DBH/Acre</b>	<b>Basal Area Trees ≥ 26" DBH</b>
<b>Nesting-Roosting Target Conditions</b>	<b>≥ 60%</b>	<b>180-240ft<sup>2</sup></b>	<b>≥ 21"</b>	<b>≥ 15"</b>	<b>≥ 12</b>	<b>≥ 30ft<sup>2</sup></b>
<b>Current Condition</b>	57	202	26.4	10.8	37.9	89ft <sup>2</sup>
<b>No Treatment</b> NR conditions met in 2073	58	342	25	15.9	43	107ft <sup>2</sup>
<b>Alternative 2 Treatment</b> NR conditions met in 2073	60	270	27.6	15.8	43	142ft <sup>2</sup>

Table 3-13b: FVS Stand Metrics for 31-4 Modeled to Nesting-Roosting Conditions with Alternative 2 Compared to No Treatment

<b>Unit 31-4</b> Foraging/Dispersal Mix with Nesting	<b>Canopy Cover (%)</b>	<b>Basal Area (ft<sup>2</sup>)</b>	<b>Overstory Mean Diameter</b>	<b>Quadratic Mean Diameter</b>	<b>Trees &gt; 20" DBH/Acre</b>	<b>Basal Area Trees ≥ 26" DBH</b>
<b>Nesting-Roosting Target Conditions</b>	<b>≥ 60%</b>	<b>180-240ft<sup>2</sup></b>	<b>≥ 21"</b>	<b>≥ 15"</b>	<b>≥ 12</b>	<b>≥ 30ft<sup>2</sup></b>
<b>Current Condition</b>	68	252	19.4	14.5	13.8	28ft <sup>2</sup>
<b>No Treatment</b> NR conditions met in 2043	68	290	21	16.6	56	55ft <sup>2</sup>
<b>Alternative 2 Treatment</b> 2043	61	235	21	13.3	38	33
<b>Alternative 2 Treatment</b> NR conditions met in 2043	63	238	19.5	15.4	37	44ft <sup>2</sup>

### 3.1.11.3 *Alternative 3*

The prescriptions under *Alternatives 3* would reduce habitat quality in the short term<sup>2</sup>, but would not delay or preclude the development of nesting-roosting habitat by more than 20 years when compared to the modeled development of the No Action Alternative (Tables 3-14 a and b). Under *Alternative 3*, the proposed action in the LSR LUA would thin stands to a target relative density of 40-45 percent. The tables below represent the stands modeled with a target relative density of 40 percent.

Under *Alternative 3* prescriptions, the Unit 31-4 model achieved nesting-roosting conditions on the same temporal scale as the No Treatment model, and Unit 27-1 would meet nesting-roosting conditions 20 years after the No Treatment model.

Table 3-14a: FVS Stand Metrics for Unit 27-1 Modeled to Nesting-Roosting Conditions with *Alternative 3* Compared to No Treatment

Unit 27-1 Foraging	Canopy Cover (%)	Basal Area (ft <sup>2</sup> )	Overstory Mean Diameter	Quadratic Mean Diameter	Trees > 20" DBH/Acre	Basal Area Trees ≥ 26" DBH
<b>Nesting-Roosting Target Conditions</b>	≥ 60%	180- 240ft <sup>2</sup>	≥ 21"	≥ 15"	≥ 12	≥ 30ft <sup>2</sup>
<b>Current Condition</b>	57	202	26.4	10.8	37.9	89ft <sup>2</sup>
<b>No Treatment</b> NR conditions met in 2073	58	342	25	15.9	43	107ft <sup>2</sup>
<b>Alternative 3 Treatment</b> 2073	58	243	28	13.5	36	59
<b>Alternative 3 Treatment</b> NR conditions met in 2093	59	207	29	16.7	56	161ft <sup>2</sup>

Table 3-14b: FVS Stand Metrics for 31-4 Modeled to Nesting-Roosting Conditions with *Alternative 3* Compared to No Treatment

Unit 31-4 Foraging/Dispersal Mix with Nesting	Canopy Cover (%)	Basal Area (ft <sup>2</sup> )	Overstory Mean Diameter	Quadratic Mean Diameter	Trees > 20" DBH/Acre	Basal Area Trees ≥ 26" DBH
<b>Nesting-Roosting Target Conditions</b>	≥ 60%	180- 240ft <sup>2</sup>	≥ 21"	≥ 15"	≥ 12	≥ 30ft <sup>2</sup>
<b>Current Condition</b>	68	252	19.4	14.5	13.8	28ft <sup>2</sup>
<b>No Treatment</b> NR conditions met in 2043	68	290	21	16.6	56	55ft <sup>2</sup>
<b>Alternative 3 Treatment</b> NR conditions met in 2043	60	234	20	16.3	42	41ft <sup>2</sup>

### 3.1.11.4 *Alternative 4*

Under *Alternative 4*, the proposed action in the LSR LUA would thin stands to a relative density range of 20-45 percent. The range of RD treatments in *Alternative 4* would be used to meet the varying objectives across the project area. In stands where the objective is to speed the development of NR and not preclude or delay the development by 20 years or more, the prescriptions would include a target RD on the higher end of the range to meet that criteria. The tables below represent the stands modeled with a target relative density of 35 percent (Tables 3-15 a and b). To demonstrate the range of proposed RD treatments in *Alternative 4*, stands were also modeled with a target RD of 20 percent and the results are included in the temporal results summary below (Table 3-16). The two modeled stands treated with a target of 20 and 35 percent RD did not reach target nesting-roosting canopy cover conditions within 20 years of the No

<sup>2</sup> Short term is considered as 5-15 years until canopy cover and other habitat features start to develop.

Treatment model, although the target conditions for basal area, overstory mean diameter, QMD, and large trees per acre were eventually met.

Table 3-15a: FVS Stand Metrics for Unit 27-1 Modeled to Nesting-Roosting Conditions with Alternative 4 Compared to No Treatment

Unit 27-1 Foraging	Canopy Cover (%)	Basal Area (ft <sup>2</sup> )	Overstory Mean Diameter	Quadratic Mean Diameter	Trees > 20" DBH/Acre	Basal Area Trees ≥ 26" DBH
<b>Nesting-Roosting Target Conditions</b>	≥ 60%	180- 240ft <sup>2</sup>	≥ 21"	≥ 15"	≥ 12	≥ 30ft <sup>2</sup>
<b>Current Condition</b>	57	202	26.4	10.8	37.9	89ft <sup>2</sup>
<b>No Treatment</b> NR conditions met in 2073	58	342	25	15.9	43	107ft <sup>2</sup>
<b>Alternative 4 Treatment</b> 2073	57	222	26	12.7	28	60ft <sup>2</sup>
<b>Alternative 4 Treatment</b> NR conditions met in 2098	58	246	30	15.1	43	88ft <sup>2</sup>

Table 3-15b: FVS Stand Metrics for 31-4 Modeled to Nesting-Roosting Conditions with Alternative 4 Compared to No Treatment

Unit 31-4 Foraging/Dispersal Mix with Nesting	Canopy Cover (%)	Basal Area (ft <sup>2</sup> )	Overstory Mean Diameter	Quadratic Mean Diameter	Trees > 20" DBH/Acre	Basal Area Trees ≥ 26" DBH
<b>Nesting-Roosting Target Conditions</b>	≥ 60%	180- 240ft <sup>2</sup>	≥ 21"	≥ 15"	≥ 12	≥ 30ft <sup>2</sup>
<b>Current Condition</b>	68	252	19.4	14.5	13.8	28ft <sup>2</sup>
<b>No Treatment</b> NR conditions met in 2043	68	290	21	16.6	56	55ft <sup>2</sup>
<b>Alternative 4 Treatment</b> 2043	55	196	21	12.8	37	37ft <sup>2</sup>
<b>Alternative 4 Treatment</b> NR conditions met in 2068	59	226	22	15.5	45	47ft <sup>2</sup>

### 3.1.11.5 *Summary of Alternatives*

The two representative stands modeled with Alternative 2 treatments (45 percent RD) obtained nesting-roosting conditions within 20 years or less of the No Treatment model. All stands modeled to Alternative 3, with a target relative density of 40 percent, achieved nesting-roosting conditions within 20 years of the No Treatment model. Stands modeled to Alternative 4 with a target RD of 20 and 35 percent did not achieve nesting-roosting conditions, particularly target canopy cover, within 20 years of the No Treatment model (Table 3-16).

Table 3-16: Temporal summary of units modeled by alternative in terms of achieving minimum nesting roosting habitat conditions (years post-treatment)

Treatment Unit	Alternative 1 (No Action)	Alternative 2 (RD 45%)	Alternative 3 (RD 40%)	Alternative 4 (35% RD) *	Alternative 4 (RD 20%) *
<b>Minimum Nesting-Roosting Habitat Conditions Met (years post-treatment)</b>					
Unit 27-1	50 years	50 years	70 years	75	100 years
Unit 31-4	20 years	20 years	20 years	45	>100 years

\*Alternative 4 includes a target RD range between 20-40%. Stands were modeled at both 20% and 30% for Alt 4 to demonstrate treatment variance.

### 3.1.12 Cumulative Effects

Additional small diameter thinning and fuels treatments could occur in the project area, such as those proposed in the upcoming foreseeable IVM River Hill Natural Fuels Reduction Project (Appendix D). In stands where the purpose is developing or maintaining nesting-roosting habitat, key habitat elements and habitat function would be retained.

The BLM Medford District assumes past management practices on private lands would continue. The BLM anticipates some loss of NSO habitat on private lands, but cannot predict the rate of loss, types of sNSO habitat affected, or the specific location of harvest. The BLM does not track private land harvest activity. Harvest activities on state and private lands can be expected to impact NSOs located within adjacent federal lands by removing and fragmenting habitat and through disturbance activities adjacent to occupied sites during sensitive periods. The Oregon Forest Practices Act Rules (OAR 629-665-0210) protects NSO nest sites (70-acre core areas) for at least three years after the last year of occupation. The Rogue Gold FMP would treat up to 484 acres of LSR habitat, of which 69 acres would be nesting-roosting treatment. Habitat function would be maintained for treatments in nesting-roosting habitat within LSR and, as described above, the prescriptions would put non-nesting-roosting habitat on the trajectory of developing nesting-roosting habitat in the future.

The 2016 PRMP/FEIS considered the overall net change in habitat function to NSO habitat of implementing the Proposed RMP, which also includes commercial harvest in the HLB for providing for a sustained supply of timber (USDI 2016a, pp. 928-998). When added to the present and future foreseeable actions, including commercial timber harvest on HLB, the BLM concluded in the 2016 PRMP/FEIS, to which this EA is tiered, that implementation of the Proposed RMP as a whole would contribute to a landscape that supports large blocks of NSO habitat that are capable of supporting clusters of reproducing NSO, distributed across a variety of ecological conditions and spaced to facilitate NSO movement between the blocks (BLM 2016a, pp. 932-941). Those analyses and findings are incorporated here by reference. The U.S. Fish and Wildlife Service confirmed in their Biological Opinion (BO) on the 2016 ROD/RMP that these analyses are a reasonable approach to assessing NSO habitat change in the planning area resulting from timber harvest, in growth, and wildfire because it reflects the application of best available science and the acreages of land that would be subject to the range of management activities in the LUAs in the 2016 RMP (USFWS 2016, p. 603). All actions on the BLM Medford District in the LSR would follow 2016 ROD/RMP management direction, and therefore the overall effect of implementing the 2016 ROD/RMP has been analyzed in the 2016 PRMP/FEIS Cumulative Effects at the landscape level.

### **Issue 5: How would timber harvest and connected actions impact the Recreation Setting Characteristics, as well as the recreation opportunities and objectives of the three Extensive Recreation Management Areas, within the project area?**

#### 3.1.13 Background

The BLM developed this issue to evaluate the potential changes in the Recreation Setting Characteristics (RSC) and recreation objectives and opportunities of the Extensive Recreation Management Areas (ERMA) within the planning area. The BLM examined impacts to both the current recreation opportunities and objectives within the ERMAs, as well as impacts to the proposed RSC designation for each ERMA.

As part of the RMP, the BLM designated certain areas of the landscape as either SRMAs or ERMAs. Within each of these designated areas, the BLM established recreation and visitor service objectives and identified supporting management actions and allowable uses (2016 ROD/RMP pg. 259). The Recreation Management Area (RMA) Frameworks are available in Appendix I.

***Special Recreation Management Areas*** (SRMAs) are administrative units where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their unique value, importance, and/or distinctiveness, especially as compared to other areas used for recreation. The BLM manages SRMAs to protect and enhance a targeted set of activities, experiences, benefits, and recreation setting characteristics. Within SRMAs, recreation and visitor services management is recognized as the predominant land use plan focus, where specific recreation opportunities and recreation setting characteristics are managed and protected on a long-term basis. (2016 ROD/RMP p. 259).

***Extensive Recreation Management Areas*** (ERMAs) are administrative units that require specific management consideration to address recreation use, demand, or recreation and visitor services program investments. The BLM manages ERMAs to support and sustain the principal recreation activities and the associated qualities and conditions of the ERMA. Management of ERMAs is commensurate with the management of other resources and resource uses (2016 ROD/RMP p. 259).

On August 22, 2018, the state director authorized a Plan Maintenance document to provide clarification of the role of the guidance in the Recreation Management Area Frameworks for an ERMA in the context of the management direction for the underlying land use allocation. The clarification added the following text to the beginning of the Forest Management section of the Recreation Management Area Frameworks for each ERMA: "Apply the following guidance to the extent it is consistent with the management direction for the underlying Land Use Allocation. Where ERMA designations overlap with the Harvest Land Base, implement actions as directed by the Harvest Land Base management direction and consider PDFs that would minimize or avoid adverse effects to the recreational resources identified in the RMP's ERMA Planning Framework to the extent consistent with Harvest Land Base management direction."

### 3.1.14 Methodologies

#### ***Remoteness and Naturalness Characteristics***

With the exception of the characteristics of remoteness and naturalness, the BLM discusses effects on all the recreation setting characteristics through analysis of RMAs, recreation opportunities, and recreation demand.

The recreation opportunity spectrum framework provides a range of possible outdoor recreation settings that produce recreation experiences. This framework consists of six classes which, range from primitive to urban. These classes are named for the purpose of describing the spectrum of recreation settings available for management. For example, the "primitive" class is not exclusive to Wilderness, Wilderness Study Areas, or lands with wilderness characteristics and may be used in other recreation management areas.

The distance criteria used to determine the recreation opportunity spectrum class for remoteness is displayed below in Table 3-16. The term "remoteness" refers to an area's proximity to human modifications associated with roads or trails. The BLM established the recreation opportunity spectrum class for remoteness by applying its functional road classification system to assign road types based on the recreation opportunity spectrum class and identifying distance criteria. These criteria were selected with consideration for the topography, vegetation, and road type within the project area. The road types consist of arterial, collector, local, and resource roads (USDI BLM 1996b, updated 2002).

Table 3-16: Distance criteria for each recreational opportunity spectrum class

PRIMITIVE	BACK COUNTRY	MIDDLE COUNTRY	FRONT COUNTRY	RURAL	URBAN
Recreation Opportunity Spectrum Class	Distance Criteria				
Primitive	Greater than 1 mile from any class of road, excluding those that are permanently closed or decommissioned				
Backcountry	0.25 to 1 mile from any class of road, excluding those that are permanently closed or decommissioned				
Middle Country	Within 0.25 mile of local* or resource† roads				
Front Country	Within 0.25 mile of collector‡ roads				
Rural	Within 0.25 mile of arterial roads or highways				
Urban	Within 0.25 mile of arterial roads or highways				

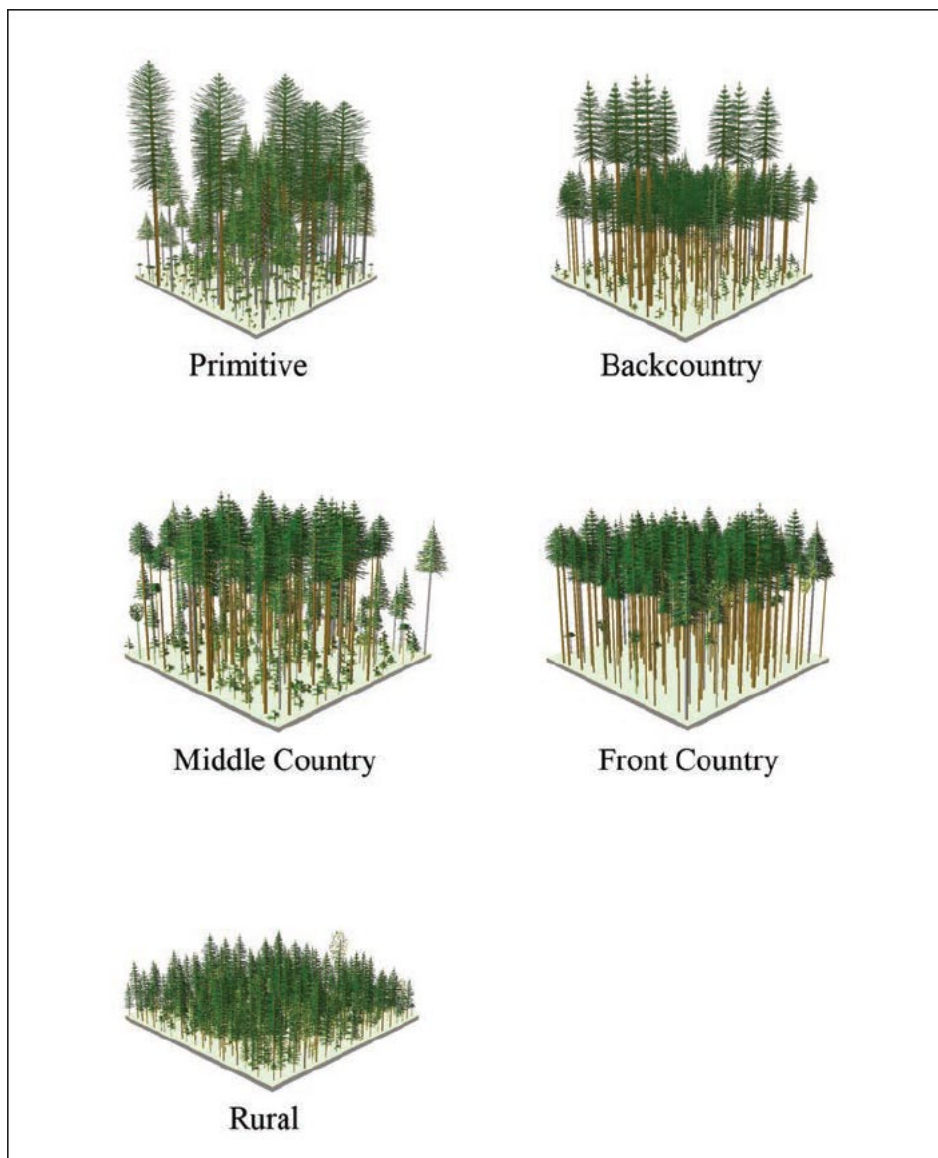
\* **Local roads.** Roads that normally serve smaller areas than collector roads, accommodate fewer uses, have lower traffic volumes, and connect with collector roads or State and County road systems.

† **Resource roads.** Roads that provide point access to public lands, typically exist for a single use, carry very low traffic volumes, and connect with local or collector roads.

‡ **Collector roads.** Roads that primarily provide access to large blocks of public land, accommodate multiple uses, have BLM's highest traffic volumes, and connect with State and County road systems.

Naturalness is defined by the level of an area's influence by human modifications other than roads and trails. Such modifications can include areas of development, utilities, rights-of-way, livestock, structures, fences, habitat treatments, or landscape alternations. The level of naturalness considers the presence of these modifications and potential impact on the visitor experience. In this planning process, management considerations would predominately address landscape alternations through forest and habitat management actions. As such, the BLM's analysis of naturalness uses forest structural stage classes as a proxy to measure changes in recreation opportunity spectrum classes for naturalness. Figure 3-2 shows a visual representation of forest structural stage classifications for naturalness for the five recreation opportunity spectrum classes with forest stand proxies.

Figure 3-2: Stand visualizations for recreational setting classifications.



Listed below is a reference guide for terminology of Forest Structural Classes and their associated proxies for the Naturalness Recreation Setting Classification:

<b>Forest Structural Class</b>	<b>Naturalness</b>
Early	Rural
Mid-Closed	Front country
Mid-Open	Middle Country
Late-Open	Back Country
Late-Closed	Primitive

Table 3-17: Level of human modification and forest structural stage class proxies by recreation opportunity spectrum class for naturalness.

<b>Recreation Opportunity Spectrum Class</b>	<b>Level of Human Modification and BLM Forest Structural Stage Class Proxies</b>
Primitive	<ul style="list-style-type: none"> <li>• Undisturbed natural landscape</li> <li>• Structurally-complex with Existing Old or Very Old Forest</li> </ul>
Backcountry	<ul style="list-style-type: none"> <li>• Natural-appearing landscape having modifications not readily noticeable</li> <li>• Mature Single- or Multi-layered Canopy</li> </ul>
Middle Country	<ul style="list-style-type: none"> <li>• Natural-appearing landscape having modifications that do not overpower natural features</li> <li>• Young High Density with Structural Legacies, or Young Low Density with or without Structural Legacies</li> </ul>
Front Country	<ul style="list-style-type: none"> <li>• Partially modified landscape with more noticeable modifications</li> <li>• Young High Density without Structural Legacies</li> </ul>
Rural	<ul style="list-style-type: none"> <li>• Substantially modified natural landscape</li> <li>• Stand Establishment with or without Structural Legacies</li> </ul>
Urban	<ul style="list-style-type: none"> <li>• Urbanized developments dominate the landscape</li> </ul>

The BLM used the amount of timber harvest by type and acres that would occur over the next 10 years to analyze the effects to recreation opportunity spectrum classes for naturalness. For example, timber harvest that involves thinning dense, young stands would shift the naturalness of an area from the Front Country to the Middle Country setting. In contrast, the regeneration harvesting of older stands would modify the naturalness of an area from Primitive to Rural. These actions would influence the distribution of recreation for visitors who prefer these different settings.

#### 3.1.14.1 Assumptions

In preparing this analysis, the BLM has made several analytical assumptions that provide the framework to the analysis of the issue below:

- The analysis area for recreation objectives and opportunities is related to the RMAs only where the proposed treatment units are within an RMA. (See map, Appendix A, Figure A-4).
- The RMAs would be developed in the future based on the objectives of the Recreation Planning Framework and any plan maintenance to that framework. (Appendix I).
- Forest stand structural stage classes are utilized as a proxy to determine effects to Naturalness, similar to the analysis completed in the 2016 PRMP/FEIS (p. 557).
- Single Tree Selection and Group Select Harvest (Appendices F and G) are the two harvest types used across all alternatives within RMA's.
- The PDFs included in the EA (Appendix B) would be adhered to during the implementation of the proposed project.

#### 3.1.15 Affected Environment

Grants Pass Peak Non-motorized Trails ERMA: Grants Pass Peak Non-motorized Trails ERMA is 11,922 acres and is in the Grants Pass Field Office. As proposed in the RMPs RMA framework the RSC designation for this area is Middle Country. The current and proposed naturalness for this area is consistent with that of the Middle Country. The Front Country remoteness of the area would remain unchanged with no change in road location or density relative to the ERMA. This ERMA was identified to provide non-motorized trail opportunities for future development near the Grants Pass greater urban area.

Rogue Timber ERMA: Rogue Timber ERMA is 7,905 acres and is in the Ashland Field Office. As

proposed in the RMPs RMA framework the RSC designation for this area is Front Country. The Front Country remoteness of the area would remain unchanged with no change in road location or density relative to the ERMA. The current naturalness for this area is consistent with the Middle Country RSC. The ERMA currently provides users with mechanized and motorized riding opportunities in diverse settings and has the potential to draw local and regional OHV and mountain biking enthusiasts. With future developments the Rogue Timber ERMA has the potential to provide technical mechanized and motorized trail opportunities. The ERMA is in the vicinity of, and has trail connectivity to, both the Motorcycle Riders Association, and the City of Jacksonville's Forest Park trail systems.

Left Right Center Foots ERMA: Left Right Center Foots ERMA is 7,656 acres and is in the Ashland Field Office. The ERMA offers expansion opportunities for nearby trails to the City of Rogue River. As proposed in the RMPs RMA framework the RSC designation for this area is Front Country. The current naturalness for this area is consistent with the Middle Country RSC. The front country remoteness of the area would remain unchanged with no change in road location or density relative to the ERMA. This ERMA was identified to provide non-motorized trail opportunities for future development near the Grants Pass greater urban area.

### *3.1.16 Environmental Consequences*

Grants Pass Peak Non-motorized Trails ERMA: Under Alternatives III and IV units 21-4, 21-5, and 21-6 are proposed. Under alternative II only units 21-4 and 21-5 are proposed within the ERMA. The Recreation Management Framework for the Grants Pass Peak Non-motorized Trails ERMA allows timber harvest if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics. Satellite imagery and field observations were used to conduct the analysis using the forest's structural stage as a proxy for naturalness. As a result of that analysis it was determined that its current state was consistent primarily with the RMA's proposed middle country RSC for naturalness with some mixed pockets of higher density areas more consistent with a front country forest structural stage, furthermore it was observed that the proposed group selection harvest within the ERMA would enhance the desired middle country RSC by thinning some of the more densely forested pockets of the ERMA, this however would not fundamentally change the naturalness for the ERMA broadly. The proposed harvest actions in this project would not impact the proposed outcome objectives of this RMA for future development of recreation facilities, including visitor activities, visitor experiences, and visitor benefits as outlined in the RMA framework due to the short time duration the forest management activities would be disruptive to the ERMA (Appendix I). However, during harvest operations it is expected short term impacts would be experienced due to a temporary safety closure of the area. These short-term impacts would be brief and recreation displacement will be easily absorbed by near-by opportunities. All proposed actions within this project would be miles north of any potential future trail development for the Applegate Ridge Trail and as such would have no impact. The proposed Applegate Ridge Trail project would traverse through some of the southernmost reaches of this ERMA if the trail were approved. The proposed activities within the ERMA are consistent with proposed recreation setting characteristics, meeting recreation objectives and not interfering with recreation opportunities for this ERMA.

No Action: Under the No Action Alternative, no timber harvest, or connected actions would occur. The No Action Alternative would leave the Grants Pass Peak Non-motorized Trails ERMA in its current state regarding the RSCs. The no action alternative would leave the pockets of the ERMA with a forest structural stage more like that of a Front Country RSC than the desired Middle Country outcome. Forest management is required to maintain the desired RSC outcome of this ERMA.

Cumulative Impacts: The Grants Pass Peak Non-Motorized Trails ERMA currently offers dispersed use with the possibility for expansion of non-motorized trail opportunities in the vicinity of the Grants Pass

and Rogue River population centers. It is reasonable to assume trail and trailhead development could be an impact in the foreseeable future. Hiking, Mountain biking, and Equestrian use would increase in the ERMA with further trail development. Proximity to the growing communities of Grants Pass and Rogue River may precipitate need for increased recreation facility development in this ERMA in the foreseeable future. It is anticipated that timber harvest would continue to occur within the Harvest Land Base LUA as well as on adjacent privately owned timber lands. The recreation related PDFs would continue to be used for timber harvest activities within the ERMA (Appendix B).

Rogue Timber ERMA: Under Alternatives III and IV units 1-1, 1-2, 2-1, 3-1, 5-1, 5-2, 6-1, 7-1, 7-2, 8-1, 8-2, 9-1, 9-2, 11-1, 11-2, 13-1, 15-1, 17-1, 17-2, 17-4, 21-1, 21-2, 21-3, 29-1, 31-1, 31-2, 31-3, 31-4, are proposed. Under alternative II only units 1-1, 1-2, 5-1, 6-1, 8-1, 8-2, 9-2, 11-1, 13-1, 17-2, 21-2, 21-3, 29-1, 31-1, 31-2, 31-3, 31-4, The Recreation Management Framework for the Rogue Timber ERMA allows timber harvest if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics. Satellite imagery and field observations were used to conduct the analysis using the forest's structural stage as a proxy for naturalness. As a result of that analysis, it was determined that its current state was most consistent with that of the Middle Country designation with some mixed pockets of lower density areas more consistent with that of the desired Front Country RSC of naturalness outcome proposed by the RMA framework. The proposed group selection harvest within the ERMA would transition the naturalness RSC to that of one more consistent with the Front Country RSC. The proposed harvest actions in this project would not impact the proposed outcome objectives of this RMA for future development of recreation facilities, including visitor activities, visitor experiences, and visitor benefits as outlined in the RMA framework due to the short time duration the forest management activities would be disruptive to the ERMA (Appendix I). However, during harvest operations it is expected that short term impacts would be experienced due to a temporary safety closure of the area. Many existing trails in this RMA are utilized by off road motorcycle, electric mountain bike, mountain bike, and on foot. Short term closures for safety would be implemented. These short-term impacts would be brief and recreation displacement would be absorbed by nearby opportunities on adjacent BLM lands, Motorcycle Riders Association trails, as well as the Jacksonville Forest Park trails. The proposed activities within the ERMA are consistent with middle country recreation setting characteristics, meeting recreation objectives and not interfering with recreation opportunities for this ERMA.

No Action: Under the No Action Alternative, no timber harvest, or connected actions would occur. The No Action Alternative would leave the Rogue Timber ERMA in its current state regarding RSCs. The no action alternative would leave the ERMA with the naturalness in the current Middle Country classification rather than the desired Front Country outcome. Forest management is required to maintain the desired RSC outcome of this ERMA.

Cumulative Impacts: The Rogue Timber ERMA currently offers motorized and mechanized trail use. It is anticipated that timber harvest would continue to occur within the Harvest Land Base LUA as well as on adjacent privately owned timber lands. It is reasonable to assume trail and trailhead development could be an impact in the foreseeable future. Mountain biking, and Off-Road Motorcycle use would increase in the ERMA with further future trail development. Proximity to Motorcycle Riders Association trails as well as Jacksonville Forest Park trails in the vicinity may precipitate a need for increased recreation facility development in this ERMA in the foreseeable future. The recreation related PDFs would continue to be used for timber harvest activities within the ERMA (Appendix B).

Left Right Center Foots ERMA: Under Alternatives III and IV units 1-1, 1-2, 2-1, 3-1, 5-1, 5-2, 6-1, 7-1, 7-2, 8-1, 8-2, 9-1, 9-2, 11-1, 11-2, 13-1, 15-1, 17-1, 17-2, 17-4, 21-1, 21-2, 21-3, 29-1, 31-1, 31-2, 31-3, 31-4, are proposed. Under alternative II only units 1-1, 1-2, 5-1, 6-1, 8-1, 8-2, 9-2, 11-1, 13-1, 17-2, 21-2,

21-3, 29-1, 31-1, 31-2, 31-3, 31-4, The Recreation Management Framework for the Rogue Timber ERMA allows timber harvest if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics. Satellite imagery and field observations were used to conduct the analysis using the forest's structural stage as a proxy for naturalness. As a result of that analysis, it was determined that its current state was most consistent with that of the Middle Country designation with some mixed pockets of lower density areas more consistent with that of the desired Front Country RSC of naturalness outcome proposed by the RMA framework. The proposed group selection harvest within the ERMA would transition the naturalness RSC to that of one more consistent with the Front Country RSC. The proposed harvest actions in this project would not impact the proposed outcome objectives of this RMA for future development of recreation facilities, including visitor activities, visitor experiences, and visitor benefits as outlined in the RMA framework due to the short time duration the forest management activities would be disruptive to the ERMA (Appendix I). However, during harvest operations it is expected that short term impacts would be experienced due to a temporary safety closure of the area. Many existing trails in this RMA are utilized by off road motorcycle, electric mountain bike, mountain bike, and on foot. Short term closures for safety would be implemented. These short-term impacts would be brief and recreation displacement would be absorbed by nearby opportunities on adjacent BLM lands, Motorcycle Riders Association trails, as well as the Jacksonville Forest Park trails. The proposed activities within the ERMA are consistent with middle country recreation setting characteristics, meeting recreation objectives and not interfering with recreation opportunities for this ERMA.

No Action: Under the No Action Alternative, no timber harvest, or connected actions would occur. The No Action Alternative would leave the Rogue Timber ERMA in its current state regarding RSCs. The no action alternative would leave the ERMA with the naturalness in the current Middle Country classification rather than the desired Front Country outcome. Forest management is required to maintain the desired RSC outcome of this ERMA.

Cumulative Impacts: The Rogue Timber ERMA currently offers motorized and mechanized trail use. It is anticipated that timber harvest would continue to occur within the Harvest Land Base LUA as well as on adjacent privately owned timber lands. It is reasonable to assume trail and trailhead development could be an impact in the foreseeable future. Mountain biking, and Off-Road Motorcycle use would increase in the ERMA with further future trail development. Proximity to Motorcycle Riders Association trails as well as Jacksonville Forest Park trails in the vicinity may precipitate a need for increased recreation facility development in this ERMA in the foreseeable future. The recreation related PDFs would continue to be used for timber harvest activities within the ERMA (Appendix B).

## **4 Consultation and Coordination**

### **4.1 Endangered Species Act**

Section 7 of the ESA requires the BLM to work with the USFWS (for plant and wildlife species) and NOAA Fisheries (for fish species) for actions the BLM funds, authorizes, or proposes to ensure the project is not likely to jeopardize the continued existence of listed plant, wildlife, or fish species, or destroy or adversely modify their designated critical habitat.

Before requesting consultation, the BLM determines whether the project may affect the listed species or critical habitat. If the project would affect the species, but the effect would be relatively minor, consultation is informal, and the BLM submits a written request for informal consultation. If USFWS or NOAA Fisheries agrees with the BLM's determination, then informal consultation concludes with the USFWS or NOAA Fisheries issuing a letter of concurrence.

If the BLM determines a project is likely to adversely affect a listed species or critical habitat, then the

project requires formal consultation and the BLM submits a written request, or biological assessment (BA), for formal consultation to USFWS or NOAA Fisheries. During formal consultation, the USFWS or NOAA Fisheries reviews the project to determine if the project is likely to jeopardize the continued existence of a listed species or destroy or adversely modify designated critical habitat. The agencies submit the results of the review to the BLM in a biological opinion (BO).

#### 4.1.1 ESA Plants

Gentner's fritillary (*Fritillaria gentneri*), the only Federally listed plant species known to grow in the Ashland Resource Area. BLM manages Gentner's fritillary under 2020 Biological Assessment of activities that may affect the federally listed plant species, Gentner's Fritillary and Cook's Lomatium (*Lomatium cookii*), on the BLM Medford District and corresponding 2020 Letter of Concurrence from the USFWS (USDI BLM 2020c and USFWS 2020b). The BLM is using the 2015 USFWS/BLM Conservation Agreement for Gentner's Fritillary in Southwestern Oregon (USFWS and USDI BLM, 2015) and the 2022 Amendment to the Conservation Agreement for Gentner's Fritillary in Southwestern Oregon.

The BLM would safeguard the 6 populations in activity units and the 7 populations in the project area using PDFs in accordance with the 2015 Conservation Agreement, the 2020 Biological Assessment, and the 2022 Amendment to the Conservation Agreement for Gentner's Fritillary in Southwestern Oregon..

#### 4.1.2 ESA Fish

The Rogue Gold FMP is within the range of the federally listed Southern Oregon Northern California Coast Coho (SONCC) Salmon. The BLM consulted on a mixture of actions proposed under the action alternatives that would have a greater likelihood of affecting listed fish species and their habitat. The BLM Fisheries Biologist determined that the project would be a "May affect/Not Likely to Adversely Affect" SONCC Coho Salmon, CCH, and Essential Fish Habitat in the Planning Area. The anticipated effects are within those consulted on with the National Marine Fisheries Service (NMFS) in the Programmatic Biological Assessment/Opinion for the BLM's Forest Management Program for Western Oregon (WCR 2017-7574). Initiation of formal consultation on this project was on MONTH DAY, 2023, with the submission of the required pre-project notification form developed under the Programmatic Forest Management BO. The BLM received a verification letter from the NMFS confirming that the proposed actions are consistent with the effects analysis and conclusions of the NMFS BO on MONTH DAY, 2020.

#### 4.1.3 ESA Terrestrial Wildlife

The federally threatened NSO and the Franklin's bumble bee (*Bombus franklini*) are the only ESA-listed wildlife species known to occur within or near the Rogue Gold FMP planning area.

The BLM has determined that the Rogue Gold FMP is likely to adversely affect the NSO. The BLM met with the Level 1 consultation team in February 2022 for a meeting and field trip to provide an overview of the project and discuss potential effects to listed species. Formal consultation with the USFWS for the NSO and Franklin's bumble bee began when the BLM sent the Biological Assessment (BA) (FY 23 Batch BA) to the USFWS in April 2023. BLM anticipates a Biological Opinion from the USFWS in July 2023.

## 4.2 Tribal Consultation

BLM sent scoping letters to the Cow Creek Band of Umpqua Tribe of Indians, the Confederated Tribes of the Grand Ronde Community of Oregon, and the Confederated Tribes of the Siletz Indians of Oregon informing them of the project, along with an email to Tribal staff on September 30, 2021, and invited them to provide input or formally consult with the BLM. The Tribes did not request consultation.

## 4.3 State Historic Preservation Office

Consultation with the State Historic Preservation Office (SHPO) was not required as the BLM determined that the project would be a “no effect” for cultural resources. (State Protocol VI.C.(9):2015:13).

## 4.4 List of Preparers

The following BLM IDT members participated in the development and/or review of the content contained in these documents:

Luke Brandy	Forester
Justin Cournoyer	Planning and Environmental Coordinator
Quinn Kawamoto	Silviculturist
Justin Kelly	Assistant Field Manager Resources
Jesse Kiene	Fuels Specialist
Fletcher Linton	Botanist
Matt McClintock	Soil Scientist
Emma McNeil	Planning and Environmental Specialist
Tim Montfort	Hydrologist
Lisa Rice	Archaeologist
Eric Siemer	Forestry
Ryan Snider	Geographic Information System Specialist
Mike Vanderberg	Assistant Field Manager Timber, Fuels, Engineering
Chris Volpe	Fish Biologist
Jena Volpe	Fire Ecologist
Jameson Whitehead	Outdoor Recreation Planner
Melanie Willard	Wildlife Biologist

## Appendix A: Location Maps

DRAFT

## Rogue Gold Forest Management Project

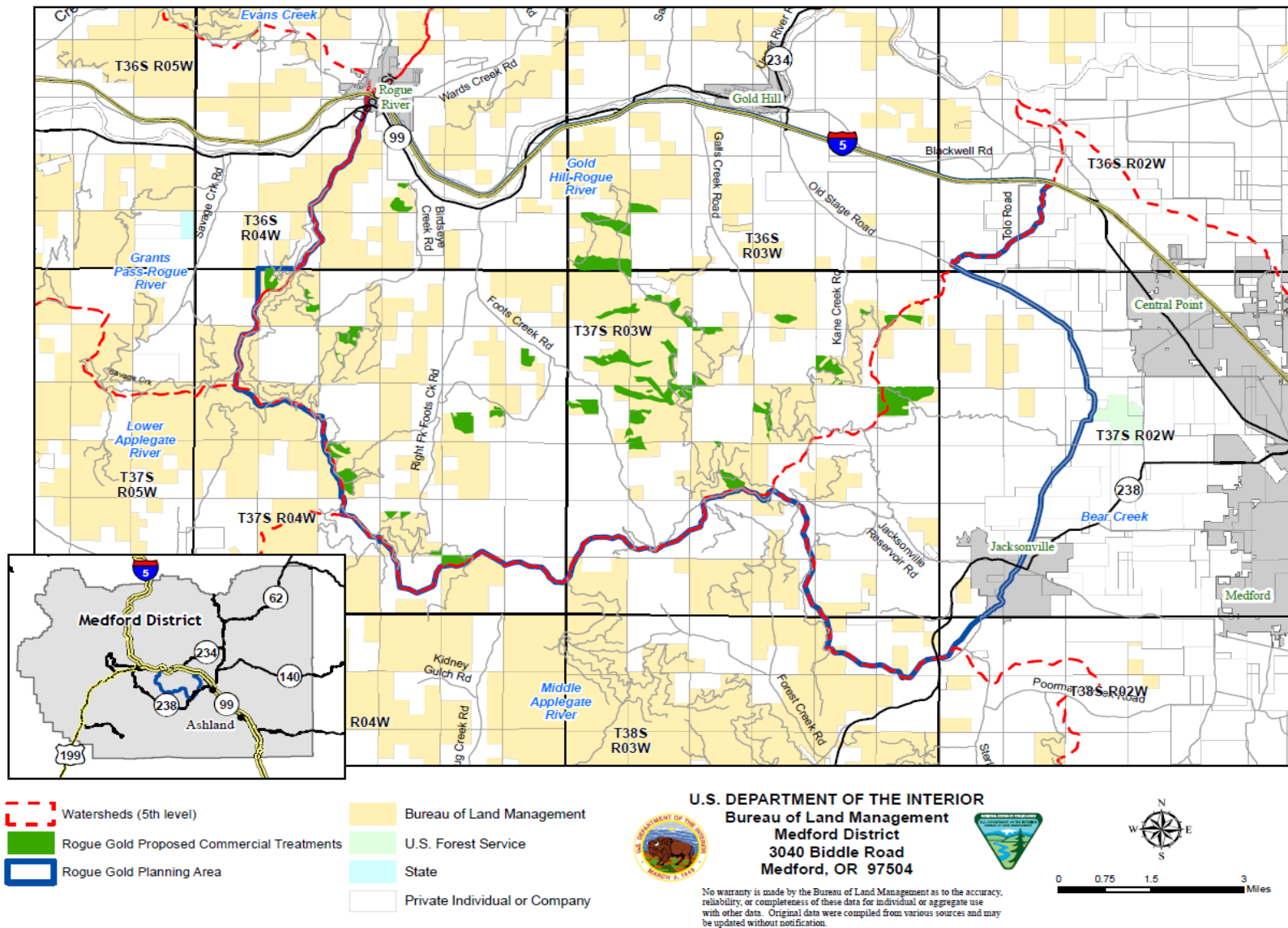


Figure A-1. Project Overview Map

# Rogue Gold - Historic Fire Causes and Large Wildfire Occurrence

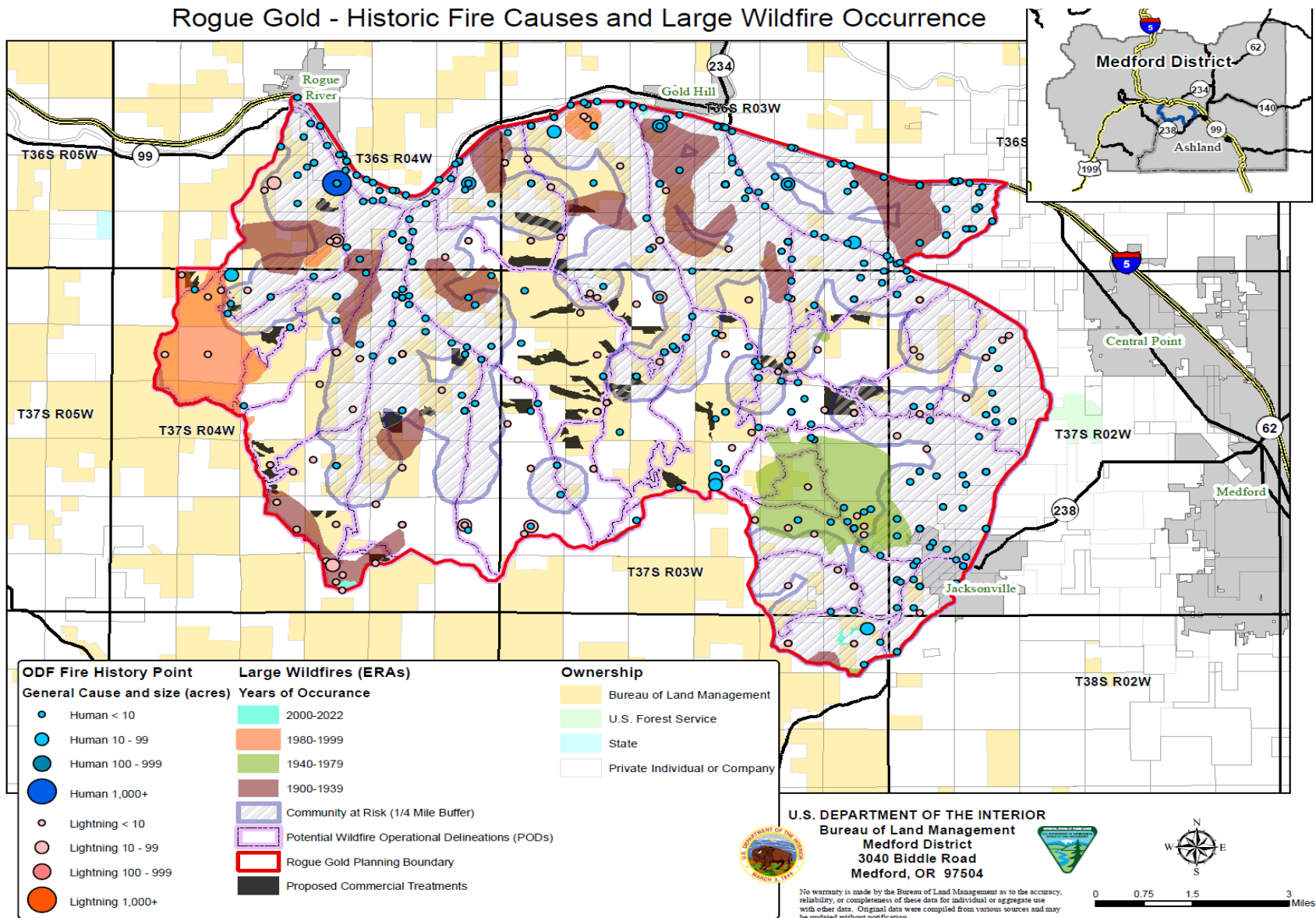


Figure A-2. Historic Fire Causes and Large Wildfire Occurrence Map

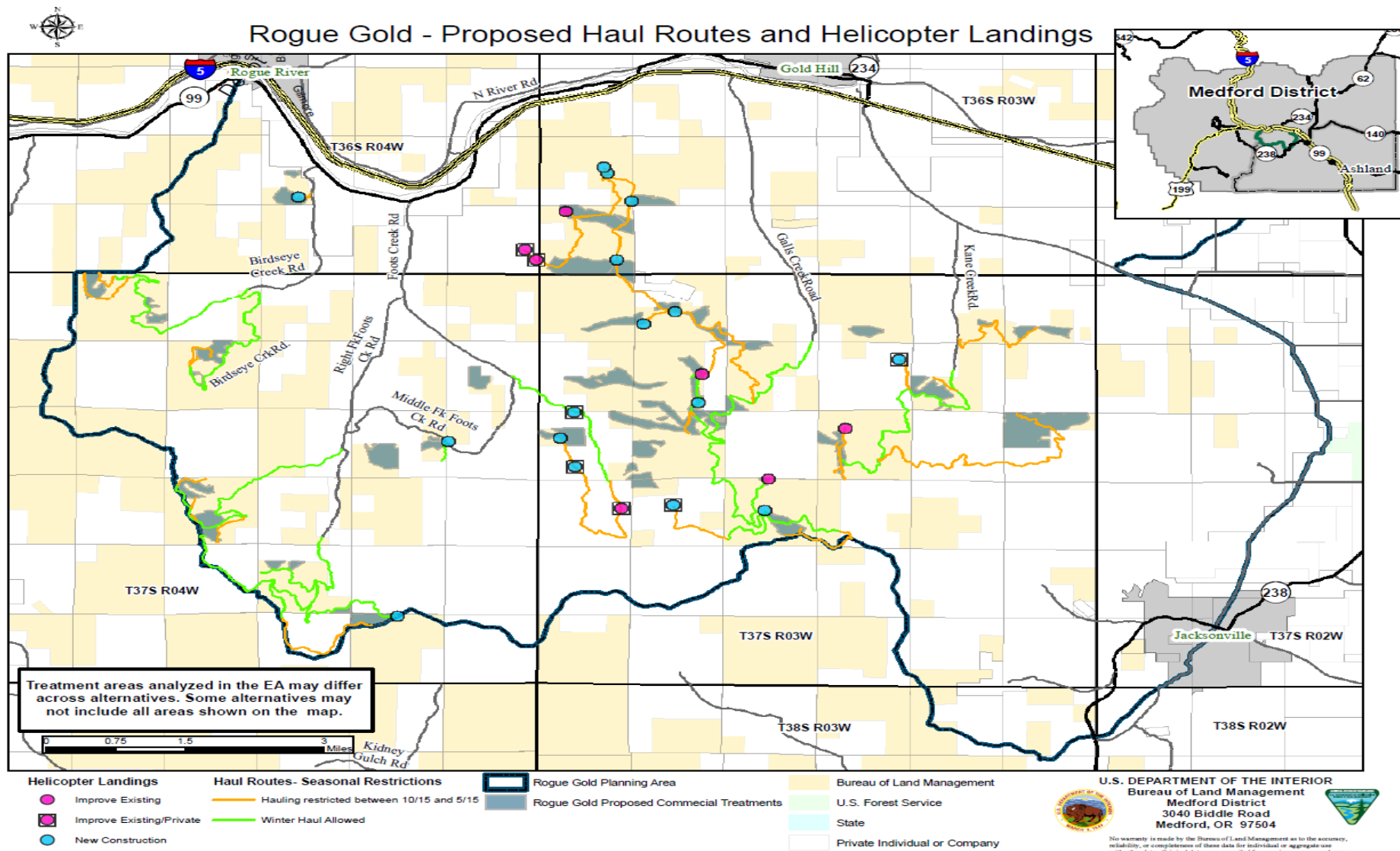


Figure A-3. Proposed Haul Routes and Helicopter Landings Map

## Rogue Gold - Extensive Recreation Management Areas (ERMA)

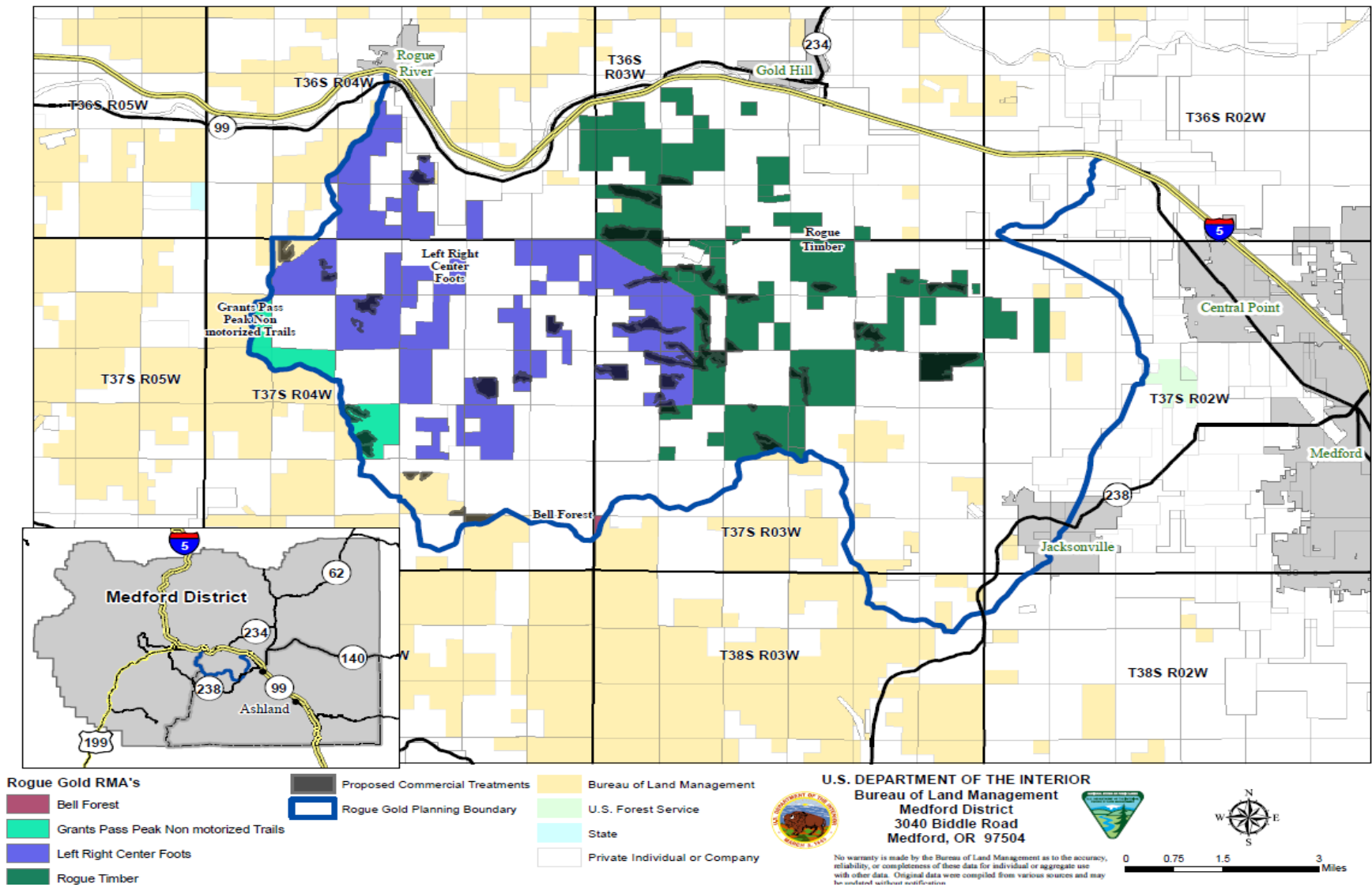


Figure A-4. Extensive Recreation Management Areas Map

## Rogue Gold - Distribution of Invasive Plant Species

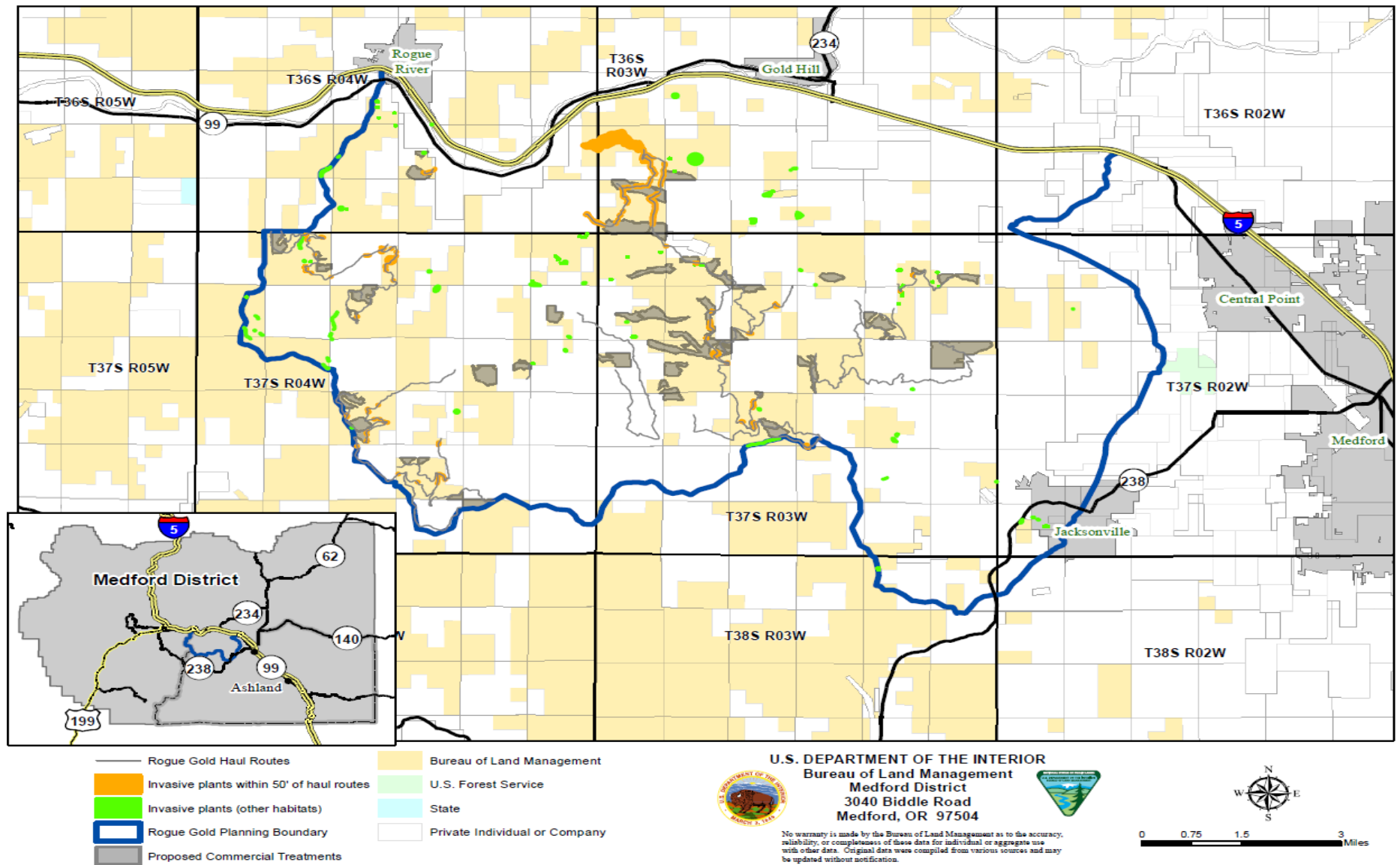


Figure A-5. Distribution of Invasive Plant Species

## Rogue Gold - Wildlife Analysis Area

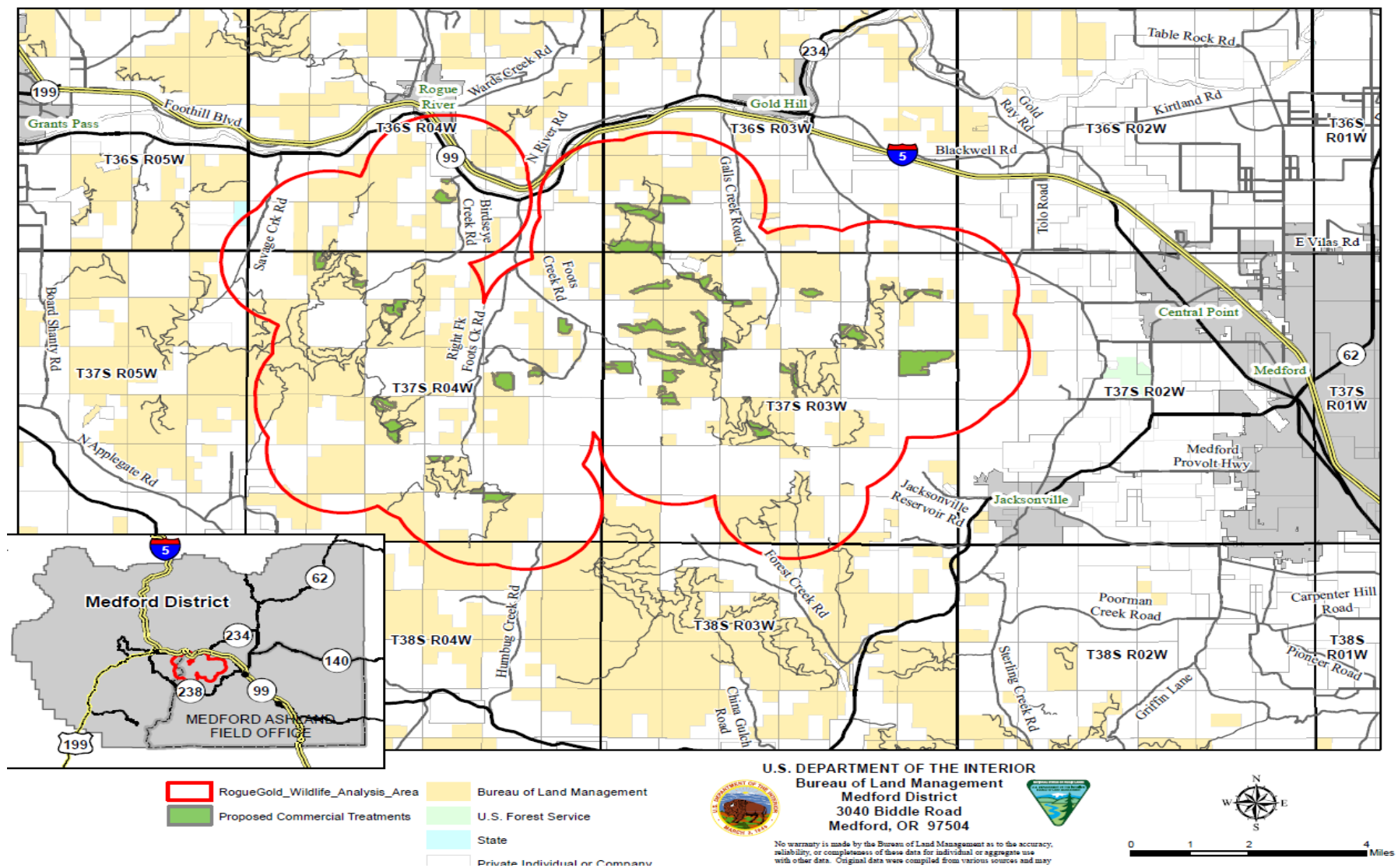


Figure A-6. Wildlife Analysis Area

## Rogue Gold - Aquatic Analysis Area and Fish Distribution

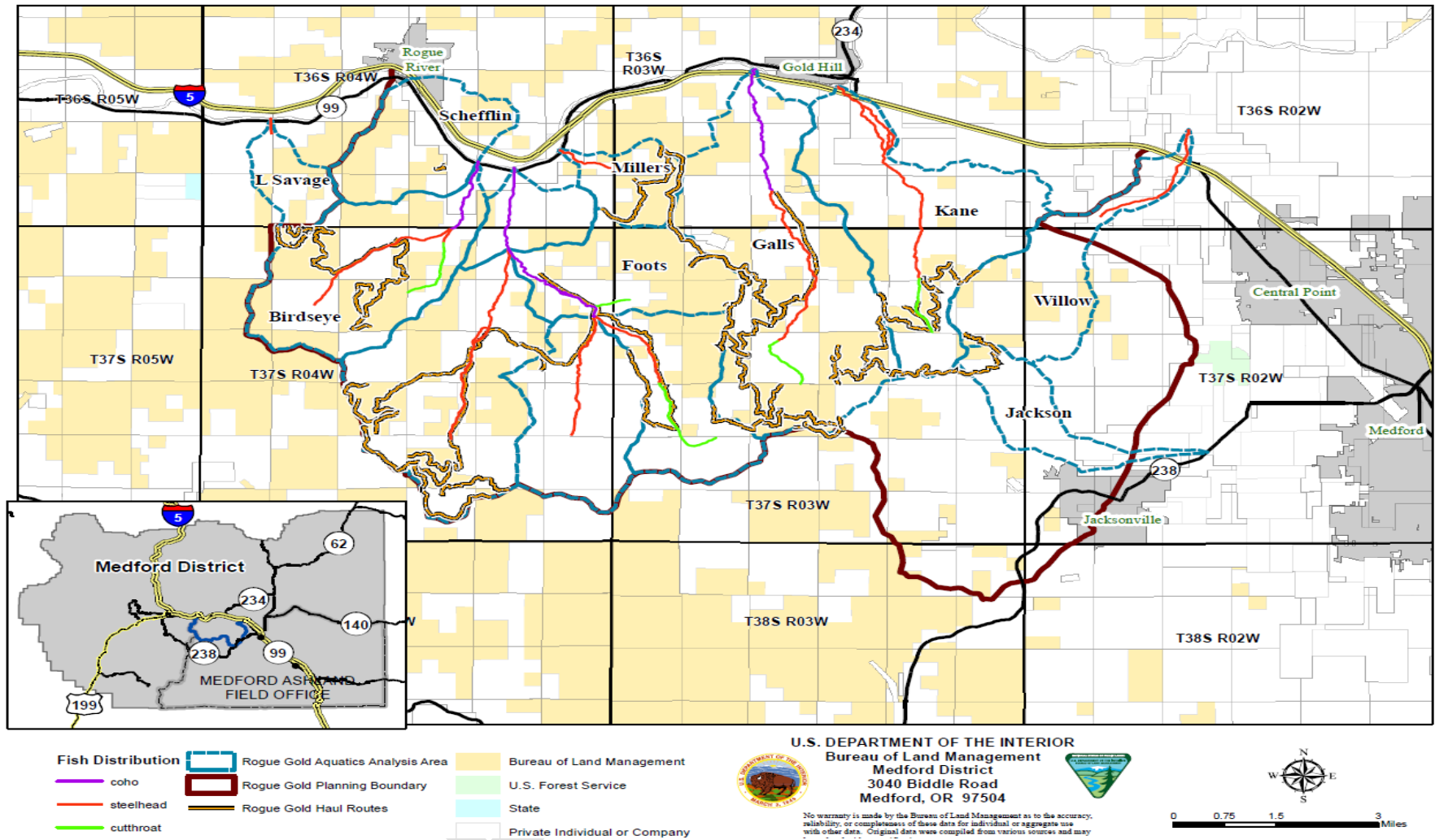


Figure A-7. Aquatic Analysis Area and Fish Distribution

## Appendix B: Project Design Features

The following PDFs would apply to the Applicable Actions as determined by the resource specialist. In some cases, the PDF would apply to All actions (ALL) and in others they would be identified by their acronym. Timber Harvest Ground-based (TH-GB); Timber Harvest Skyline-Cable (TH-SC); Timber Harvest Helicopter (TH-H); Roadwork Construction/Improvement (R-CI); Roadwork Renovation (R-Re); Roadwork Decommission (R-De); and Timber Haul (Haul).

### *B-1 Botany Project Design Features*

PDF #	Source (RMP BMP or Other)	Botany PDF	Applicable Action
1	RMP	Ensure hay, straw, and mulch are certified as free of prohibited noxious vegetative parts or seeds. Hay must be from native grasses only. Straw or hay must be obtained from the BLM or purchased from growers certified by the Oregon Department of Agriculture's Weed Free Forage and Mulch Program or approved by the project botanist.	
2		Revegetate disturbed soils with locally adapted native seeds and plant materials as prescribed by the field office botanist, and mulch. Need would be determined by the field office botanist, based on the level of disturbance and the presence of priority non-native invasive plants. Planting and/or seeding would occur between September 1 to October 31, or February 1 to March 31 or as otherwise approved by the field office botanist.	
3		Monitor and treat priority non-native invasive plant infestations in project treatment units, staging areas, and along access routes prior to project implementation as funding allows. Conduct three years of post-project monitoring, and re-treat if infestations have reached or exceeded action thresholds, as funding allows.	
4		<p>Implement weed prevention measures throughout project implementation.</p> <ul style="list-style-type: none"> <li>· Locate and use weed-free project staging areas. Avoid or minimize all types of travel through weed-infested areas. BLM would provide maps of current infestations in the project area.</li> <li>· Make an effort to inspect, remove, and properly dispose of weed seed and plant parts found on workers' clothing and equipment. Proper disposal entails bagging the seeds and plant parts and incinerating them.</li> </ul>	
5		Require washing of vehicles and equipment travelling off system roads or temporary routes prior to entry onto BLM-administered lands. Ensure all plant material, soil, and debris is removed from the vehicle undercarriage.	
6		Clean all equipment off site or at sites authorized by the sale administrator before leaving the project site if operating in areas infested with weeds.	
7		Implement no-entry buffers around known BSS plant sites as listed below. The use of skid trails and/or skidding logs through plant site buffers would not be allowed.	

		<b>Species</b>	<b>Number of Affected Sites</b>	<b>Buffer Width (radius in feet)</b>	
		<i>Fritillaria gentneri</i>	5 in Units, 12 total in Project Area	100 feet	
		<i>Cypripedium fasciculatum</i>	22 in Selection Harvest Units	75 feet	
		<i>Phaeoclavulina abietina</i>	1 in Selection Harvest Unit	75 feet	
8		For <i>Fritillaria gentneri</i> :  · No heavy equipment within 100 feet of plant sites.  · Construct landings at least 100 feet from plant sites.  · Seed skid trials, landings, or other areas of disturbance adjacent to plant sites.			

*B-2 Cultural, Tribal, and Paleontological Project Design Features*

PDF #	Source (RMP BMP or Other)	Cultural or Tribal PDF	Applicable Action
9		Place a no-entry buffer around National Register of Historic Places (NRHP)-listed or eligible/unevaluated archaeological sites located within the Area of Potential Effect. The BLM archaeologist would establish a buffer sufficient to protect each site from adverse impacts of any proposed activities, considering all elements of the cultural site that contribute to its NRHP eligibility. No treatments would occur within this buffer. Timber identified for removal next to a buffer would be directionally felled away from the buffer for one site-potential tree length.	All proposed activities.
10		If, during project implementation, the contractor encounters or becomes aware of any archaeological, historical, or paleontological sites, features, or artifacts on federal lands, the contractor shall immediately suspend all operations in the vicinity and notify the BLM Contracting Officer. The BLM Contracting Officer would consult with the Field Office Archaeologist and determine appropriate actions to prevent the loss of significant cultural or scientific values. The project may be redesigned to protect the cultural or scientific values present, or evaluation and mitigation procedures would be implemented based on recommendations from the Field Office Archaeologist with concurrence by the BLM Authorized Officer and State Historic Preservation Office. Work may not proceed until	All proposed activities.

		authorization to proceed is issued by the Contracting Officer after approval by the District Archaeologist.	

### B-3 Fuels Project Design Features

PDF #	Source (RMP BMP or Other)	Fuels PDF	Applicable Action
11	RMP BMP F02	Reduce fuel loads by whole tree yarding, and piling material, as necessary, prior to under burning in dry forest types where fuel loads are elevated.	

### B-4 Hydrology Project Design Features

PDF #	Source (RMP BMP or Other)	Hydrology PDF	Applicable Action
12	TH2	Where practical, directionally fall trees away from streams. Fall trees to the lead in relation to and direction of skid trails	All commercial harvest units
13	R62, R66	Restrict ground-based yarding; road and landing construction; road renovation: road closure and decommissioning work; and soil de-compaction operations from October 15 <sup>th</sup> to May 15 <sup>th</sup> , or when soil moisture exceeds 25 percent. Keep erosion control measures concurrent with ground disturbance to allow immediate storm proofing. Variations in these dates are dependent upon weather, soil texture, and soil moisture conditions as determined by the Authorized Officer in consultation with aquatic and/or soils scientists.	Ground based harvest units, road construction, renovation, and decommissioning
14	TH6, TH 16, TH17	Apply erosion control measures to skid trails, cable yarding corridors and other disturbed areas with potential for erosion and subsequent sediment delivery to waterbodies, floodplains, or wetlands. These practices may include seeding, mulching, water barring, tillage, and woody debris placement. Use Table C-6 in the 2016 ROD/RMP (p. 191) as a guide for constructing waterbars on skid trails where potential for soil erosion or delivery to waterbodies exist.	All commercial harvest units
15	R66, R93	Suspend ground-disturbing activity (ex. timber hauling and landing operations) on native surface or inadequately rocked roads if forecasted precipitation would saturate soils to the extent that there would be potential for movement of sediment from the road to wetlands, floodplains, and waters of the state. Cover or temporarily stabilize exposed soils during work suspension. Upon completion of ground-disturbing activities, immediately stabilize fill material over	All commercial harvest units, timber haul

		stream crossing structures. Measures could include, but are not limited to, erosion control blankets and mats, soil binders, soil tackifiers, and slash placement.	
16	R93	On active haul roads, during the wet season, use durable rock surfacing and sufficient surface depth to resist rutting or development of sediment on road surfaces that drain directly to wetlands, floodplains and waters of the state.	Timber haul
17	R94	Prior to winter hauling activities, implement structural road treatments such as: increasing the frequency of cross drains, installing sediment barriers or catch basins, applying gravel lifts or asphalt road surfacing at stream crossing approaches, and armoring ditch lines.	Timber haul
18	R93, R94, R97	Hauling could occur during the wet season (October 16 <sup>th</sup> to May 14 <sup>th</sup> ) on roads determined to have adequate surfacing as identified in Table 2-5. In addition, a selection of roads have been identified as too thin for winter haul would be available for wet season haul if adequate rock is added to the roadbed (Table 2-5). If the Authorized Officer, in consultation with field office watershed specialists and engineers, determines that hauling would not result in road damage or the transport of sediment to nearby stream channels based on soil moisture conditions or rain events, a conditional waiver for hauling may be granted. The conditional waiver may be suspended or revoked if conditions become unacceptable (where the road surface is deteriorating due to vehicular rutting or standing water, or where turbid runoff is likely to reach stream channels) as determined by the Authorized Officer.	Timber haul
19	R97	Maintain road surface by applying appropriate gradation of aggregate and suitable particle hardness to protect road surfaces from rutting and erosion under active haul where runoff drains to wetlands, riparian reserve, floodplains and waters of the state.	Road maintenance, Timber haul
20	R13, R64, R94	Install protective features such as certified weed-free straw bales, silt fences, geo-fabric rolls, wattles, and waterbars where there is potential for haul-related road sediment to enter the aquatic system. Maintain protective features by removing accumulated sediment and placing sediment in stable location where it cannot enter the aquatic system.	Timber haul
21	R68	Apply water or approved road surface stabilizers/dust control additives to reduce surfacing material loss and buildup of fine sediment that can enter into wetlands, floodplains and waters of the State.	Timber haul
22	R68	Do not apply dust abatement materials, such as lignin sulfonate, during or just before wet weather, and at stream crossings or other locations that could result in direct delivery to a water body (typically not within 25 feet of a water body or stream channel).	Road maintenance, timber haul
23	R68	Do not apply lignin sulfonate at rates exceeding 0.5 gallons per square yard of road surface, assuming a 50-50 solution of	Road maintenance,

		lignin-sulfonate to water.	Timber haul
24	R01, R02, R03	Temporary roads and landings would be located on stable locations, such as ridge tops, stable benches, or flats where topographically feasible. Use existing jeep roads, skid trails, and landing footprints where possible. Locate roads and landings away from slide areas, headwalls, seeps, springs, high landslide hazards locations, and Riparian Reserves, unless there is no practicable alternative. Locations are to be approved by the Authorized Officer before construction.	Road construction
25	M 01	Place waste stockpile and borrow sites resulting from temporary road construction in a location where sediment-laden runoff can be confined.	Road construction
26	R84, TH 19	Camouflage and block skid trails leading off system roads or radiating from landings by placing woody debris or other appropriate barriers (e.g., rocks, logs, and slash) on the first 100 feet of the skid trail in all ground-based yarding units upon completion of yarding to block and discourage unauthorized vehicle use. Also, where material such as logs and other organic debris exists, this material would be placed along the length of skid trails as determined by the Contract Administrator. The intent is to minimize erosion and routing of overland flow to streams and to protect site productivity to ensure successful reforestation by decreasing disturbance (e.g., unauthorized use by OHVs).	All commercial harvest units

*B-5 Recreation Project Design Features*

PDF #	Source (RMP BMP or Other)	Recreation PDF	Applicable Action
27		Minimize harvest impacts to existing recreational routes within the Rogue Timber RMA. Fell trees away from the trail to avoid ground damage to recreational routes from impact. Avoid skidding trees across or along recreational routes to avoid damage to the tread surface (TH 02). For public safety, remove down woody material from the tread surface, making the route safely passable after harvest operations have been completed Construct slash piles no less than 15 feet away from the trail centerline in either direction. Where harvest operations are present, signs will be placed at access points indicating temporary closure for public safety and removed upon completion. Locations for as determined by the Contract Administrator.	
28		Prevent unauthorized motorized and OHV use. Camouflage and block skid trails leading off system roads or radiating from landings by placing woody debris or other appropriate barriers (e.g., rocks, logs, and slash) on the first 100 feet of the skid trail in all ground-based yarding units upon	

		completion of yarding to block and discourage unauthorized vehicle use (TH 19). Also, where material such as logs and other organic debris exists, this material would be placed along the length of skid trails as determined by the Contract Administrator. The intent is to minimize erosion and routing of overland flow to streams and to protect site productivity to ensure successful reforestation by decreasing disturbance (e.g., unauthorized use by OHVs).	
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*B-6 Soils Project Design Features*

PDF #	Source (RMP BMP or Other)	Soils PDF	Applicable Action
29	TH02	Directionally fall trees to lead for skidding and skyline yarding to minimize ground disturbance when moving logs to skid trails and skyline corridors	All commercial harvest units
30	TH 08	Limit designated skid trails for thinning or regeneration harvesting to $\leq 15$ percent of the harvest unit area to reduce displacement or compaction to acceptable limits.	Ground-based harvest units
31	TH10	Ensure leading-end of logs is suspended when skidding.	Skyline yarding
32	TH11	Restrict non-road, in unit, ground-based equipment used for harvesting operations to periods of low soil moisture; generally, from May 15 to Oct 15. Low soil moisture varies by texture and is based on site-specific considerations. Qualified specialists would determine low soil moisture limits to determine an estimated soil moisture and soil texture	Ground-based harvest units
33	TH12	Incorporate existing skid trails and landings as a priority over creating new trails and landings where feasible, into a designated trail network for ground-based harvesting equipment, consider proper spacing, skid trail direction and location relative to terrain and stream channel features.	Ground-based harvest units
34	TH13	Limit non-specialized skidders or tracked equipment to slopes less than 35 percent, except when using previously constructed trails or accessing isolated ground-based harvest areas requiring short trails over steeper pitches. Also, limit the use of this equipment when surface displacement creates trenches, depressions, excessive removal of organic horizons, or when disturbance would channel water and sediment as overland flow.	Ground-based harvest units
35	TH16	Apply erosion control measures to skid trails and other disturbed areas with potential for erosion and subsequent sediment delivery to waterbodies, floodplains, or wetlands. These practices may include seeding, mulching, water barring, tillage, and woody debris placement. Use guidelines from the road decommissioning section.	All commercial harvest units

36	TH18	Subsoil skid trails, landings, or temporary roads where needed to achieve no more than 20 percent detrimental soil conditions, and minimize surface runoff, improve soil structure, and water movement through the roadbed	Ground-based harvest units
37	TH21	Minimize the area where more than half of the depth of the organically-enriched upper horizon (topsoil) is removed when conducting forest management operations	Ground-based harvest units
38	TH22	Maintain at least the minimum percent of effective ground cover needed to control surface erosion, as shown in Table C-3, following forest management operations. Ground cover may be provided by vegetation, slash, duff, medium to large gravels, cobbles, or biological crusts	All commercial harvest units
39	DF01	Use full log suspension whenever practicable on TPCC soils identified as prone to surface erosion, category FM in Table C-13. Use one-end suspension on these soils if full suspension is not practicable. Restrict yarding to the dry season, generally from June to end of September.	Unit 13-1
40	DF02	Limit non-specialized ground-based yarding equipment to slopes less than 20 percent on TPCC soils identified as category FM or FP in Table C-13, where soils average less than or equal to 20 percent clay in the top 6" of soil as determined by NRCS soil survey data	Unit 13-1
41		Skid trails would be pre-determined by the authorized officer to maximize the use of old disturbances	Unit 13-1

*B-7 Wildlife Project Design Features*

PDF #	Source (RMP BMP or Other)	Wildlife PDF	Applicable Action								
42	BLM 2016a, p. 115	<p>Seasonally restrict timber harvest activities from March 1 to June 30 but may be extended up to September 30 if late nesting or nesting re-attempts are confirmed, within 0.25-mile of known active NSO sites or within 0.5-mile for helicopter operations and blasting. The seasonal restriction could be waived if non-nesting status is determined. If any new owls are discovered in harvest units, activities would be halted until mitigation options are determined. Follow USFWS recommended noise disturbance distances for activities other than timber harvest to avoid disturbance to NSOs.</p> <table><tr><th>Activity</th><th>Buffer Distance Around Owl Site</th></tr><tr><td>Light maintenance (e.g., road brushing and grading) at campgrounds, administrative facilities, and heavily used roads</td><td rowspan="3">0.25 mile</td></tr><tr><td>Burning (prescribed fires, pile burning)</td></tr><tr><td>Log hauling on heavily used roads (FS maintenance levels 3, 4, and 5)</td></tr><tr><td>Chainsaws (includes felling hazard/danger</td><td>200 feet</td></tr></table>	Activity	Buffer Distance Around Owl Site	Light maintenance (e.g., road brushing and grading) at campgrounds, administrative facilities, and heavily used roads	0.25 mile	Burning (prescribed fires, pile burning)	Log hauling on heavily used roads (FS maintenance levels 3, 4, and 5)	Chainsaws (includes felling hazard/danger	200 feet	All units and activities
Activity	Buffer Distance Around Owl Site										
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		<table><tr><td>trees)</td><td></td></tr><tr><td>Heavy equipment for road construction, road repairs, bridge construction, culvert replacements, etc.</td><td></td></tr><tr><td>Blasting</td><td>0.5 mile</td></tr><tr><td>Helicopter</td><td></td></tr><tr><td>Pile-driving (steel H piles, pipe piles)</td><td>400 feet</td></tr><tr><td>Rock crushing and screening equipment</td><td></td></tr><tr><td>Tree climbing</td><td>100 feet</td></tr></table>	trees)		Heavy equipment for road construction, road repairs, bridge construction, culvert replacements, etc.		Blasting	0.5 mile	Helicopter		Pile-driving (steel H piles, pipe piles)	400 feet	Rock crushing and screening equipment		Tree climbing	100 feet	
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Pile-driving (steel H piles, pipe piles)	400 feet																
Rock crushing and screening equipment																	
Tree climbing	100 feet																
43	BLM 2016a, p. 116 and National Bald Eagle Management Guidelines (USDI FWS 2007)	Do not remove overstory trees within 330 feet of bald eagle or golden eagle nests, except for removal of hazard trees. Do not conduct timber harvest operations (including road construction, tree felling, and yarding) during the breeding season (Feb. 1 to Aug. 15) within 660 feet of bald eagle or golden eagle nests. Decrease the distance to 330 feet around alternate nests within a territory, including nests that were attended during the current breeding season but not used to raise young, or after eggs laid in another nest within the territory have hatched.	Ground-based harvest units; skyline yarding														
44	BLM 2016a, p. 117	No confirmed den sites are located within 50 feet of proposed treatment areas, however, if a confirmed fisher den site is found: <ul style="list-style-type: none"><li>• Maintain <math>\geq 80\%</math> canopy cover within at least 50 feet of documented fisher natal and maternal dens.</li><li>• No activities may occur within stands containing known fisher den sites from March 1 to July 30.</li><li>• Maintain sufficient (at least 60%) canopy cover on a within-stand average basis.</li><li>• Protect fisher denning structures by retaining <math>\geq 24''</math> diameter snags, down woody material, and live trees with cavities in the stand and if, for safety concerns, it is necessary to fall such snags or live trees with cavities, retain those cut trees or snags in the stand as additional down woody material.</li><li>• Do not apply vegetation treatments to all portions of the stand.</li></ul>	All units; timber harvest and activity fuels														
45		To protect potential fisher nesting/denning structures, debris piles associated with logging activity (slash and/or cull material piles) adjacent to roads or on landings would not be burned, chipped, or made available for firewood cutting between February 1st and September 30th when the pile is mixed with various sized logs (multiple diameters) and there is sufficient open space within the piled logs (not compact). Spring burning, chipping or firewood cutting could take place if a BLM wildlife biologist reviews the pile and determines it is not compatible with fisher denning/resting use.	Activity fuels, chipping														
46	BLM 2016a, p. 115	Restrict the use of motorized equipment and vehicles to existing roads within the following naturally occurring special habitats to maintain their ecological function: seeps, springs, wetlands, natural ponds, and natural meadows.	All units														

47	BLM 2016a, p. 116	<p>Protect known maternity colonies and hibernacula for Bureau Sensitive bat species within caves, abandoned mines, bridges, and buildings with a 250-foot buffer:</p> <ul style="list-style-type: none"> <li>• Maintain existing habitat conditions and protect the site from destruction or species disturbance to the extent practicable consistent with safety and legal requirements.</li> <li>• Prohibit blasting.</li> <li>• Prohibit blasting during periods of reproduction and hibernation within 1 mile of known maternity colonies and hibernacula for Bureau Sensitive bat species within caves, abandoned mines, bridges, and buildings.</li> </ul>	All units
48	2016 ROD/RMP, p. 63	Maintain existing snags greater than 20 inches DBH and snags 6-20 inches DBH in decay classes III, IV, and V (see BLM 2010a) except those that need to be felled for safety reasons or for logging systems to minimize impacts to cavity-dependent species. Retain snags felled for safety reasons on site, unless they would also pose a safety hazard as down woody material	All units
49	BLM 2016a, p. 118	<p>Gray wolves (<i>Canis lupus</i>) are not currently present in the planning area. If a gray wolf den or rendezvous site is identified prior to or during project activities, implement a seasonal restriction from April 1 to July 15 and suspend project activities located within one mile of a known den or rendezvous site. Because these sites are difficult to locate and can change from year to year, this would be assessed on an ongoing basis throughout the life of this project through annual updates and communication with the USFWS and Oregon Department of Fish and Wildlife.</p>	All units and activities
50		When practicable, prescribed fire treatments should be carried out in fall or winter, rather than spring, to avoid disturbance or mortality to spring nesting birds and native pollinators.	Activity fuels

## Appendix C: Foreseeable Actions

### C-1 Medford IVM

The Bureau of Land Management (BLM) Medford District has conducted an environmental analysis for a 10-year program of integrated vegetation management for resilient lands (IVM-RL) work. Actions are intended to promote and develop safe and effective wildfire response, fire resilient lands and fire-resistant stands, and habitat for Special Status species (wildlife and plants) on certain portions of BLM-administered lands across the Medford District (and small portion of Coos Bay District administered by the Medford District). The analysis is documented in the Integrated Vegetation Management for Resilient Lands Environmental Assessment (EA) (USDI BLM 2022a).

### C-1.1 River Hill Hazardous Fuels Reduction

As a part of IVM-RL, the River Hill Hazardous Fuels Reduction project would include 7259 acres of BLM-managed land within and adjacent to the Rogue Gold EA planning area. Approximately 5434 of these acres were treated for hazardous fuel reduction between the years 2000 to 2010 and are designated for maintenance treatments to maintain the integrity of the original hazardous fuels treatments. Some of these prescribed fire treatments overlap with commercial harvest units. Fuels management activities include small diameter thinning, hand piling, burning of vegetation, and follow-up prescribed fire applied to ground as broadcast and/or underburning, consistent with the selected alternative (BLM 2022a, Appendix 1, pp. 89-91, 108-110)

## **C-2 Bear Grub VMP**

The Bear Grub Vegetation Management Project (VMP) is a proposed project aimed at enhancing the resilience of BLM managed land in the vicinity of Ruch, Jacksonville, Talent, and Medford, Oregon. The project encompasses approximately 5,000 acres of fuel reduction activities and entails approximately 1,500 acres of commercial thinning operations. For more details on the Bear Grub VMP visit <https://eplanning.blm.gov/eplanning-ui/project/1501673/510>.

The Bear Grub VMP is presently undergoing environmental analysis. While the Bear Grub VMP planning area is adjacent to the Rogue Gold FMP planning area, each project has individual analysis and cumulative effects have been considered. It is conceivable that project activities could coincide dependent on future decisions, however any simultaneous actions would be coordinated by the BLM to ensure the adherence to BMPs.

## **C-3 Reforestation**

The BLM may propose reforestation, young stand management, and forest condition restoration treatments to accomplish land use allocation objectives described in the 2016 Southwestern Oregon Resource Management Plan (SWO ROD/RMP, p. 92) within the proposed planning area. The treatments would be scheduled to assure the treatment areas maintain developmental paths that result in desired stand characteristics in the future. Proposed silviculture treatments would occur in the Butte Falls and Ashland Field Offices in the Harvest Land Base (HLB), Late Successional Reserves (LSRs), and Riparian Reserves (RRs) to meet the management direction of the SWO ROD/RMP (pp. 62-87). All stands would be accessed using existing road systems.

## **C-4 Future Harvest if No Action**

Future Harvest of the Same Units if the No Action Alternative is Chosen: If the No Action alternative is selected or the project is cancelled the units scheduled for commercial treatment would be placed back into outyear planning as potential units for harvest. The units may become a part of the same treatment units as the Bear Grub VMP or grouped with other units to create a new project area. The analysis of the units as part of a future timber harvest may be as soon as five years due to the BLM having identified the area as needing treatment.

## **Appendix D: Issues Not Analyzed in Detail**

## D-1 Soils

### **Soils 1: What would be the impact of the proposed actions specifically, road landing construction, reconstruction, and decommissioning on fragile soils classified under the TPCC?**

**Background:** The TPCC is designed to document land capable of supporting commercial forests on a sustainable basis. It is not designed for making decisions on economic, or multi-use considerations. It incorporates factors such as soil depth, available moisture, slope, aspect, drainage, and slope stability to evaluate the suitability of timber management on a site-by-site basis. The O&C Act of 1937 specifies that timber harvests would be planned and carried out only on lands which can be managed without the loss of the potential productivity of a site. The TPCC Handbook (BLM Manual 5251 – Timber Production Capability Classification; USDI BLM 1984) provides the standards for the TPCC Classification. If lands designated for timber harvest are categorized as fragile and suitable, special harvest or restricted measures are used in the form of PDFs or reducing harvest volume to maintain the productivity of the site. Fragile non-suitable lands are not included in the commercial portions of this EA.

The soils classified as fragile under the TPCC Manual in the proposed Rogue Gold Project Area were identified using the BLM Medford District's current corporate GIS layer for fragile soils. Other resources used to make an informed decision are the Oregon Department of Geology and Mineral Industries (DOGAMI) geology maps, aerial imagery, LiDAR imagery, Natural Resource Conservation Service soil survey maps, and site-specific field review. Data from site-specific field reviews ultimately determined the presence of fragile soils while other data sources prioritized site investigations.

Fragile designations within the project area are restricted for excessive erosion concerns (FR-E), mass movement potential (FR-P), and for gradient concerns (FR-G). All fragile soils within the project area are considered restricted, and no soils are considered non-suitable for timber harvest. Surface soil texture is the primary reason that soils are designated as FR-E. In this project area, FR-E soils are coarse sandy textured resulting from a granitic parent material. FR-G soils are all on steep slopes, which makes them susceptible to erosion and other soil issues when combined with other factors effecting a soil's propensity to erode. FR-P soils in this area are designated due to the prevalence of past mining activity which has caused slope instability.

Restricted designations require the application of specific project design features for the removal of trees to be considered sustainable. PDFs include but are not limited to: Use full suspension harvest systems or at minimum one end suspension, leave large cull logs on the unit to help impede soil movement, restrict ground-based equipment operations to less than 20% slope gradient, buffer headwalls, and spread slash over cable yarding corridors to disperse water runoff when extensive bare mineral soil is exposed.

Changes to the TPCC classifications happened after field inspections and consultations with other resource specialists, and management. Several areas were designated as non-suitable for timber harvest based on evidence suggesting that past mining activities had caused slope instability. These areas were buffered and would not have trees removed from them. Other areas were removed from the non-suitable category after investigation had found that conditions during the initial TPCC mapping process almost 40 years ago had changed, or that the initial problems identified could be mitigated using modern harvesting and replanting techniques.

**Rationale:** This issue was considered but not analyzed in further detail because the design of the timber extraction for these sales, would use helicopter, cable yarding, and temporary road placement, eliminates the potential for surface erosion and impacts to slope stability to exceed levels outlined in the 2016 FEIS/RMP (2016 PRMP/FEIS, p. 752). PDFs also address slope stability and erosion issues associated

with FR-E and FR-G soils. The BLM deferred or incorporated as no-treatment, areas that were identified during field review as having the potential for mass movement or other issues identified in the TPCC handbook. Maps (Figure D-1 and D-2) show changes that were made to the TPCC designations in the planning area. For these reasons, the Rogue Gold Project would meet the required management direction on TPCC soils.

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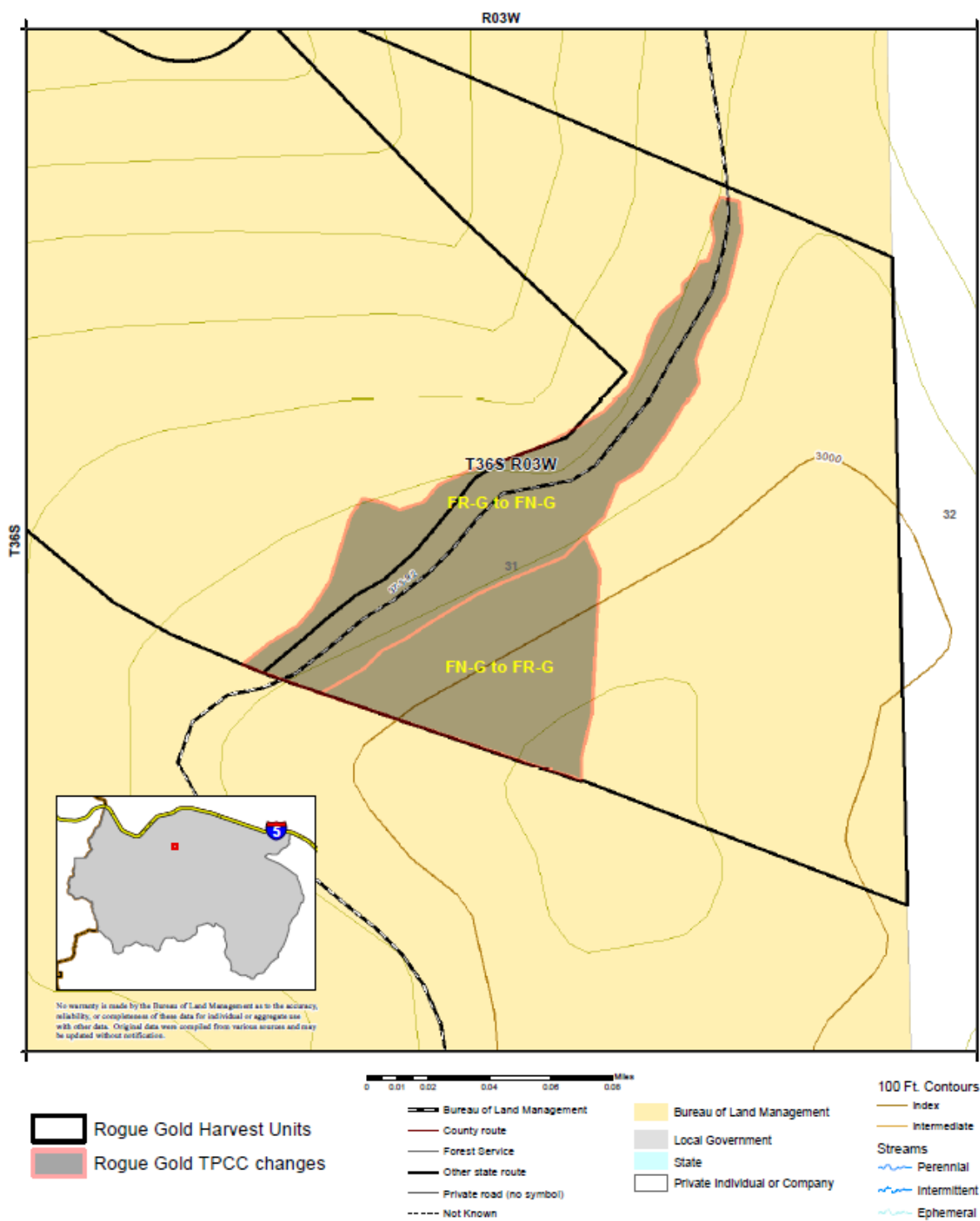
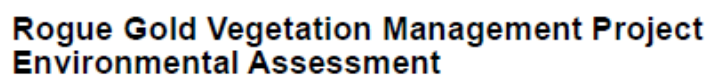


Figure D-1: Map of TPCC changes made to units 31-1 and 31-2



# Rogue Gold Vegetation Management Project Environmental Assessment

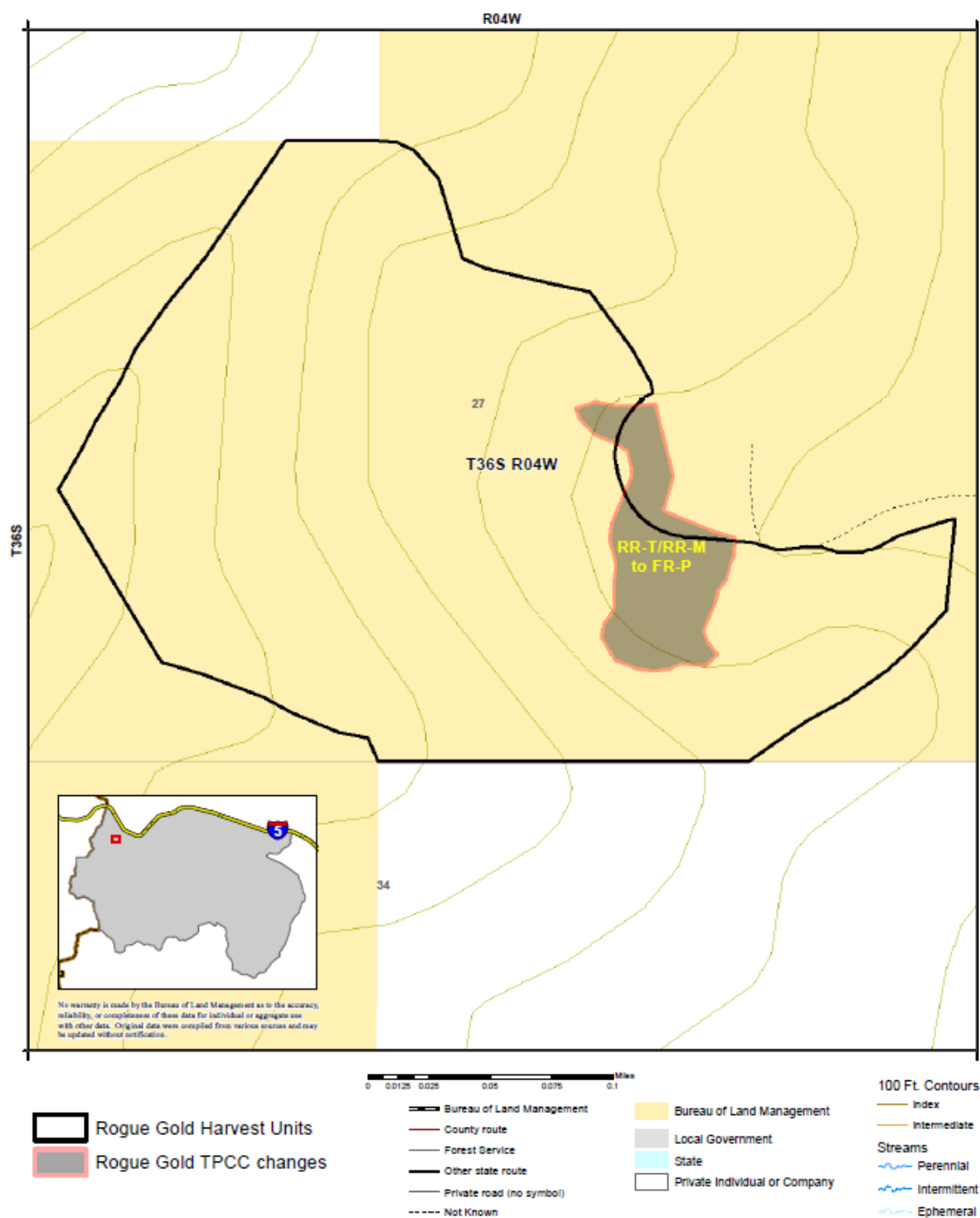


Figure D-2: Map of TPCC changes made to unit 27-1

## **Soils 2: How would the proposed timber harvest and associated activities, and fuels reduction treatments affect soil productivity in the treatment areas?**

**Background:** Many factors affect the productivity of soils. The 2016 ROD/RMP provides management direction to apply BMPs as needed to maintain or restore soil functions and soil quality and limit detrimental soil disturbance (2016 PRMP/FEIS, p. 752). The RMP also provides direction to limit detrimental soil disturbance from forest management operations to a total of <20% of the harvest unit area. In the 2016 PRMP/FEIS, the BLM incorporated an assumption of 10% growth loss in the vegetation modeling of future stand growth over the length of the next rotation in stands with 20% detrimental soil disturbance levels (2016 PRMP/FEIS, p. 752). Where the combined detrimental soil disturbance from past management operations exceeds 20% of the unit area, we would apply mitigation or amelioration to reduce the total detrimental soil disturbance to less than 20% of the harvest unit area. Additionally, soil moisture during activities, slope, and activities that remove or influence nutrients have effects on soil productivity. The BLM has incorporated the applicable BMPs from the RMP as PDFs for the Rogue Gold FMP.

Proposed forest management actions that affect soil productivity within the harvest unit area include timber harvest and yarding, burning of activity and natural hazardous fuels, and new road/route and landing construction. Other forest management actions would not have the potential to impact soil productivity and were not evaluated further on this project. The following are measurement indicators of all the soil issues caused by forest management actions outlined in the Forest Soil Disturbance Monitoring Protocol with a short inexact description of why it is harmful to soil productivity:

**Erosion:** Soil erosion is the movement of soil by water and/or wind. While erosion is always happening to soil, human activities accelerate this process to detrimental rates. Accelerated soil erosion causes a shallower, less productive soil onsite, while causing sediment pollution offsite. Visual indicators of accelerated erosion rates are sheet erosion, rills, and pedestals.

**Rutting:** Wheel tracks or ruts are the impressions left in soil after heavy equipment has made one or more passes. Different types of equipment making a different number of passes effect the size and depth of the ruts. These ruts channel water offsite, making it unavailable for plant growth. Water moving offsite in ruts also carries topsoil offsite. Ruts are also strongly associated with several other indicators of detrimental disturbance. Rutting severity is measured based on their depth on the soil surface and their extension into the mineral soil profile.

**Burning:** Broadcast burning and pile burning both have potential to alter soil functions to the point of being considered detrimental. Both the intensity of heat and the time under heat effect a soil's ability to function by altering soil structure, burning organic matter, and sterilizing beneficial microbes. The severity of burning is directly correlated to the change in color of the soil, and the depth to which the effects of burning are present.

**Compaction:** Compaction of soil is the collapse of pore spaces that were previously filled with air or water. A compacted soil has a reduced functionality as both a plant growing medium and a water storage apparatus. Detrimental compaction is caused by ground-based yarding, temporary road building, and landing construction. Soils at higher moisture contents are compacted with less force. Compaction can be partially remediated to the point that it is no longer considered detrimental through subsoiling with or without soil amendments (e.g. biochar, compost, etc.) To measure compaction as a visual indicator, the depth to which compaction can be detected determines whether compaction is detrimentally impacting the soil. The deeper compaction can be detected is directly correlated to the severity of the compaction on the surface.

Structure: Soil structure is the naturally occurring arrangement of soil particles into aggregates that results from pedogenic processes. When disturbed, soil structure becomes platy or massive, which indicates a reduction in pore sizes and decreased functionality. While massive and platy structures occur naturally, they are uncommon in undisturbed forest soils. The depth to which the structure change is evident determines the amount of site detrimental disturbance.

An authorized officer or soil scientist trained on soil monitoring protocols would measure the extent and severity of all these measurement indicators post-harvest to evaluate the need for mitigating excessive detrimental soil disturbance.

**Rationale:** This issue was considered but not analyzed in further detail because there is no potential for significant impacts to soil productivity beyond what was analyzed in the FEIS for the western Oregon RMPs. Management direction in the 2016 ROD/RMP limits the increase of detrimental soil disturbance to 20% of any given harvest unit and includes all types of disturbances including those resulting from treatments as well as new road and landing areas (RMP, p. 109, 2016 PRMP/FEIS, p. 752).

An evaluation of the proposed treatment areas, in the field and via office review, determined that the detrimental soil disturbance does not currently exceed 20% in the proposed treatment areas. Unit 13-1 contains an areal extent of approximately 10% detrimental soil disturbance, unit 31-1 contains approximately 5%, while the rest of the units contain less than 1%. LiDAR and satellite imagery are used to identify areas that have legacy disturbance from past human activity. Field review is then used to determine whether that disturbance rises to a level that would classify it as detrimental using the criteria described in the background section above. The BLM would also apply BMPs and site-specific PDFs that would reduce the future acreage of detrimental soil disturbance from timber harvest, road construction, and fuels treatments to stay below the required 20% detrimental soil disturbance level.

After evaluating all sale units and subtracting areas that were buffered out due to soil resource concerns, Unit 13-1 had the most detrimental soil disturbance in terms of areal extent, with approximately 10% of the unit showing some level detrimental disturbance. This areal calculation is based on assuming each disturbance visible from LiDAR imagery is 6 feet in width, and that all the disturbance would be considered detrimental. Based on field verification these assumptions are an overestimate. The disturbances are almost exclusively from OHV use, with a minor component of what is assumed to be exploratory mining. Unit 13-1 is also classified under the TPCC as fragile for erosion concerns but suitable for timber harvest given certain precautions. Because of these reasons, the following PDFs would be implemented for unit 13-1 specifically:

- Limit non-specialized ground-based yarding equipment to slopes less than 20% on TPCC soils where soils average less than or equal to 20% clay in the top 6" of soil as determined by NRCS soil survey data.
- Skid trails would be pre-determined by the authorized officer to maximize the use of old disturbances.

No treatment units proposed in this EA have the potential to exceed the 20% threshold for detrimental soil disturbance. Based on current levels of detrimental soil disturbance, planned temporary infrastructure, and PDFs to be implemented on this project the allowable 20% threshold for detrimental soil disturbance would not be exceeded and analysis beyond what is contained in the 2016 PRMP/FEIS is not needed.

**Soils 3: Do commercial harvests or small diameter thinning treatments in forested landscapes dry soils beyond their natural variability?**

**Background:** Various thinning and harvest treatments in forested landscapes have direct effects on soil moisture. In soils, water content is constantly in flux. Factors that influence water content in soil are numerous and creating and examining an exhaustive list would be difficult. Real world experiments can incorporate all variables while controlling for different amounts of thinning. A literature review reveals that real-world thinning experiments that monitor soil moisture show an increase in soil moisture post-thinning. Zhu et al. (2017) found that thinning in a semi-arid environment (15 inches of precipitation) created an overall net gain in water content within the soil profile. In Lassen National Forest, Hood et al. (2018) found that soil moisture was higher elevated relative to a control plot for at least 5 years after post-stand thinning of Ponderosa and Jeffery pine forests. More recently, a study performed in Arizona published in Nature found profound positive effects from forest thinning in terms of soil moisture reservoirs through spring dry-down (Sankey & Tatum, 2022). Gray et al. (2002) concludes that soil moisture was more abundant in gaps than controls in a coastal Douglas-fir forest. In that same study, Gray et al. discusses a variety of other studies that have found similar results in soil moisture response to thinning:

“Studies in a wide variety of forest types have found increases in soil moisture in response to canopy gaps, including temperate hardwoods (Minckler and Woerhide 1965; Moore and Vankat 1986), pine forests (Ziemer 1964; Brockway and Outcalt 1998), tropical forest (Denslow et al. 1998), and temperate conifer forest (Wright et al. 1998). Despite greater exposure to evaporation, moisture is also initially more abundant in clearcuts than in uncut controls (Adams et al. 1991).”

Extensive research on the topic of how harvest and thinning alter soil moisture availability throughout the year conclude that the increases in soil moisture from lack of rainfall interception and lack of vegetative transpiration, outweigh the decreases from increased direct solar radiation on soil.

**Rationale:** Peer-reviewed scientific literature strongly supports that thinning trees, creating gaps, and removing commercial sized trees do not dry out soil. Instead, a combination of decreased water demand from trees and less canopy cover to intercept precipitation causes soil moisture to increase. Because this issue has had extensive scientific review supporting the conclusion that there is no potential for significant effects to diminish soil moisture, , this issue was not analyzed in further detail.

## **D-2 Recreation**

### **Recreation 1: How is Rogue Gold FMP addressing the Visual Resource Management of the resources (contiguous LSR stands) that can be seen from the Rogue Valley?**

**Background:** For the purposes of visual resource management, the 2016 ROD/RMP designated BLM-administered lands into four Visual Resource Management (VRM) Classes: Class I, II, III, and IV. The proposed actions all take place in VRM Class IV lands. See the descriptions below for allowable levels of modification within these classes (2016 ROD/RMP, p. 114).

**Rationale:** This issue was considered but not analyzed in further detail because the proposed actions only take place within VRM Class IV and meet the visual objectives for that classification. VRM Class IV – management activities may dominate the view and would be the major focus of viewer attention.

### **Recreation 2: Would temporary road construction; ground-based and skyline yarding corridors lead to more off-road OHV and dirt bike use?**

**Background:** There are no new trails or trail designations proposed as part of this project. Temporary roads and skids would be restored to conditions in accordance with the project design features. Routes

used as trails within the Rogue Timber RMA that are not explicitly closed and were in use at the signing of the 2016 RMP would be avoided during logging operation where practical. (Appendix B, PDF 27)

**Rationale:** This issue was considered but not analyzed in further detail because there is no potential for significant effects resulting from the use of skids, and temporary roads to conduct timber harvest operations would to be used as OHV routes because measures have been taken to prevent this from happening as part of the PDF's for the project through rehabilitation and obfuscation after harvest activities have concluded. Such as camouflage and block skid trails leading off system roads or radiating from landings by placing woody debris or other appropriate barriers (e.g., rocks, logs, and slash) on the first 100 feet of the skid trail in all ground-based yarding units upon completion of yarding to block and discourage unauthorized vehicle use. Also, where material such as logs and other organic debris exists, this material would be placed along the length of skid trails as determined by the Contract Administrator. The intent is to minimize erosion and routing of overland flow to streams and to protect site productivity to ensure successful reforestation by decreasing disturbance (e.g., unauthorized use by OHVs).

### **D-3 Hydrology**

**Hydrology 1: Would the Rogue Gold FMP actions (proposed timber harvest and associated road and landing construction) alter the timing, magnitude, duration, frequency, and spatial distribution of peak flows?**

**Background:** Water quantity in the planning area is a function of natural and human-caused factors. Natural site factors include climate, geology, and geographic location. Natural processes that have influenced water quantity include floods, wildfires, and drought. Past human activities that have altered water quantity in the planning area include land clearing (for agricultural and residential use), timber harvest, road construction, water withdrawals, and fire suppression.

A substantial reduction in vegetation canopy below historic levels has the potential to cause the following hydrologic process changes: reduced interception, evaporation, and transpiration (i.e., more precipitation reaches the soil surface and less water consumption by plants); increased snow accumulation in the transient snow zone; increased snow melt rate in transient snow zone; and increased soil water content (Moore and Wondzell 2005). Possible effects on the streamflow regime from these hydrologic process changes include reduced time to hydrograph peak; increased frequency of peak flows; and increased magnitude of peak flows. Altered peak flows may affect stream channel condition by eroding streambanks, scouring streambeds, and transporting and depositing sediments if the magnitude of flow reaches the level required for sediment transport. These are normal occurrences in a dynamic, properly functioning stream system; however, increases in the magnitude and frequency of peak flows due to forest management activities, particularly road construction and timber harvest, can intensify the effects. The risk of peak flow enhancement from forestry-related impacts can be estimated from methods in the Oregon Watershed Assessment Manual (OWAM) (WPN1999: IV-11). Using the methodology in OWAM, the risk of peak flow enhancement is low when canopy cover is greater than 30% within the analyzed drainages.

Hydroregions are a classification of landscapes based on the precipitation type and longevity. Within the planning area there are two hydroregions: rain and rain-on-snow. In the rain-on-snow region, greater snow accumulation can occur in clearings, producing the potential for higher peak flows during rain-on-snow events. The 2016 PRMP/FEIS, to which this EA is tiered, analyzed for the potential effect of timber harvest and road construction on peak stream flows within the rain-on-snow dominated hydroregion. In the analysis, the BLM addressed effects of peak flows in the transient snow zone hydroregion only,

because there is little evidence that timber harvest activities can elevate peak flows in the rain or snow hydroregions. The 2016 PRMP/FEIS identified 7 subwatersheds in western Oregon that would be susceptible to detectable change in peak flow response, none of which are located in the Rogue Gold FMP Aquatic Analysis Area. While Grant et al. 2008 found that there is little evidence that peak flows are affected by timber harvest in the rain or snow hydro-regions (USDI 2016a, p. 386), the 2008 FEIS for Western Oregon Plan Revision found that nine sub-watersheds in the rain hydro-region in the Western Oregon planning area were susceptible for a reported change in peak flows. None of those nine subwatersheds are located within the Rogue Gold Forest Management Analysis Area. The 2008 FEIS includes a more detailed discussion of the effects of timber harvest in the rain dominated watersheds (USDI 2008, pp. 352-354). The 2016 PRMP/FEIS and 2008 FEIS analyses are incorporated here by reference.

Climate change projections for the future indicate that the Pacific Northwest is likely to experience much greater average warming than other regions in the United States with increased precipitation in the winter and the same or decreased precipitation in the summer (Furniss et al. 2010, p. 17). As a result, projected hydrologic changes, particularly the changes in snowpacks and runoff patterns are among the most prominent and important consequences. Declines in snow water equivalent occurring in low and mid-elevation sites may result in earlier spring flows and lower late season flows. Changes in average annual streamflows are also expected to decrease. Flood severity is expected to increase because increased interannual precipitation variability will cause increased runoff in wet years and increased rain-on-snow probability in low elevation snowpacks (Furniss et al. 2010, p. 20).

**Rationale:** Under any of the action alternatives, no changes in the timing, magnitude, duration, frequency, or spatial distribution of peak flows are expected to result from the proposed vegetation treatment or road construction activities. Under all the action alternatives, commercial harvest treatments in selectively harvested units will have 30% canopy cover or greater post-harvest, with the exception of the gaps. Sentinel Satellite imagery collected in 2021 and Google Earth imagery collected in 2020 was used to determine existing canopy cover across all forested lands, across all ownerships in the Aquatic Analysis Area (see map, Appendix A, Figure A-7). The Left Fork Foothills Creek drainage had the highest percentage (25%) of forested acres with less than 30% canopy cover. The Kane Creek drainage had the lowest percentage (6%) of forested acres with less than 30% canopy cover. Based on a compilation of watershed studies in the Northwest, completed in small catchments in rain dominated hydroregions, peak flow response is only detected where at least 29% of the drainage area is intensively harvested (Grant et al. 2008).

Additionally, as noted above, Grant et al. 2008 found that there is little evidence that peak flows are affected by timber harvest in the rain-dominated hydro regions. None of the rain-dominated subwatersheds identified in the 2008 FEIS (as incorporated into the 2016 PRMP/FEIS) as susceptible to peakflows, are located within the Rogue Gold Forest Management project.

Under any of the action alternatives, there would be no new permanent or temporary road construction with hydrological connectivity to any water feature. Keeping new roads hydrologically disconnected from streams is beneficial because roads can influence peak flows, potentially to a greater degree than harvest.

Most temporary roads (0.37 miles of the 0.52 total) are located completely within treatment units. All temporary roads would be decommissioned after use and de-compacted to the pre-existing condition. Temporary roads and landings would reduce canopy cover during their construction and use, eventually recovering to pre-existing condition. The reduction of canopy cover in the footprint of these roads and

landings, the proposed permanent roads, and harvest in the gaps would be too small to have any influence on peak flow enhancement.

Management actions that improve and sustain watershed resilience can moderate future impacts caused by climate change (Furniss et al. 2010). Vegetation treatments under all the alternatives would decrease the likelihood that a high intensity wildfire would occur within the treated areas. This would maintain or improve watershed resiliency for those areas, potentially reducing effects of increased peak flows. In addition, road maintenance activities such as improving surfacing, installation of rolling dips, and other storm-proofing activities would increase the resilience of portions of the permanent roads that provide access for project activities, potentially reducing road failures and sediment delivery from peak flow events.

#### D-4 Wildlife

##### Wildlife 1: How would the Rogue Gold FMP affect NSO habitat, including RA-32 stands and NRF habitat?

**Background:** The Rogue Gold Project Area is located within the range of the NSO, which is listed as threatened under the Endangered Species Act. NSOs prefer coniferous forest with multiple layers of vegetation; a variety of tree species and age classes; and the presence of large down, woody material (to serve as habitat for prey species) and large diameter live and dead trees (snags) for nesting-roosting habitat. NSO nesting-roosting and foraging habitat in southwest Oregon is mixed-conifer habitats with recurrent fire history, patchy habitat components, and higher incidences of woodrats. NSOs also utilize younger stands with closed canopies for foraging and dispersing. Based on studies of owl habitat selection, including habitat structure and use, and prey preference throughout the range of the owl, NSO habitat consists of three components: nesting-roosting, foraging, and dispersal (Thomas et al., 1990). (Table D-1)

Table D-1. Medford District NSO Habitat Types

Habitat Type	Description
High-Quality Habitat (RA-32), A Subset of Nesting-Roosting Habitat	Older, multilayered, structurally complex forests characterized as having overstory trees greater than 17 to 21 inches in diameter (depending on annual precipitation), high canopy cover (greater than 60%), large trees present (at least 30" DBH), and quantifiable decadence components such as broken-topped live trees, mistletoe, cavities, large snags, and fallen trees (Figure 12). RA 32 habitat may vary due to climatic gradients across the range. Also functions as dispersal habitat.
Nesting-Roosting	These forests have a high canopy cover (greater than 60%), a multilayered structure, and large overstory trees greater than 21 inches in diameter. Deformed, diseased, and broken-top trees, as well as large snags and down woody material, are also present. Nesting-roosting habitat meets all NSO life requirements. Also functions as dispersal habitat.
Foraging	Canopy cover greater than 60% and canopy structure generally single layered. Overstory trees are generally greater than 16 inches in diameter. Snags and down wood not considered a requirement. Also functions as dispersal habitat.
Dispersal-only	This habitat is not for nesting, but provides requirements believed important for NSO dispersal. Canopy cover is generally between 40 and 60%. In stands with greater than 60% canopy cover, overstory tree diameters are generally between 11 and 16 inches DBH. The area has the capability of becoming nesting-roosting, or foraging habitat. Deformed trees, snags, and down wood are absent or less prevalent than in nesting-

	roosting habitat.
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The BLM looked at the amount of NSO habitat on federal lands within the home range circles (1.3 miles) for the 26 known owl sites within 1.3 miles (provincial home range radius) of proposed treatment units, as well as areas within 1.3 miles of treatment units outside of NSO home ranges, hereby referred to as the Wildlife Analysis Area (See map, Appendix A, Figure A-6).

The Rogue Gold FMP is within three 5th field watersheds (Gold Hill-Rogue River, Grants Pass-Rogue River, and Bear Creek). The majority of the Wildlife Analysis Area (37,877 out of 57,216 acres) is within the Gold Hill – Rogue River watershed, which contains an estimated 14,522 acres of NRF habitat, approximately 11% of the watershed, across all land ownerships.

While the NSO home ranges in the Analysis Area are comprised of Federal (BLM) and private lands, the following analysis only includes effects on Federal lands. Private lands within the Wildlife Analysis Area are made up of early-, mid-, and late-seral forests, agricultural, and shrub/oak lands. Most private forestlands are managed as tree farms for production of wood fiber on forest rotations. It is expected that any remaining late-seral forests on private timberlands would be converted to early-seral forest over the next one or two decades (BLM 2016b, p. 173).

The following actions have the potential to affect NSOs and NSO habitat by modifying, downgrading, or removing habitat: timber harvest, small diameter understory thinning, and road/route and landing construction. Treatment effects are described below and effects to NSO habitat by alternative are demonstrated in Table D-2.

Modified NR, F, or dispersal-only habitat occurs when an action or activity in nesting-roosting, foraging, or dispersal-only habitat removes some trees or reduces the availability of other habitat components but does not change the current function of the habitat because the conditions that would classify the stand as NR, F, or dispersal-only habitat would remain post-treatment. Habitat elements such as multiple canopy layers, snags, coarse woody debris, and hardwoods, must be retained to maintain habitat function post-treatment. The treated stand is expected to still function as NR or F habitat because it would continue to provide at least 60 percent canopy cover (treatment unit average), large trees, multistoried canopy, standing and down dead wood, diverse understory adequate to support prey, and may have some mistletoe or other decay (when present prior to harvest). For dispersal habitat, the treated stand would still maintain its habitat function by continuing to provide at least 40 percent canopy cover (treatment unit average), flying space, and an average of trees 11 inches DBH or greater. In the Rogue Gold FMP, NRF and dispersal-only habitat modification would occur from selection harvest, commercial thinning, small diameter thinning, roadside vegetation management, and harvest access (yarding corridors).

Downgraded NR or F alters the condition of spotted owl NR or F habitat, so the habitat no longer contains the variables associated with nesting, roosting, and foraging. Downgraded units would contain trees > 11 inches DBH and enough tree canopy cover to support spotted owl dispersal. Downgrade is defined when the canopy cover in a NR or F stand is reduced to 40-60 percent (treatment unit average) and other key habitat elements are removed, such as decadent down wood, snags, multistoried canopy layers, and hunting perches. Conditions are altered such that an owl would be unlikely to continue to use that unit for nesting, roosting, or foraging. The removal of these key habitat features would reduce the roosting and foraging opportunities for owls and may lead to increased predation risk by exposing owls to other raptors. Downgraded NR or F continues to provide habitat for dispersal and potentially limited foraging opportunities. In the Rogue Gold FMP, NRF downgrade would occur from selection harvest, commercial thinning, and small diameter understory thinning.

The proposed action is described as removal when canopy cover would drop below 40 percent and

canopy layering and other key habitat would be reduced so the unit would no longer function as spotted owl habitat post-harvest. Removing these habitat elements eliminates important microclimate considerations for the stand function for heat sensitive spotted owls while roosting, diminishes concealment cover from predators, and reduces habitat for primary spotted owl prey. Removal of dispersal-only habitat drops canopy cover to less than 40 percent (unit treatment average) and otherwise changes the stand, so it no longer provides dispersal habitat for NSO. The post-harvest stand would be too open to provide protection from predators. In the Rogue Gold FMP, NRF and dispersal-only habitat removal would occur from road and landing construction, commercial thinning, and selection harvest.

#### RA-32

The BLM conducted field verification of suspected structurally complex forest (see RA-32 habitat definition, Table D-1) within the proposed treatment area to identify high-quality NSO habitat for Recovery Action 32 (USFWS 2011, pp.67-68). The proposed treatments under all alternatives would include up to 62 acres of RA-32 habitat.

The BLM considered both downgrade treatments and removal treatments of nesting RA-32 habitat to determine the total acres removed. All nesting-roosting habitat in the LSR LUA, including stands identified as RA-32, treatments would maintain habitat function regardless of NSO occupancy (USDI 2016c, p.71). In the HLB, Alternatives 2 and 3 would include removal of up to 28 acres of RA-32 habitat, and Alternative 4 would remove up to 4 acres of RA-32 habitat. This is consistent with the direction in the 2016 ROD/RMP not to forego timber harvest of stands in the Harvest Land Base to contribute to Recovery Action 32 (USDI 2016c, p. 127).

(Table D-2) Effects of the Action Alternatives on NSO Nesting-Roosting and Foraging Habitat in the Analysis Area

Action Alternative	Unit Treatment Acres					
	Foraging Modified	Foraging Downgraded	Foraging Removed	Nesting-roosting Modified	Nesting-roosting Downgraded	Nesting-roosting Removed
Alternative 2	202 acres	366 acres	3 acres	137 acres	238 acres	3 acres
Alternative 3	279 acres	450 acres	4 acres	211 acres	243 acres	4 acres
Alternative 4	192 acres	162 acres	376 acres	229 acres	5 acres	224 acres

(Table D-3) Amount of NSO Habitat Pre- and Post-Treatment in Wildlife Analysis Area (All Land Ownerships)

Habitat Type	Current Condition / Alternative 1	Post-Treatment (Acres and % of Analysis Area)		
		Alternative 2	Alternative 3	Alternative 4
Nesting-Roosting or Foraging	11,435 acres (20.0%)	10,825 (18.9%)	10,734 (18.8%)	10,668 (18.6%)
Dispersal-only	23,849 acres (41.7%)	24,450 (42.7%)	24,216 (42.3%)	23,695 (41.4%)
Unsuitable (Capable or Non-Habitat)	21,932 acres (38.3%)	21,941 (38.3%)	22,266 (38.9%)	22,853 (39.9%)

The amount of habitat modified, downgraded, or removed varies by alternative and is presented in Table D-3. Alternatives 2, 3, and 4 would reduce the amount of nesting-roosting and foraging in the Wildlife Analysis area by less than 2%. Alternatives 2 and 3 would result in a net increase in dispersal-only habitat by up to one percent. Alternative 4 would result in a net decrease in dispersal-only habitat of less than one percent in the Wildlife Analysis Area. Alternative 4 would result in the highest reduction of NSO NRF

habitat of all action alternatives, with approximately 6.6% of the total NRF (767 acres) habitat available within the wildlife analysis area removed compared to the No Action Alternative. Alternative 2 would result in the lowest reduction in NSO NRF habitat of all action alternative, with approximately 5.3 percent of the total NRF (610 acres) habitat in the Wildlife Analysis Area removed. The net change in NRF habitat in the Wildlife Analysis Area is relatively similar across Action Alternatives with a difference of up to 1.3 percent.

Follow-up hazardous fuels reduction in the form of small diameter thinning would occur in treated units where canopy base height remains less than 5 feet after commercial thinning. Where nesting and roosting, foraging or dispersal habitat would be modified, canopy cover would be retained, and multiple canopy, uneven-aged structure where present, and tree species present prior to treatment would continue, but be thinned to a lesser density within the understory. Snags and coarse wood would be protected to the greatest extent practicable during slashing and piling. Retaining these primary features provides the vertical and horizontal structure for NSO roosting and foraging. This includes a multi-layered canopy, sufficient overhead canopy, species composition, and down wood features, while meeting hazardous fuels reduction goals.

Small diameter thinning, in addition to all proposed treatments, could impact NSO foraging by changing habitat conditions for prey species. Effects to spotted owl prey species, such as woodrats, northern flying squirrels and other small mammals, which are the primary prey of spotted owls in the analysis area (Forsman et al. 2004), are expected to occur under the proposed treatments. However, limited information on prey species abundance in the analysis area provides a challenge for accurately quantifying those impacts, and prey availability is likely variable across stands within the project area.

Some disturbance of habitat can improve forage conditions, provided some ground cover is retained. Removal of older brush and dense understory in the treated areas may stimulate grass, forbs, younger shrub and associated seeds, providing food source for small mammals. Woodrats are important components of the spotted owls' diet in the Planning Area (Forsman et al., 2004) and some beneficial effects to dusky-footed woodrats due to shrub development in thinned stands could be possible (Sakai and Noon 1993; Suzuki and Hayes 2003). Gomez et al. (2005) noted that commercial thinning in young stands of coastal Oregon Douglas-fir (35-45 year) did not have a measurable short-term effect on density, survival or body mass of northern flying squirrels, an important prey species for spotted owls.

The spacing, timing and the retention of key habitat features as called for under the Project Design Features for this project (Appendix B) would be utilized to avoid adverse impacts to spotted owls with respect to prey availability. Although localized, short-term changes in prey species distribution and abundance are likely to occur within a treated stand. Residual trees, snags, and down wood retained in the treated stands would provide some cover for prey species over time and would help reduce harvest impacts to some prey species, such as dusky-footed woodrats. Treatment implementation would be spread out temporally and spatially within the project area, which would leave untreated areas available for spotted owl foraging, reducing the impact of these effects at the project level.

**Rationale:** The BLM did not analyze this issue in further detail because there is no potential for significant effects beyond those already analyzed in the 2016 PRMP/FEIS, to which this EA is tiered. The BLM designed the Rogue Gold FMP to follow the management direction from the 2016 ROD/RMP for each LUA. The BLM, in the 2016 PRMP/FEIS, analyzed the effect of harvest of NSO habitat together with the effects of other Proposed RMP decisions and concluded that implementation of the Proposed RMP Alternative would contribute to a landscape that supports large blocks of NSO habitat that are capable of supporting clusters of reproducing owls, distributed across a variety of ecological conditions and spaced to facilitate owl movement between the blocks (BLM 2016b, pp. 932-941). The BLM is

incorporating those analyses here by reference. The U.S. Fish and Wildlife Service (USFWS) confirmed in their BO on the RMP that these analyses are a reasonable approach to assessing NSO habitat change in the Planning Area resulting from timber harvest, ingrowth, and wildfire because it reflects the application of best available science and the acreages of land that would be subject to the range of management activities in the land use allocations in the RMP (USFWS 2016, p. 603).

In conclusion, there is no potential for significant impacts to NSO habitat beyond those already analyzed in the PRMP/FEIS because the project design and site-specific information is consistent with analysis in the PRMP/FEIS. This project would not result in substantially different effects than what was analyzed for in the PRMP/FEIS and there is no new information that would substantially change the conclusion reached in the PRMP/FEIS.

## **Wildlife 2: How would incidental take of NSO be assessed?**

Under the BLM's SWO RMP/ROD (USDI BLM 2016a), the BLM would not propose actions that incur incidental take of spotted owls due to timber harvest activities. Based on technical assistance with the Level 1 Team, the BLM does not anticipate the proposed action would result in the incidental take of NSO associated with the Rogue Gold project. However, the question of whether the effects described above ultimately lead to incidental take via harm is a determination made by the Service. The Biological Opinion specific to this project would contain the assessment and determination of incidental take.

## **Wildlife 3: How would proposed forest management treatment affect the NSO dispersal habitat in the Gold Hill-Rogue River watershed and the dispersal function at the landscape scale?**

**Background:** Fifth field watersheds can provide a landscape-level qualitative evaluation for dispersal function at a more localized scale. The Rogue Gold FMP is within three 5th field watersheds (Gold Hill-Rogue River, Grants Pass-Rogue River, and Bear Creek). The majority of the Wildlife Analysis Area (37,877 out of 57,216 acres) is within the Gold Hill – Rogue River fifth field watershed which has limited dispersal quality habitat (below 40 percent) due to abiotic and biotic site limitations, past fires, and large amounts of non-federal lands in the low-valley bottoms with urban and agricultural areas.

**Rationale:** The PRMP/FEIS analyzed the effect of the proposed timber harvest of NSO habitat together with the effects of other ROD/RMP decisions and concluded that implementation of the RMP would contribute to a landscape that facilitates NSO movement between and through large blocks of nesting, roosting, and foraging habitat and ensures the survival of dispersing NSO (BLM 2016b, pp. 941-947). Those analyses are incorporated here by reference. The effects to dispersal function at the landscape scale from the proposed EA are within the analysis for NSO dispersal within the PRMP/FEIS.

Approximately 74% of this watershed does not provide NSO habitat currently and is not expected to in the future due to site limited grounds and human development. Even though there is limited dispersal quality habitat, the adjacent watersheds, as well as portions of the landscape within the Gold Hill – Rogue River 5th field watershed provides connectivity and dispersal function. This watershed would still provide habitat for transient dispersers because transient dispersers use a wider variety of forest conditions for movements. NRF and dispersal-only habitat remains on the landscape which would help dispersing owls recolonize in the watershed. Additionally, even though the dispersal quality is below 40 percent at the landscape scale in this watershed, it has not been identified as an area that has lost dispersal connection or has created a bottleneck for dispersal (Davis et al. 2016).

The Rogue Gold FMP would remove up to 856 acres of habitat suitable for dispersal (nesting-roosting, foraging, or dispersal-only) across the treatment area; 9 acres in Alternative 2, 278 acres in Alternative 3,

and 856 acres in Alternative 4. The action alternatives would reduce the dispersal quality habitat in the 5th field watershed by up to 0.63 percent. This would not preclude NSO from dispersing throughout the watershed because the proposed units would be spread throughout the watershed. Forest landscapes traversed by dispersing NSO typically include a fragmented mosaic of roads, clear-cuts, and non-forested areas, and a variety of forest age classes ranging from fragmented forests on cutover areas to old-growth forests (Forsman, et al. 2002). Additionally, under all alternatives, nesting-roosting habitat in LSR would be maintained at the stand scale and older, structurally complex forests would be protected. Implementing these management directions would also help minimize potential impacts to NSO dispersal at the landscape scale. This issue is not analyzed in detail because there is no potential for significant effects beyond what was analyzed in the PRMP/FEIS to which this EA tiers.

#### **Wildlife 4: What would be the effects, to include cumulative effects, from the action alternatives on migratory bird populations?**

**Background:** Land birds use a wide variety of habitats, including late-successional forests, riparian areas, brush in recovering clear-cuts, small trees in developing stands, oak-savannahs, grasslands, meadows, and chaparral habitats. An objective of the SWO ROD/RMP is to conserve or create habitat for species addressed by the Migratory Bird Treaty Act (MBTA) and the ecosystems on which migratory birds depend (BLM 2016a, p. 115). Forest management activities may impact individuals of various neotropical migratory bird species through the destruction of nests during spring or direct mortality to individuals present during vegetation removal activities.

**Rationale:** The effect of the proposed actions on migratory birds in the planning area is not analyzed in detail because there is no potential for significant effects beyond those already analyzed in the 2016 PRMP/FEIS, to which this EA is tiered (BLM 2016b, pp. 830-852). While it was not possible to analyze quantitatively the effects of the 2016 PRMP/FEIS on populations of all migratory species, due to incomplete and unavailable information, the BLM completed an analysis of the effects of the 2016 PRMP/FEIS on a selection of land bird focal species potentially found on federal lands within the analysis area. This analysis modeled the structural stages of vegetation representing habitat conditions (BLM 2016b, p. 833). While forest management activities in the project area may negatively impact individual birds, habitat availability would increase for the majority of the 34 focal land birds in the analysis area (BLM 2016b, p. 850).

While some migratory bird individuals would be disturbed or displaced during project activities, the use of required PDFs (Appendix B) would reduce impacts and contribute to the conservation and persistence of neotropical migratory bird species. Seasonal restrictions that were developed to minimize effects to other species (NSOs, bald eagles, fisher, etc.) would also benefit migratory birds and minimize the amount of disturbance during their nesting season.

Additionally, proposed treatment units' range in size from one acre to 209 acres; are dispersed across the analysis area, which is comprised of over 23,000 acres of BLM-administered lands; and would occur over the course of several years. Temporally and spatially staggered treatments would minimize the disturbance to nesting birds. Over time, these treatments would create a mosaic landscape with increased structure and biodiversity, which would provide a long-term benefit to bird and wildlife species.

There would be no perceptible shift in species composition during the breeding season following treatment, and future breeding seasons, because of the limited scale of habitat modifications in relation to the planning area. Adequate undisturbed areas within and adjacent to the planning area would maintain habitat for displaced individuals and snags that would be retained would continue to provide nest structures. Overall, populations in the region would be unaffected due to this small amount of habitat and/or reproduction loss. These effects would not be measurable at the regional scale. Analyzing bird populations at this scale is supported by Partners in Flight (California Partners in Flight 2002).

**Wildlife 5: Would the Rogue Gold FMP's timber harvest, reduction in forest canopy and road construction, in addition to timber harvest activities on private land, effect wildlife habitat degradation and fragmentation in the Wildlife Analysis Area?**

**Background:** The Wildlife Analysis Area contains a checkerboard pattern of ownership of private land interspersed with BLM. Management practices occurring on private lands range from residential development to intensive industrial timber management. Historically, non-federal landowners practiced even-aged management (clear-cutting) of timber over extensive acreages. Private industrial forestlands are managed for timber production and would typically be harvested between 40 and 60 years of age. The BLM anticipates some loss of habitat on private lands, but cannot predict the rate of loss, types of habitat affected, or the specific location of harvest. For these reasons, the BLM cannot analyze for effects to habitat on private lands within the analysis area.

Timber harvest and road/route and landing construction impact wildlife species in the analysis area by modifying or removing habitat. Some wildlife in the Analysis Area, such as fisher and black-tailed deer, are associated with areas of reduced road densities (BLM 2016b, pp. 863 and 871). Road construction would cause warmer, drier conditions in adjacent interior forest habitats, because of canopy closure reduction and increased solar and wind exposure (Trombulak and Frissell 2000). This results in reduced reproduction and survival of species with low dispersal capabilities, such as mollusks and amphibians (Marsh and Beckman 2004). Species with greater dispersal capabilities move to areas with more favorable microclimate conditions if suitable habitat were nearby.

**Rationale:** This issue was considered but not analyzed in further detail because the scale of the project would not have impacts beyond what was already analyzed in the PRMP/FEIS, to which this EA is tiered. The analysis concludes that the PRMP would lead to an increase in habitat for the majority of the species for which habitat was modeled (BLM 2016b pp. 833-846). The BLM designed this project to follow the management direction from the SWO ROD/RMP for each LUA.

Additionally, the proposed treatments in the Rogue Gold FMP, totaling up to 1700 acres (3.0 percent of the Wildlife Analysis Area) would be spread widely across the Analysis Area, ranging in size from one acre to 209 acres. The relatively small size and dispersed spacing of proposed treatment units would not result in a significant change in connectivity on the landscape. The majority of habitat within the Wildlife Analysis Area would remain untouched and continue to serve as connectivity corridors for a variety of wildlife species.

With selection harvesting, development of structural complexity and high quality late-successional habitat are primary treatment objective and large habitat blocks of late-successional reserves would be maintained under all treatments to allow for survival and movement of late-successional dependent species across the landscape, as designated in the SWO ROD/RMP.

With the use of PDFs, the project would retain valuable habitat features such as legacy trees, snags and woody debris, and "no treatment" skips which would maintain diversity at the stand level. The PDFs and ROD/RMP management direction provides additional support for the proposed actions and additional protection during implementation:

- Manage naturally occurring special habitats to maintain their ecological function, such as seeps, springs, wetlands, natural ponds, vernal pools/ponds, natural meadows, rock outcrops, caves, cliffs, talus slopes, mineral licks, oak savannah/woodlands, sand dunes, and marine habitats. (BLM 2016a, p. 115).

- Maintain or restore natural processes, native species composition, and vegetation structure in natural communities through actions such as applying prescribed fire, thinning, removing encroaching vegetation, treating non-native invasive species, retaining legacy components (e.g., large trees, snags, and down logs), maintaining water flow to wetlands, and planting or seeding native species (BLM 2016a p. 106)

#### **Wildlife 6: How would the Rogue Gold FMP affect Bureau Special Status species the pacific fisher?**

**Background:** Wildlife survey databases were reviewed for known locations of Bureau Special Status (BSS) Species. These species are identified from the 2021 OR/WA State Director Special Status Species list as well as more recently proposed candidates for federal ESA listing. For species not directly observed within the planning area, the BLM wildlife biologist determined whether a species' known range extended into the planning area (based on literature review and historic records), whether surveys had located a species, and whether a species' habitat was present within the planning area.

There are 15 BSS wildlife species known or suspected to be present in the Rogue Gold FMP Wildlife Analysis Area (Table D-4). The gray wolf is both a Federally listed ESA species and designated on the BSS list, however, the gray wolf's current known range does not extend into the Analysis Area and is not included here (see Wildlife 11, below). Through habitat modification or ground disturbance, activities that would impact BSS wildlife species include timber harvest, activity fuels treatments, and new road and landing construction. Activities that would not affect habitat but would cause noise disturbance to BSS wildlife species include road renovation and improvement, timber haul, and road decommissioning.

Table D-4. *Bureau Special Status Wildlife Species within the Rogue Gold Wildlife Analysis Area*

Scientific Name	Common Name	PRMP /FEIS Analysis	PRMP/FEIS Structural Stages for Habitat Analysis	PRMP /FEIS % Habitat in 2063 Compared to Current	Project-Level Effects
<i>Actinemys marmorata</i>	Western pond turtle	p.1670	Wetlands	No change	The treatment area does not include any sites where pond turtles are known to congregate. Impacts to overwintering or nesting individuals are unlikely due to distance from suitable aquatic habitat.
<i>Agelaius tricolor</i>	Tricolored blackbird	p.1667	Wetlands	No change	Treatments would not affect nesting habitat due to buffers around wetlands (see PDFs, Appendix B).
<i>Antrozous pallidus</i>	Pallid bat	p.1674	Young stands with structural legacies; late successional forest	142%	All treatments would retain snags and large live trees likely to be used for roosting (see PDFs, Appendix B, and RMP Management Direction (BLM 2016a p.62-87)). There are no known maternal colonies or hibernacula within the treatment area.

<i>Bombus occidentalis</i>	Western bumblebee	p.1672	Variety of flowering plants, prairies	No change	Disturbance to soil and vegetation could kill or displace individuals. Grassland habitat would not be treated, or altered, in the planning area, and special habitats such as meadows would be retained (BLM 2016b, Appendix B). PDFs would reduce effects to pollinators (Appendix B; see also Franklins bumble bee, Wildlife 9, below)
<i>Chloealtis aspasma</i>	Siskiyou short-horned grasshopper	p.1673	Early successional forest	58%	Disturbance to soil and vegetation could kill nymphs and remove habitat in the short-term. Some canopy-opening treatments could be lead to an increase in grasses in forested areas. Grassland habitat would not be treated, or altered, in the planning area, and special habitats such as meadows would be retained.
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	p.1674	Caves, mines	No data	While there are no known maternal colonies or hibernacula in the treatment area, suitable habitat is present, and they are likely to occur in the Analysis Area. PDFs which protect features such as mines and snags are included (Appendix B)
<i>Danaus plexippus</i>	Monarch butterfly	N/A	N/A	N/A	Grassland habitat would not be treated, or altered, in the planning area, and special habitats such as meadows would be retained. PDFs would reduce effects to pollinators (Appendix B)
<i>Haliaeetus leucocephalus</i>	Bald eagle	p.825-829, 1668	Mature and structurally complex forest	129%	While one nest is known to occur in the Analysis Area, there are no known nests within the treatment areas. In treated stands, legacy trees would be retained to maintain desired structural components for bald eagle nests. If any new nests are located, buffers and seasonal restrictions would mitigate disturbance (see PDFs, Appendix B)
<i>Hesperia colorado oregonia</i>	Oregon branded skipper	p.1680	Variety of flowering plants, prairies	Unknwn	Grassland habitat would not be treated, or altered, in the planning area and special habitats such as meadow would be retained. PDFs would reduce effects to pollinators (Appendix B)
<i>Melanerpes lewis</i>	Lewis's woodpecker	p.1668	Early successional forest	334%	There are no known nesting sites in the analysis area. Canopy-opening treatments would benefit preferred habitat for this species. Retention of snags required for nesting would mitigate project impacts (see PDFs, Appendix B)
<i>Myotis thysanodes</i>	Fringed myotis	p.1675	Young stands with structural legacies; late successional forest	147%	While there are no known maternal colonies or hibernacula in the treatment area, suitable habitat is present, and they are likely to occur in the Analysis Area. PDFs which protect features such as caves and snags would mitigate project impacts (see PDFs, Appendix B).

<i>Pekania pennanti</i>	Fisher	p.870-880	Mature and structurally complex forest, Young forest with structural legacies	113%	No known den sites occur within the project area. If any are located, treatment buffers would mitigate disturbance (Appendix B). See below for further discussion about effects to fishers.
<i>Rana boylei</i>	Foothill yellow-legged frog	p.1670	Mature and structurally complex forest within 1 site-potential tree height of streams	168%	PDFs to protect riparian reserves and reduce impacts to water quality would minimize any project-level effects.
<i>Speyeria coronis coronis</i>	Coronis fritillary	p.1673	Variety of flowering plants, prairies	No change	Grassland habitat would not be treated, or altered, in the planning area, and special habitats such as meadows would be retained. PDFs would reduce effects to pollinators.
<i>Vespericola sierranus</i>	Siskiyou hesperian	p.1672	Mature and structurally complex forest	133%	Perennially moist riparian habitat would be retained in all treatments due to buffers around perennial streams. All treatments would retain large woody debris used as refugia (see PDFs, Appendix D).

**Rationale:** This issue was considered but not analyzed in detail because there is no potential for significant effects beyond what was analyzed in the 2016 PRMP/FEIS (USDI 2016a, pp. 825-852), to which this EA is tiered. While the data is not available to predict future populations for these species, the 2016 PRMP/FEIS modeled the changes in habitat availability for Bureau Sensitive and Strategic species (as of 2015) as a proxy for effects to these populations (BLM 2016b, pp. 1667–1681). As described in the 2016 PRMP/FEIS and incorporated by reference here, approximately 52-67 percent of analyzed Bureau Sensitive and Strategic species would have an increase in available habitat (BLM 2016b, p. 845). The incorporation of PDFs further reduces any potential impacts to BSS wildlife species that may be present in the planning area. The BLM would retain sufficient habitat to support BSS wildlife species to persist within the planning area.

The proposed treatments would potentially benefit four BSS associated within early successional forests. There are no expected habitat changes for the other 11 species either because they are habitat generalists or because design features have been incorporated into the proposed treatments that would retain habitat features. For these reasons, the proposed action alternatives are within the effects analyzed in the 2016 PRMP/FEIS and have no potential for significant effects on BSS wildlife species.

Alternative 4 would have the greatest benefit to species associated with early successional habitat or open forests because it proposes the lowest amount of retention. Removing canopy cover allows sunlight to reach the forest floor and stimulates the growth of grasses, forbs, and shrubs that early successional species rely on. Alternative 2 would have the greatest benefit to fisher and other species associated with late successional habitat because it proposes the highest amount of retention.

**Pacific fisher:**

Pacific fisher (*Pekania pennanti*) is currently designated as an OR/WA BLM State Director Sensitive Species. The fisher was formerly an ESA candidate species, but on May 15, 2020, the U.S. Fish and Wildlife Service published a final rule that found such listing to be unwarranted for fishers in Oregon (USFWS 2020, p. 29562). The Rogue Gold planning area is within the range of the Northern California/Southern Oregon Distinct Population Segment of fisher. Fisher occurrence is closely associated with low to mid-elevation forests with a coniferous component, large snags or decadent live trees and logs for denning and resting, and complex vertical structure (USFWS 2020, 29538).

The effects of the proposed actions and alternatives on fisher are not analyzed in detail because there would be no potential for significant effects beyond those analyzed in the 2016 PRMP/FEIS, to which this EA is tiered. As described below, the estimated effects from the proposed action are within the range of effects estimated in the 2016 PRMP/EIS. The 2016 PRMP/FEIS describes the fisher's range, the habitat it uses, and the effects of vegetation management as described in the 2016 ROD/RMP on fisher and their habitat (USDI 2016a, pp. 871-872). The fisher analysis in the 2016 PRMP/FEIS (pp. 870-880) is incorporated here by reference.

While the BLM Medford does not have baseline fisher habitat data, NSO habitat has been determined as a reasonable proxy for fisher habitat because both require similar habitat components (*KS Wild v. US BLM*, Case No. 06-3076-PA, Order and Judgment 9/10/2007). The BLM used the NSO habitat data in the Wildlife Analysis Area (see explanation in above in Wildlife 1, and Appendix A Map, Figure A-6) to derive the effects to fisher habitat. The correlation between NSO and fisher habitat are as follows:

- NSO nesting-roosting and foraging habitat is considered fisher denning and resting habitat because they include similar key habitat elements (high canopy cover, multi-storied stands, large live trees and snags, and large woody debris).
- NSO dispersal-only habitat is considered fisher foraging habitat because fishers forage in a broader range of forested habitats, which can be similar to NSO dispersal-only habitat. NSO dispersal-only habitat may also be utilized as fisher denning and resting habitat if the appropriate structures are available (Purcell et al. 2009). However, for this analysis, because denning and resting structures cannot be measured at the analysis area scale, all dispersal-only habitat is analyzed as foraging only habitat.
- NSO capable habitat and non-habitat are not considered habitat for fishers.

Table D-5. Estimated Baseline Fisher Habitat Based on NSO Habitat Conditions in the Rogue Gold Wildlife Analysis Area

Land Ownership	Wildlife Analysis Area Total Acres	Denning and Resting Habitat Acres (% of Total)	Foraging Habitat Acres* (% of Total)	Non-Habitat Acres (% of Total)
All Ownerships	57,216	11,435 (20%)	35,284 (62%)	21,932 (38%)
Federal Lands (BLM)	23,364	7,342 (31%)	17,622 (75%)	5,742 (25%)

\*Denning and resting habitat acreage is included in the total foraging habitat

(Table D-6) Estimated Fisher Habitat Based on NSO Habitat Conditions Pre- and Post-Treatment in Wildlife Analysis Area (All Land Ownerships)

Habitat Type	Current Condition	Post-Treatment (Acres and % of Analysis Area)
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	<b>Alternative 1</b>	Alternative 2	Alternative 3	Alternative 4
Denning and resting	11,435 acres (20.0%)	10,825 (18.9%)	10,734 (18.8%)	10,678 (18.7%)
Foraging*	35,284 acres (61.7%)	35,275 (61.7%)	35,006 (61.2%)	34,428 (60.2%)

\*Denning and resting habitat acreage is included in total foraging habitat

The proposed action under all action alternatives would have negative effects to fisher denning, resting, and foraging habitat and for some fisher prey species due to the removal of trees and other vegetation. Within the Rogue Gold FMP Wildlife Analysis Area, the proposed action alternatives would result in a 1.1 percent reduction in fisher denning and resting habitat in Alternative 2, a 1.2 percent reduction in denning and resting habitat under Alternative 3, and a 1.3 percent reduction under Alternative 4. For fisher foraging habitat, which includes areas considered denning and resting habitat, the proposed action alternatives would result in a less than 0.01 percent reduction under Alternative 2, a 0.5 percent reduction under Alternative 3, and a 1.5 percent reduction under Alternative 4. Some of these effects would be relatively short-term, as understory vegetation typically returns within five years and some of the fishers' prey species utilize early seral stages.

The effects to fisher habitat from the Rogue Gold FMP do not exceed those already analyzed in the 2016 PRMP/FEIS. The 2016 PRMP/FEIS analysis describes that under the RMP there would be a 10-15% loss in total fisher habitat in the first two decades; however, additional habitat would develop in subsequent decades that would surpass current conditions by 2043 (USDI 2016a, p.875). The proposed actions in the LSR LUA would promote development of fisher denning habitat by accelerating the growth of large trees and vertical canopy structure, as emphasized for spotted owl nesting-roosting habitat development.

Additionally, project design features that retain snags, large trees, or large woody debris in all LUAs would reduce effects to fisher habitat (see PDFs, Appendix B, and BLM 2016a, p. 62-87). There is a considerable body of literature documenting the importance of these structural elements for fisher denning and resting, and for supporting abundant prey populations (Aubry and Raley 2006, Aubry et al. 2013, Lofroth et al. 2010, Purcell et al. 2009, Zielinski et al. 2004). Naney *et al.* (2012 p.25) stated that the reduction in structural elements used for denning and resting distributed across the landscape was the highest ranked and geographically consistent threat to fishers.

There could be a loss of individuals from the proposed actions due to the removal of habitat within fisher home ranges and the potential to remove unknown active den sites during harvest activities. There are no known den sites within the Rogue Gold planning area. If any new den sites were to be located, habitat retention guidelines would take effect to prevent treatments from causing direct effects to den sites (see PDFs, Appendix B).

Disturbance from treatment activities would affect fishers within the analysis area. However, fishers are highly mobile and have large home ranges. In the southern Oregon Cascade Mountains, the home range of a non-breeding male fisher averages 24 mi<sup>2</sup> (15,320 acres) while home range of a female fisher averages 9.6 mi<sup>2</sup> (6,177 acres) (Aubry and Raley 2006). Based on the overall size of the wildlife analysis area (57,216 acres), it has the potential to contain up to 9 female home ranges and 3 male home ranges, depending on their home range juxtaposition on the landscape. Disturbance from project activities would be temporally and geographically limited and would occupy a geographic area smaller than the average fisher home range. This analysis concludes that there is no potential for significant effects.

## **Wildlife 7: How would the Rogue Gold FMP affect NSO critical habitat and how much is in the Rogue Gold FMP?**

**Background:** In December 2021, the USFWS released the Designation of Revised Critical Habitat for the NSO, Final Rule, which designated NSO critical habitat on federal lands. A Critical Habitat Unit (CHU) identifies geographic areas that contain features essential for the conservation of the NSO and may require special management considerations. The Rogue Gold FMP Wildlife Analysis Area includes 16,396 acres of spotted owl CHU 10, sub-unit KLE-3.

**Rationale:** The BLM did not analyze in detail the effects of the proposed alternatives on NSO critical habitat in the planning area because there is no potential for significant effects beyond those already analyzed in the 2016 PRMP/FEIS, to which this EA is tiered (BLM 2016b, pp. 990-993). The 2016 PRMP/FEIS analysis of the 2016 ROD/RMP on NSO critical habitat was based on the vegetation modeling (including timber harvest and growth) in the 2016 PRMP/FEIS. In the Biological Opinion for Western Oregon Resource Management Plan, the USFWS predicted that uneven-aged management would result in the loss of primary biological features, such as nesting-roosting and foraging habitat, in the HLB (USFWS 2016). USFWS also concluded that the mitigation of these losses would occur because during the same time span, NSO critical habitat in reserved LUAs would develop through ingrowth and through management actions, such as thinning designed to speed the development of critical habitat primary biological features (USFWS 2016, pp 690 and 691).

The proposed treatments would reduce the amount of nesting-roosting, foraging, and dispersal-only habitat within critical habitat under all action alternatives. However, the potential reduction of NSO habitat would not alter the intended sub-unit function of providing connectivity between subunits and critical habitat units because these changes are immeasurable at the sub-unit scale and therefore would not affect the dispersal of NSO between sub-units. Additionally, the proposed actions would not affect the ability for the critical habitat subunits to provide demographic support because incidental take of NSOs would not occur under all action alternatives, so the proposed actions would not affect NSO occupancy at active sites.

## **Wildlife 8: Would the Rogue Gold FMP increase the number and distribution of barred owls and what would be their effect on NSO presence, reproduction, and recovery in the project area?**

**Background:** The Revised Recovery Plan for the Northern Spotted Owl (2011) identified competition from the barred owl (*Strix varia*) as a threat to NSO (USFWS 2011). Barred owls are native to eastern North America but have moved west into NSO habitat. Recent studies have continued to confirm the high barred owl population expansion rate (Dugger et al., 2019; Dugger et al., 2020; Lesmeister et al., 2019; Lesmeister et al., 2020; Weins 2014; Dugger et al. 2016).

Barred owls are the primary driver of NSO population decline seen throughout the NSO range (Franklin et al. 2021). Barred owls exert pressure on NSOs through interference competition, where barred owls deny NSO access to resources through territorial interaction, and exploitation competition where barred owls use some or all of the resources necessary for NSO fitness (e.g., prey species) reducing their availability (Wiens et al. 2014). Demographic evidence strongly suggests that barred owls are the dominant competitor (Franklin et al. 2021).

Eleven demographic study areas have been established to represent owl status across the range of the NSO (Forsman et al., 2011). Metadata analysis evaluates population statistics of the owls in the demographic study areas. Recent NSO meta-analysis (Franklin et al. 2021) found range-wide evidence that the negative consequences of competition with barred owls have increasingly overwhelmed the

decreasing NSO population since the 2016 meta-analysis (Dugger et al. 2016). Franklin et al (2021) found that barred owl occupancy had a dominant negative effect on colonization and positive effect on extinction of NSO territories (Franklin et al. 2021, p. 28). This most recent report supports the overall NSO population decline predicted in the PRMP/FEIS.

Detailed barred owl population numbers or density are not available for the Wildlife Analysis Area. However, barred owls were detected at 42 percent of known NSO territories in the Southern Oregon Cascades Demography Study Area (DSA) (Dugger et al. 2023) and 52 percent of territories in the Klamath DSA through NSO call-back surveys (Lesmeister et al. 2020, p17). Passive Acoustic Monitoring (conducted on 20 percent of 5 km<sup>2</sup> hexagonal grid cells covering the Klamath DSA detected NSO on 53 percent of the cells and barred owls in 95 percent of the cells sampled in 2020 (Lesmeister et al. 2022,). The BLM does not conduct barred owl surveys across the Medford District; barred owls have only been detected opportunistically within the Wildlife Analysis Area. However, the BLM assumes the trend of barred owl observations across the BLM Medford District is consistent with the trends in the adjacent demography study area.

Barred owls and NSO have a high degree of niche overlap, preferentially selecting for the same forest cover types and food resources, although the barred owls' niche width is wider than NSO preying on a wider variety of species and at least in some forest types, selecting for a wider variety of forest cover types (Wiens et al. 2014; Irwin et al. 2020). Barred owls' more generalist character allows them to have relatively smaller home ranges and produce more young annually than the more specialized NSO (Hamer et al. 2007; Singleton et al. 2010; Wiens et al. 2014).

Where one species is competitively dominant over another and where there is a high degree of habitat overlap, only spatial segregation would ameliorate the effects of such competition. For two competitor species to persist on the same landscape, there must be exclusively suitable habitat for both species (i.e., areas only used by one of the two species, or some other form of spatial or temporal niche separation) (Carrete et al. 2005). There is currently little evidence suggesting that NSO habitat is not also selected for by barred owls (Wiens et al. 2014; Franklin et al. 2021). Dugger et al. (2011) suggested that in their Southwestern Oregon study area, exclusive NSO habitat may not exist.

Natural spatial segregation is unlikely for barred owls and NSO populations. Barred owls are present and expanding in population and space throughout the NSO range (Franklin et al. 2021; Lesmeister et al. 2022). Fine scale spatial segregation (within territory) may reduce the effects of barred owls on NSO, but the overall magnitude of the barred owl effect is several times larger than any habitat effect (Dugger et al. 2011; Franklin et al. 2021).

Based on known current barred owl occupancy of BLM-administered lands in the Wildlife Analysis Area and the increasing trend of barred owl occupancy regionally and locally, it is likely many of the NSO sites within the Rogue Gold Wildlife Analysis Area could be occupied by barred owls in the future regardless of timber harvest. There is no evidence that "more" acres of older forest would alter the competitive relationship between barred owls and NSO at the population levels, particularly given barred owls' demonstrated ability to rapidly expand in range and population. Research and modeling show a general expectation of wide scale and continuing declines in NSO populations regardless of retention of habitat (BLM 2016b, Figure 3-188, p. 959; Wiens et al. 2014; Yackulic et al. 2019; Franklin et al. 2021). This is reflected in the declining trend in NSO occupancy observed throughout their range (Franklin et al. 2021), even though during the same time, habitat was increasing (Davis et al. 2022). Habitat is clearly important for NSO (e.g., Yackulic et al. 2019), but the effects of barred owls on NSO demography are so large all NSO demographic trends in all demography study areas analyzed in Franklin et al. (2021) were negative regardless of habitat quantity or the relative suitability of habitat.

**Rationale:** The effects of the proposed alternatives on interactions between barred owls and NSOs are not analyzed in detail because there would be no potential for significant effects beyond those analyzed already in the PRMP/FEIS, to which this EA is tiered (BLM 2016b, pp. 947-973). The PRMP/FEIS described the effect of competition from barred owls on NSOs and concluded that current research provides no evidence that the BLM can manage individual forest stands to provide NSOs with a competitive advantage over barred owls (BLM 2016b, pp. 947– 948; Dugger et al. 2011; Wiens et al. 2014). That discussion is incorporated here by reference.

The PRMP/FEIS analysis of the effects of management actions on NSO populations included simulation of barred owl encounters. The population simulations acknowledged that NSO populations in the Western Cascades and Klamath Provinces would continue to decline, and the PRMP/FEIS did not show discernable differences among the alternatives when compared to the No Timber Harvest reference analysis (BLM 2016b, pp. 961, 962, 969). Additionally, as described above, barred owl invasion, regardless of harvest, is likely to continue to be the driving force behind the decline of NSO occupancy and reproduction in the Treatment Area (BLM 2016b, pp. 947-973; USFWS 2012; Dugger et al. 2016). Therefore, the results of the recent studies do not present new information that would create new effects to NSO populations since the PRMP/FEIS. Instead, research reaffirms the importance of older forest conditions and managing for large blocks of unfragmented older forest (Dugger et al. 2011, p. 2463; Wiens et al. 2014, pp. 36–38; BLM 2016b, p. 948). Untreated functioning NRF and dispersal-only habitat within the Wildlife Analysis Area would help minimize the likelihood that inter-species competition would be exacerbated as a result of the EA proposed alternatives. Franklin et al. (2021) confirmed the importance of these untreated areas across the landscape to help with barred owl competition effects by providing areas for spotted owls to re-colonize across the landscape and facilitated connectivity and dispersal between NSO occupied areas.

#### **Wildlife 9: What would be the effects to the Franklin’s bumble bee from the Rogue Gold vegetation management activities?**

**Background:** In 2019 the USFWS proposed the federal listing of the Franklin’s bumble bee (*Bombus franklini*) as endangered under the ESA, Federal Register Vol. 84, No. 156, p. 40006 (FR 2019) and the final rule for federal listing as endangered was effective on November 23, 2021, Federal Register Notice, Vol. 86, No. 161, p. 4722 (FR 2019). This species is a narrow endemic, with historical locations recorded in portions of Douglas, Jackson, and Josephine counties in southern Oregon and Siskiyou and Trinity counties in northern California. The last sighting of any Franklin’s bumble bee was in 2006 and there are no known current populations distributed across any level of ecological conditions or spatial extent despite numerous survey efforts in high quality habitat in documented historical locations (USFWS 2018, p. 3, 42). The Rogue Gold FMP is located approximately 22 miles northwest of the last Franklin’s bumble bee detection (2006).

The USFWS considers a defining habitat characteristic for Franklin’s bumble bee to be the presence of Substantial Floral Resources (SFRs) – defined as a diverse and abundant group of insecticide-free native flowering plants that provide both pollen and nectar throughout a Franklin’s bumble bee colony’s active flight period (May 15 – September 30). A varied assortment of plant species with staggered floral senescence must be present in abundance (i.e., no monocultures), as floral forage must be available throughout the active flight season. This is typically exemplified by existing meadow systems. Franklin’s bumble bee High Priority Zones (HPZs) have been identified by USFWS and contain all known historic observation locations of Franklin’s bumble bee, supplemented by additional modeling of SFRs and other habitat characteristics most likely to support the species within its historic range. However, not all areas within HPZs provide habitat for bumble bees.

There is a total of 7,051 acres of HPZ identified within the Wildlife Analysis Area, of which the BLM manages 1,991 acres. In the Rogue Gold FMP, there are 11 acres of proposed treatments (selection harvest) within a current Franklin's bumble bee HPZ, all of which are forested habitat and are not likely to contain high-quality habitat with SFRs to support Franklin's bumble bee.

**Rationale:** The BLM did not analyze the effects of the proposed alternatives on pollinator species, including Franklin's bumble bee, because there would be no potential for effects beyond those analyzed in the 2016 PRMP/FEIS, to which this EA is tiered. The FEIS states "BLM would manage naturally occurring special habitats.... natural meadows... to maintain their ecological function." (FEIS p. 834). The 2016 PRMP/FEIS acknowledged that the 2016 PRMP/FEIS would result in no changes to meadow habitats and the species associated with these habitats (2016 PRMP/FEIS, pp. 1667-1675) because the activities in the proposed resource management plan alternative would not remove or degrade meadow habitat. Additionally, the 2016 PRMP/FEIS assumed that non-forested lands would remain constant over time because no management direction would substantively alter the structural characteristics of this habitat (2016 PRMP/FEIS, pp. 834).

The BLM does not anticipate short-term impacts to the Franklin's bumble bee, and other pollinators, from timber harvest activities because the proposed treatments units are characterized by high canopy forested or young stand environments where flowering habitat is minimal, due to limited canopy openings that would allow for the growth of Substantial Floral Resources. While some minimal floral resources may be present, these flowering plants are unlikely to sustain a colony of bees throughout its life cycle because flowering plant numbers and diversity are low. Longer term effects from proposed treatments could be beneficial as increased solar penetration into previously shaded stands increases resultant floral resources. Reduction in canopy cover may stimulate grass, forb and shrub growth that tends to provide greater resources for pollinator species, including the Franklin's bumble bee.

The BLM has included project design features (Appendix B) in the Rogue Gold EA to reduce the effects to Franklin's bumble bee and all pollinators. In addition to the PDFs, the SWO ROD/RMP management direction provides additional support for habitat improvement and protection to pollinator species during implementation:

"Maintain or restore natural processes, native species composition, and vegetation structure in natural communities through actions such as applying prescribed fire, thinning, removing encroaching vegetation, treating non-native invasive species, retaining legacy components (e.g., large trees, snags, and down logs), maintaining water flow to wetlands, and planting or seeding native species." (2016 PRMP/FEIS, p 533; 2016 ROD/RMP, p. 106).

#### **Wildlife 10: How would the proposed vegetation treatments and road building affect the great gray owl and other raptors?**

**Background:** The great gray owl (*Strix nebulosa*) is a large owl found in parts of northern Europe, Asia and North America from Alaska throughout much of Canada and into portions of the United States. Great gray owl habitat consists of mature or structurally complex conifer forests that are located near open areas for foraging (Bull and Henjum 1990, Bryan and Forsman 1987). They also utilize younger forests with structural legacies (Bull and Henjum 1990). In southwest Oregon, great gray owls have been associated with late successional Douglas-fir forests adjacent to oak woodlands, grassy meadows, or chaparral (Fetz et al. 2003). Broken-top trees, abandoned raptor nests, mistletoe clumps, and other platforms provide suitable nest structures (Huff and Godwin 2016, p. 11-13).

The 1994 Northwest Forest Plan (USDA FS USDI BLM 1994) designated the great gray owl as a Survey and Manage species. The Northwest Forest Plan adopted the Survey and Manage species mitigation

measures for harvest in the matrix land use allocation (predecessor to the HLB). These mitigation measures were a set of protections for species associated with late-successional and old-growth forests. As stated in the 2016 PRMP/FEIS, “the Northwest Forest Plan is not a statute or regulation. It was a coordinated, multi-agency amendment to the then-current RMPs of the BLM and forest plans of the U.S. Forest Service” (2016 PRMP/FEIS, p. 20). The 2016 ROD/RMP does not include the Survey and Manage measures of the 1994 Northwest Forest Plan because the program was an artifact of the U.S. Forest Service’s regulations that do not apply to BLM. The BLM determined that it could achieve the purposes of its 2016 RMP revision and respond to the BLM’s statutory authorities and mandates without including Survey and Manage species mitigation (2016 ROD/RMP, pp. 27-28).

The BLM manages species that are on the Bureau Special Status species list (Table D-4) which includes some species that were managed under the former Survey and Manage measures, consistent with BLM’s Special Status Policy (2016 PRMP/FEIS, p. 22). The BLM released a new State Director’s Special Status Species list (dated June 21, 2021) which officially updates the list for BLM Oregon/Washington (USDI BLM 2021). Great gray owls do not have any special status because the USFWS has not federally listed them under ESA, nor do they have status as BLM Special Status species (USDI BLM 2021). The BLM has observed nesting great gray owls within the Rogue Gold EA Planning Area, with one known historic site occurring within the Rogue Gold Wildlife Analysis Area.

There is one known bald eagle nest (a Bureau Special Status Species, see Table D-4) within the Wildlife Analysis Area, and no known nests within the treatment area. With the implementation of PDFs, treated stands would retain legacy trees to maintain desired structural components for eagle nests (PDFs Appendix B). If new nests are discovered within the planning area, buffers and seasonal restrictions would be implemented at nest sites. This is consistent with the management direction in the RMP, which states to protect known eagle nests (including active nests and alternate nests) and bald eagle winter roosting areas; and prohibit activities that would disrupt bald eagles or golden eagles that are actively nesting (BLM 2016a, p. 116). This is also consistent with the findings in the FEIS (BLM 2016b, p. 828), which concluded that overall bald eagle populations would continue to grow, habitat availability would increase, and the seasonal restrictions would avoid disruption of nesting.

Through habitat modification, noise, or ground disturbance, activities that may impact other raptor species include timber harvest, activity fuels treatments, and new road and landing construction. Activities that would not affect habitat but may cause noise disturbance to BSS wildlife species include road renovation and improvement, timber haul, and road decommissioning. Forest management activities may impact individuals through the destruction of nests during spring, as well as displacement or direct mortality to individuals present during vegetation removal activities. The incorporation of PDFs further reduces any potential impacts to other raptor species that may be present in the analysis area. The BLM would retain sufficient habitat to support raptor persistence within the analysis area.

**Rationale:** The BLM did not analyze this issue in detail because there would be no significant effects beyond those already analyzed in the 2016 PRMP/FEIS to which this EA tiers. The 2016 PRMP/FEIS analyzed the effects to 13 former Survey and Manage wildlife species, including the great gray owl, in the 2016 PRMP/FEIS alternatives within the 2016 PRMP/FEIS decision area (BLM 2016b, p. 846). See Wildlife 4, above, for further discussion about project impacts to migratory birds.

As described below, the estimated effects from the proposed action are within the range of effects estimated in the 2016 PRMP/FEIS. The BLM is incorporating by reference the great gray owl analysis in the 2016 PRMP/FEIS (BLM 2016b pp 846-850).

The PRMP/FEIS used the vegetation modeling of structural stages, specifically “the mature and structurally-complex forest structural stages, to represent the late-successional or old-growth forest with

which [formerly known as] Survey and Manage species are closely associated” (BLM 2016b, p. 833-834). The 2016 PRMP/FEIS predicted an increase of mature and structurally complex forest habitat on the BLM-administered lands within the Western Oregon PRMP/FEIS Decision Area (BLM 2016b, pp. 1655- 1656) within the next 50 years based on a rate of harvest in the HLB and reserve LUAs. At the PRMP/FEIS Decision Area scale, mature forest habitat would increase by 392,605 acres and structurally complex forest habitat would increase by 143,789 acres by 2063. The increase in habitat is attributed to an increased development of mature and structurally complex habitat with legacy structures through vegetation treatments (2016 PRMP/FEIS, p. 844). Specific to great gray owls, the 2016 PRMP/FEIS predicted an increase in habitat for the great gray owl over current conditions by 19,098 acres in 50 years (BLM 2016b, pp. 848, 1682). These acres are based on mature and structurally complex forest located within foraging habitat > 10 acres in size.

Meadows or grasslands adjacent to older forests provide foraging habitat for great gray owls. The 2016 PRMP/FEIS acknowledged that implementation of the 2016 PRMP would result in no changes to non-forest and oak habitats (BLM 2016b pp 1667-1675) because the BLM manages these habitats to maintain their ecological function (BLM 2016b pp 834, 1154).

For this analysis, the BLM wildlife biologist used NSO NRF habitat in the wildlife analysis area as a proxy for habitat great gray owls would use for nesting. Both species are associated with mature or structurally complex forests with high canopy cover and are dependent on structural legacies for nesting. The Rogue Gold wildlife analysis area contains a patchwork of habitat types that includes NRF habitat adjacent to natural and man-made forest openings including oak woodlands and grass dominated openings. Because these openings would supply the great gray owl with a food source, the great gray owl has the potential to use any of the 11,435 acres of NSO NRF habitat within the analysis area for nesting and roosting. NRF habitat in the analysis area would have a reduction of approximately 1.1 percent under Alternative 2, and 1.2 percent under Alternative 3, and 1.3 percent under Alternative 4 (Wildlife 1, above).

Additionally, treatments in the LSR-dry LUA that would promote the development and retention of large, open grown trees and multi-cohort stands would also improve or speed the development of nesting habitat for great gray owls because the structures upon which great gray owls depend on nesting are more likely to occur in larger, older trees (Huff and Godwin 2016, p 11-12). Commercial treatments in all LUAs would reduce suitable great gray nesting habitat by removing canopy cover. However, 93-95 percent of suitable great gray nesting habitat would remain in untreated areas of units as well as adjacent untreated stands to ensure persistence of the species on the landscape. All treatments would retain legacy structures such as large live trees and snags (see PDFs, Appendix B, and BLM 2016b p. 62-87), which have the potential to provide nest structures and hunting perches for great gray owls. For these reasons, the proposed action alternatives are within the effects analyzed in the 2016 PRMP/FEIS and have no potential for significant effects on great gray owls beyond those analyzed in the 2016 PRMP/FEIS.

### **Wildlife 11: How would the proposed vegetation treatments affect the gray wolf?**

**Background:** The Rogue Gold FMP is within the area where the gray wolf remains listed as endangered by the USFWS (west of highways 395 and 78 in Oregon). While the Rogue Gold FMP is within the historic range of the gray wolf, the current distribution of gray wolves does not extend into the wildlife analysis area. ODFW provides a minimum known number of wolves present in Oregon at the end of the year; it is a direct count of wolves, not an estimate. The minimum known wolf count in 2022 was 178. Twenty-four packs were documented at the end of 2022, with the closest pack being the Rogue Pack (Oregon Wolf Conservation and Management 2022 Annual Report, p. 4).

**Rationale:** This issue was not analyzed in detail because the current distribution of the gray wolves does

not extend into the wildlife analysis area. An Area of Known Wolf Activity (AKWA) are areas designated by ODFW that show where an individual or group of wolves have been documented repeatedly over a period of time. The nearest AKWA to the Rogue Gold FMP is the area used by the Rogue Pack which is approximately 16 miles east of the Rogue Gold Analysis Area. Wolves are unlikely to disperse into the project area because the Rogue Gold FMP and the nearest AKWA are separated by Interstate-5 and the heavily populated Rogue Valley. However, ODFW and the USFWS communicates wolf activity with the BLM and if wolf activity was present in the Rogue Gold FMP area in the future, the BLM would follow the Timber Sale E-3 contract clause that authorizes the Medford District to initiate a stop work order to the timber sale contractor when threatened and endangered or sensitive species are found in the timber sales. The BLM would work with ODFW and USFWS to determine if mitigation measures, such as seasonal restrictions would be required.

## D-5 Botany

### **Botany 1: How would ground disturbance, decreases in woody vegetation cover from timber harvest, fuels reduction treatments and related activities affect the persistence of Bureau Special Status plants and fungi?**

**Background:** Activities such as timber harvest, fuels reduction, and activities associated with them have the potential to affect Federally Threatened & Endangered (T&E) and Bureau Sensitive (BS) vascular plants, lichens and bryophytes directly through the loss of sites and habitat or indirectly due to changes in microsite conditions, soil erosion, or increased competition from non-native vegetation, if not conducted with protective measures.

The BLM has completed botanical surveys and reviewed Oregon Biodiversity Information Center (ORBIC) and BLM Geographic Biotic Observation (GeoBOB) occurrence data for federally T&E and BS vascular plants, lichens, bryophytes, and fungi in the Rogue Gold planning area. All surveys were completed by professional botanists between 2014 and 2023. Fungi primarily grow underground as mycelial networks with conifers and/or decaying wood and do not produce sporocarps (fruiting bodies) every year, everywhere that they may occur, and usually present for a limited time (USDI 2016b, p. 527). Fungi species are impractical to survey (Cushman *et al.* 2013), however BS fungi may be found during surveys for other species and a portion of the suitable habitat for sensitive fungi within the planning area was surveyed during equivalent-effort fungi surveys completed from 2014 to 2022.

The Rogue Gold VMP is in the range of the federally listed Gentner's fritillary (*Fritillaria gentneri*) and twelve populations are in the project area (Table D-7). Five of these populations are within selection harvest units. The Medford Districts Biological Assessment with the USFWS (USDI BLM, 2020) requires 100 foot no activity buffers around all Gentner's fritillary, to avoid adverse effects. It also requires that constructed landings be least 100 feet from Gentner's fritillary populations and the seeding of skid trails, landings, or other areas of disturbance adjacent to populations. The Rogue Gold VMP is not in the range of any of the three federally listed (or candidate) plant species known or suspected to occur on the BLM Medford District (*Lomatium cookii*, *Arabis macdonaldiana*, and *Limnanthes pumila* ssp. *grandiflora*).

Botany surveyors have documented one Bureau Sensitive fungus species, Coral Fungus (*Phaeoclavulina abietina*), and one BS vascular plant species, Clustered Lady's Slipper (*Cypripedium fasciculatum*), in areas proposed for section harvest or other project related disturbances (Table D-7). There are 22 populations of Clustered Lady's Slipper and 1 population of Coral Fungus in units proposed for section harvest. To prevent direct impacts to these sites, the BLM would implement no-treatment buffers, between 25 to 100 feet in radius, ensure they are not damaged under Action Alternatives. Buffer widths were prescribed based on the affected species' biology, habitat needs, population size, rarity, and

management recommendations. Re-vegetating disturbed areas with native species would reduce soil erosion and suitable conditions for invasive species to become established. Other known BS species sites in the planning area are outside of areas of proposed project activities.

**Table D-7- Special Status Plant Buffers for Rogue Gold Action Alternatives**

Species	Number of Affected Sites	Buffer Width (radius in feet)
<i>Fritillaria gentneri</i>	6 in Units, 13 total in Project Area	100 feet
<i>Cypripedium fasciculatum</i>	22 in Selection Harvest Units	100 feet
<i>Phaeoclavulina abietina</i>	1 in Selection Harvest Unit	75 feet

**Rationale:** This issue was considered but not analyzed in further detail because with the completion of required surveys and the protection of known sites under all action alternatives (PDFs Appendix B), there is no potential for direct or indirect impacts to BS plants or fungi, or federally listed T&E species, and therefore no potential for significant effects. Revegetating disturbed areas with native species removes potential indirect impacts to T&E species, BS plants and fungi from soil erosion and competition from invasive plants (PDFs Appendix B). The BLM determined that the actions proposed under all action alternatives would have “no effect” to T&E plants or their critical habitat because they do not occur in the planning area. The BLM determined that the action proposed under all action alternatives would have no direct or indirect effects to BS plants and fungi because they are not in any areas proposed for treatment and sites within 100 feet of project activities would be marked in the field to prevent incidental damage.

The FEIS, to which this analysis tiers, concluded that conducting surveys and applying conservation measures would be sufficient to protect sites from direct and indirect impacts and would ensure T&E and BS plant and fungi species would persist in the planning area, prevent species from needing further protection under the Endangered Species Act, prevent adding cumulative effects to these species during implementation of the project, and would not have additional effects beyond those analyzed in the FEIS (USDI 2016, pp. 517-543). That discussion is incorporated here by reference.

## **Botany 2: How would the proposed project activities affect the introduction and spread of non-native invasive plants and noxious weeds?**

**Background:** Invasive plants are nonnative plants with the potential to cause ecological damage or economic losses. Noxious weeds are a subset of invasive plants designated by a county, state, or federal agency as injurious to public health, agriculture, recreation, wildlife, or property. In this assessment, the term “invasive plants” includes noxious weeds.

BLM botanists surveyed for invasive plants along haul routes (includes proposed new routes/roads) and proposed treatment units, reviewed botany survey reports, and invasive plant infestation data in the BLM’s Vegetation Management Action Portal (VMAP) and the National Invasive Species Information Management System (NISIMS) to characterize and evaluate invasive plant infestations within the planning area. Surveys were completed between 2014 and 2023. Most infestations and acres occupied occur along roadsides, although some small infestations occur within the proposed treatment units. The high rates of noxious species in the planning area reflect the past land use patterns, influence of human traffic, animal movement, wind, and water.

The BLM botanist used botany survey reports and invasive plant infestation data in VMAP/NISIMS to

characterize and evaluate invasive plant infestations within the Project Area. The VMAP/NISIMS dataset represents the known distribution and abundance of noxious weeds on the Medford District (see map in Appendix A, Figure A-5), but it does not include all invasive plants species. The BLM has documented 21 invasive plant species on 254 sites, totaling an estimated 46 net infested acres in the Project Area (Table D-8). Approximately 76 percent of these infestations are smaller than 0.1 acre and only twelve infestations are 1-acre or larger. Most infestations occur within 50 feet of a road but only 40% are within 50' of project haul routes or activities. Many species, including bull thistle, Canada thistle, Japanese knotweed and Himalayan blackberry are more common in riparian areas. The BLM botanist categorized the potential ecological impacts of invasive plants species occurring in the Project Area based on the Oregon Department of Agriculture's Noxious Weed Policy and Classification System (ODA 2023) and professional experience, resulting in three ratings:

High: These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes result in moderate to high rates of dispersal and establishment.

Moderate: These species have observable, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. They have moderate to high rates of dispersal, but their establishment generally follows disturbance events. Their distribution and ability to colonize a variety of habitats ranges from limited to widespread.

Limited: These species are invasive, but their ecological impacts are minor and/or transitory. They have low to moderate rates of invasiveness and tend to be only locally persistent, often because of recurring disturbance. Their distribution and ability to colonize a variety of habitats is limited.

**Table D-8 - Invasive Plant Infestations in the Rogue Gold Project Area**

Species	Effects Rating	ODA Status	# of Sites	Net Acres	Predominant Habitats in the Project Area
<i>Rhaponticum repens</i> Russian knapweed	High	B	1	0.23	Roadsides, disturbed sites, riparian areas, forest openings
<i>Bromus tectorum</i> Cheat Grass	High	---	7	3.84	Roadsides, grasslands, disturbed sites
<i>Centaurea diffusa</i> Diffuse Knapweed	High	B	3	0.25	Roadsides, disturbed sites
<i>Centaurea x gerstlaueri</i> Meadow Knapweed	High	B	1	0.01	Roadsides, meadows, disturbed sites,
<i>Centaurea solstitialis</i> Yellow Starthistle	High	B	83	12.03	Roadsides, grasslands, disturbed sites
<i>Centaurea stoebe</i> Spotted Knapweed	High	B	4	0.61	Roadsides, grasslands, old homesteads, disturbed sites
<i>Chondrilla juncea</i> Rush skeletonweed	High	B	24	2.69	Roadsides, grasslands, disturbed sites,
<i>Cirsium arvense</i> Canada thistle	Moderate	B	35	2.20	Roadsides, riparian areas, seeps, meadows
<i>Cirsium vulgare</i> Bull Thistle	Moderate	B	12	2.78	Roadsides, grasslands, disturbed sites, forest openings
<i>Cytisus scoparius</i> Scotch Broom	High	B	7	3.43	Roadsides, grasslands, disturbed sites, riparian areas, forest openings
<i>Hedera helix</i> English Ivy	Moderate	B	1	0.08	Old homesteads, disturbed sites
<i>Hypericum perforatum</i> Common St. John's wort	Limited	B	17	0.20	Roadsides, disturbed sites
<i>Iris pseudacorus</i> Yellow Flag Iris	Moderate	B	3	0.04	Old homesteads, disturbed sites

<i>Lathyrus latifolius</i> Everlasting Pea	Moderate	---	14	0.62	Grasslands, disturbed sites
<i>Potentilla recta</i> Erect Cinquefoil	Moderate	---	2	0.13	Grasslands, riparian areas,
<i>Rubus bifrons</i> Himalayan Blackberry	High	B	33	16.85	Roadsides, grasslands, disturbed sites, riparian areas, forest openings
<i>Rubus laciniatus</i> Evergreen Blackberry	Limited	---	1	0.00	Roadsides, grasslands, disturbed sites, riparian areas, forest openings
<i>Taeniatherum caput-medusae</i> Medusahead	High	B	5	0.41	Grasslands, disturbed sites, meadows
<i>Vinca major</i> Greater Periwinkle	Moderate	B	1	0.04	Old homesteads, roadsides, grasslands, disturbed sites

Assuming no major changes in the typical types and extent of natural disturbances in the Project Area, the BLM assumed that under the No Action Alternative, invasive plants would continue to spread, on average, at 12% annually (USDI 2010, pp. 135-137). Invasive plants can spread over great distances by wind, water, animals, and humans through vehicle and foot traffic. Most of the spread would occur along roadsides and riparian areas, grasslands, and open woodlands.

All Action Alternatives would disturb vegetation and soil in ways that could stimulate existing invasive plant seed banks, reduce barriers to invasive seed dispersal, and improve site conditions for invasive plant establishment and growth. The rate of invasive plant spread for some species would exceed the average baseline rate. Areas that would be particularly vulnerable to weed invasions would include newly disturbed soil, such as in skid trails, landings, newly constructed roads, decommissioned roads, and burn pile scars. Invisibility of these sites would further increase where soil disturbance would be accompanied by reductions in woody vegetation cover. Invasive plants could invade these disturbed areas by seeds transported by vehicles, equipment, or individuals during management actions; by the public or landowners using roads and lands within the Project Area; or by animals, wind, or water. Where soil disturbances would be more severe or extensive, invasive plant infestations could persist and become sources for further invasive plant spread.

However, BLM botanists would evaluate and monitor infestations and disturbed areas to determine when and where to take management action. The BLM Medford District currently uses an integrated approach to manage invasive plants weeds in ways that minimize adverse effects to ecological function and economic values. For each infestation, the BLM botanist would establish an action threshold and monitor to determine if the threshold has been reached or exceeded. Action thresholds are the levels of ecological or economic damage permitted before treatments are needed, and these thresholds differ across sites, projects, and species. For example, for most invasive plant species, the action threshold would be different along a disturbed roadside than it would be next to a population of a Special Status species known to be intolerant of the invasive plant. For a given site, some aggressive invasive plant species may reach the threshold very quickly, while for other species the threshold may rarely be reached at any site. Species with “high” effects ratings would be prioritized for treatment over species with “limited” effects ratings. Species not capable of persisting in forests/ woodlands would be prioritized lower because their ecological effects would be minor or transitory. The BLM botanist would select invasive plant control methods that would be most effective for the target species and appropriate for the infested site, including the presence of sensitive or high-value resources. Selection of treatment methods is guided by Department of the Interior policy which states, “Bureaus will accomplish pest management through cost-effective means that pose the least risk to humans, natural and cultural resources, and the environment” and requires Bureaus to “[e]stablish site management objectives and then choose the lowest risk, most effective approach that is feasible for each pest management project” (USDI 2007). Control methods considered for the Project Area would include manual (such as pulling and grubbing), mechanical (string

trimmers and mowers), herbicide spot treatments (with backpack or utility terrain vehicle sprayers), and classical biological control. This combination of control treatments available for use in the Project Area is estimated to be, on average, 60 percent effective at controlling noxious weed infestations with the initial treatment (USDI 2010b, p.136).

To improve long-term success and reduce the chance of secondary invasion (the colonization of a second invasive plant species after treatment of the primary infestation), control treatments would often be coupled with competitive seeding. Additionally, areas of bare soil resulting from project activities, such as landings and skid trails, would be seeded and mulched upon the completion of project activities. Mulch would be weed free and seed mix would be weed free native seeds, including one pollinator (non-grass) species. The objective of competitive seeding would be to provide a desirable native vegetative component to compete with invasive plants in treatment areas. When revegetating disturbed sites in the Project Area, the BLM botanist would select locally adapted native grass and forbs seeds that are genetically appropriate for each revegetation site, thereby increasing the probability of successful and persistent establishment of native plant communities that would be resistant to invasive plants.

**Rationale:** This issue was considered but was not analyzed in further detail because the implementation of PDFs and invasive plant control treatments along with monitoring before and after project implementation would mitigate the amount Action Alternatives would contribute to invasive plant spread through the Project Area to an insignificant level. PDFs, such as seeding disturbed areas with native species and mulching with weed-free straw, would aid the establishment of desirable vegetation that would then compete with invasive plants. An integrated invasive plant management approach would include annual monitoring and evaluation of existing and new infestations to determine the appropriate management response.

Further analysis of the issue would not lead to a more informed decision. There are only slight differences between Action Alternatives in the abundance of invasive plants occurring within 100 feet of project activities (Table D-8). The selection of any Action Alternative would result in a short-term pulse in invasive plant abundance following project implementation but, within approximately 5 years, new infestations would be outcompeted by native woody vegetation or be controlled by BLM. Seven invasive plant species are abundant (occupying more than one cumulative acre) near project activities under Action Alternatives: himalayan blackberry; yellow star thistle; cheat grass; rush skeletonweed; Canada thistle; bull thistle, and scotch broom. These species are rated high for potential ecological effects and persist in some of the project area habitat types; however, because the BLM currently has effective treatment methods available for these species, new infestations would be controlled before they have a chance to become well-established and cause adverse effects. These weed treatments would be prioritized in the District Annual Weed Treatment Plan (ATP). The new listing of Franklin's Bumble Bee impacted weed treatments on the BLM Medford District. Emergency consultation was initiated for these actions that would fit under a "no effect" determination. All treatments proposed fall under the Consultation Level 1 Team's "no-effect" determination for BLM Medford Weed Treatments. The presence of these species near project activities is limited for Action Alternatives and the BLM has effective methods for controlling infestations before they cause adverse effects. Medusahead (0.4 acres total in project area) is rated high for potential ecological effects, primarily in meadows and open woodlands or shrublands, but the species is not a strong competitor in conifer forests, so its spread to those habitats would be limited and short-term. Infestations of this species would be controlled with herbicide spot treatments and string trimmers if they reach priority thresholds or threaten sensitive habitats.

## **D-6 Cultural**

**Cultural 1: How would the proposed project activities, through ground disturbance or other physical impacts, affect cultural and paleontological resources such as archaeological and**

## **historical sites, artifacts, features, and fossil remains?**

**Background:** This issue was considered but not analyzed in further detail as it was determined that the proposed project activities would not affect any historic properties, therefore there is no potential for significant effects. Impacts to National Register of Historic Places (NRHP) listed or eligible and unevaluated archaeological sites would be avoided by the establishment of buffers within which no project activities would take place (Appendix B, 4.7.1). If any archaeological sites are inadvertently discovered during project implementation, the BLM would suspend activities and follow an established protocol (Appendix B).

**Rational:** The project archaeologist conducted archival research, a site files search, and field survey to identify cultural resources located in the Planning Area, with the results detailed in a cultural resource inventory report. This report documents all precontact and historic archaeological sites and isolated finds identified in the Planning Area and provides an assessment of their current NRHP eligibility. Archaeological sites and isolated finds not eligible shall be allocated to an appropriate use category as defined in USDI BLM 8110 manual, Identifying and Evaluating Cultural Resources (8110.4.41). Project activities are designed to avoid eligible and unevaluated archaeological sites.

The project archaeologist reviewed the Potential Fossil Yield Classification (PFYC) predictive modeling system and the geologic formations index map for the Planning Area. Based on this review, the Planning Area has low potential to yield fossil remains and any inadvertent discoveries are protected under a PDF (Appendix B).

The BLM considered this issue, but did not analyze it in detail, because it does not address the purpose and need for the proposed action and is not associated with significant impacts beyond those analyzed in the PRMP/FEIS to which this EA is tiered to. The BLM completed the surveys required by Section 106 of the NHPA and as stated, PDFs would protect significant Historic Properties from potential adverse effects.

## **Cultural 2: How would the project affect sites of traditional cultural or religious significance to tribes, such as from ground-disturbing activities or by altering accessibility or use?**

**Background:** This issue was considered but not analyzed in further detail because no sites of traditional cultural or religious significance to tribes were identified in the Planning Area during scoping and invite to consult with the Tribes, therefore there is no potential for significant effects. If any sites are identified during project implementation, the BLM would suspend activities and follow an established protocol (see Appendix B) to protect the site.

**Rational:** In September 2021, the BLM invited tribes to consult and to identify places of traditional cultural or religious significance to tribes who take interest in the Planning Area. The tribes did not respond to the invitation and did not identify any areas of traditional cultural or religious significance.

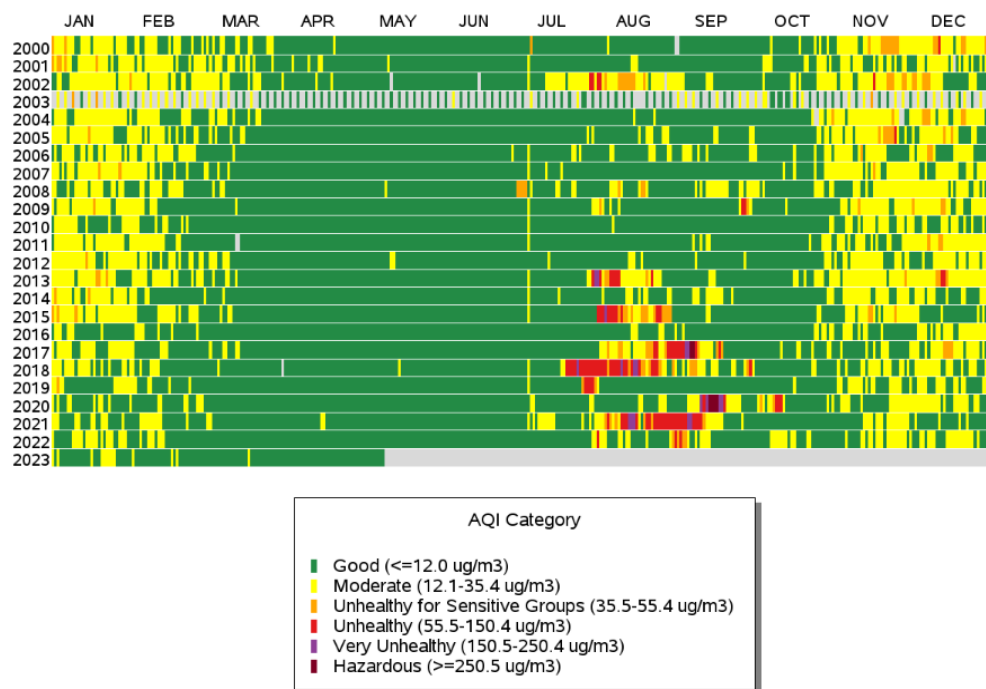
## **D-7 Fuels**

### **Fuels 1: How would the alternatives, including prescribed burning activities, affect air quality (taking climate change into consideration)?**

**Background:** The combination of weather patterns and topography of the Rogue basin contribute to regional air quality problems. The American Lung Association has ranked the Medford / Grants Pass metropolitan area as 5<sup>th</sup> in their annual State of the Air report, Report Cards of U.S. Cities Most Polluted U.S cities by year-round particle pollution (Annual PM<sub>2.5</sub>; ALA 2021). Poor air quality can develop

when a major polluting activity or event combines with temperature inversions and strong high-pressure systems that create stagnant air. Valleys can trap and concentrate pollutants, exacerbating the effects of stagnant air. Sources of pollutants may be chronic, such as from a factory or homes heating with wood during the winter, or transient, such as from prescribed burning or wildfires. Wildfires tend to be the primary contributor to air quality concerns within the Medford District, particularly in July and August (USDI BLM 2016a, pp. 155- 157) and into October in some recent years. The EPA daily air quality index for Jackson County indicates that daily emissions (PM 2.5) have been increasing during summer months over the past 20 years (Figure D-3).

PM2.5 Daily AQI Values, 2000 to 2023  
Jackson County, OR



Source: U.S. EPA AirData <<https://www.epa.gov/air-data>>  
Generated: May 10, 2023

Figure D-3. The EPA Daily Air Quality Index in Jackson and Josephine counties (2000-2023). Air quality during the period from November through March is characterized mostly as moderate. Most emissions during this period are attributed to residential heating with wood, which is frequently trapped beneath temperature inversions. Summer month (July – September) air quality has been mixed from good to hazardous, emissions during this period are attributed to wildfire smoke. Notable large wildfire years in southwest Oregon are evident in the record (2002, 2013, 2015, 2017, 2018, 2020, and 2021). Air quality from April to June is characterized as mostly good. This timeframe typically coincides with favorable conditions for implementation of prescribed under burning.

The ODEQ Air Quality Division implements the U.S. Environmental Protection Agency’s air quality regulation standards. The ODEQ has delegated prescribed fire smoke management responsibilities to the ODF. For all prescribed burning activities, the Medford District is required to comply with the Oregon Smoke Management Plan (ODF 2019, OAR 629-048) as outlined in the PMRP/FEIS (USDI BLM 2016a, pp. 146-151).

The Oregon Smoke Management Plan outlines best burn practices in the Emission Reduction Techniques section (629-048-0210). The practices are designed to minimize emissions from prescribed burning, and

“ensure the most rapid and complete combustion of forest fuels while nearby, “non-target” fuels are prevented from burning. These best burn practices include, “covering of piles sufficient to facilitate ignition and complete combustion, and then burning them at times of the year when all other fuels are damp, when it is raining or there is snow on the ground.” The section continues, stating that “when piles are covered as a best burn practice and the covers are to be removed before burning, any effective materials may be used, as long as they are removed for re-use or properly disposed of. When covers will not be removed and thus will be burned along with the piled forest fuels,” the covers must consist of approved materials, which includes polyethylene (PE) sheeting (ODF 2019, 629-048-0210). Removal of PE sheeting from piles in advance of burning increases safety risks, operational cost, particulate emissions, and reduces the pace and scale of hazardous fuel reduction.

Piles are often burned during colder and wetter periods, punctuated by wet, icy, and snowy conditions. Removal of PE sheeting from piles in advance of burning would increase risk and exposure of field personnel to injury and illness from additional hours of driving, hiking steep terrain, rolling debris from deconstructed piles, and inclement weather. As shown in a case study on the Klamath National Forest, the additional time devoted to PE removal (up to 20 minutes per pile) and disposal resulted in a 60 percent reduction of acres burned (Pers. Comm., Klamath National Forest 2021). This reduces production, increases per unit cost, and leaves more acres of handpiles on the landscape, increasing the probability of those piles burning intensely in a wildfire. Piles from which PE sheeting has been removed become vulnerable to wetting rains and wetting of fuels, prior to ignition. Worbel and Reinhart (2003) examined the use of PE sheeting to enhance combustion efficiency of piles, and found that uncovered piles have increased fuel moisture, reduced combustion efficiency, and require more accelerants (up to three gallons of fuel) to achieve sustained pile ignition, compared with PE covered piles, this finding is consistent with local knowledge and experience. The polyethylene ensures low moisture content of the wood and facilitates rapid and efficient ignition and consumption of fuels to minimize residual smoke (Aurell et al. 2016).

Use of Kraft paper as a substitute for PE sheeting would contribute toward decrease burning efficiency because environmental conditions in the region quickly deteriorate the material. An extensive review by Worbel and Reinhardt (2003) found Kraft paper less effective at minimizing moisture intrusion into piled wood (also consistent with local knowledge and experience), resulting in similar conditions as uncovered piles. The additional weight of Kraft paper also contributes to decreased production and increased per unit cost of covering piles. While combustion studies examining the difference in pyrolysis of polyethylene vs. lignocellulosic materials (kraft paper) have found that emission from kraft paper combustion were lower than polyethylene, both materials produce many of the same substances (Garcia et al. 2003). Additionally, Kraft paper is often coated with paraffin wax (a derivative of petroleum) or polyethylene to improve water resistance properties. Current scientific literature does not disprove that burning PE sheeting would produce unique chemicals or classes of chemicals that are not also found in emissions from burning wood debris (Worbel and Reinhardt, 2003; Aurell et al. 2016).

Ultimately, combustion of wet piles results in more particulate emissions (smoke) than dry piles (NWCG 2020). Comparisons of post-harvest slash machine pile burning indicate that dry piles covered with polyethylene sheets have significantly lower emissions than uncovered wet piles (Aurell et al. 2016). Additionally, initial entry fuel reduction treatments (i.e., thin and handpile burn) provide the opportunity for follow-up treatment, via maintenance underburning, which eliminates the need for piles and thus PE sheeting.

The Oregon Smoke Management Plan designates SSRA (Smoke Sensitive Receptor Areas), which are areas designated for the highest level of protection under the smoke management plan, as described and listed in OAR 629048-0140. The SSRAs within the Medford District are Grants Pass and the Bear Creek Valley, as described in OAR 629-048-0160 (USDI BLM 2016a, Map 3-1, p. 149). The objective of the

Smoke Management Plan is to minimize smoke from prescribed burning from entering the SSRAs. Medford District is also required to comply with the Oregon Visibility Protection Plan (OAR 340-200-0040, Section 5.2) which mandates that prescribed burning does not affect the visibility of Class I areas. Local Class I areas include Crater Lake National Park, Kalmiopsis Wilderness, and Rogue Wilderness (USDI BLM 2016a, Map 3-1, p. 149). The Planning Area is not within a Class I area.

Prior to conducting prescribed burning activities, the BLM must register prescribed burn locations with Oregon Department of Forestry in compliance with Oregon's administration of the Clean Air Act. The specific location, size of the burn, fuel loadings, ignition source, time, and duration of ignition are reported prior to ignition. The timing of all prescribed burning would be dependent on weather and wind conditions to help reduce the amount of residual smoke to the local communities. The day before each planned burn, ODF meteorologists evaluate this information along with the forecasted weather for the next day to determine whether smoke from a given burn is likely to effect an SSRA or Class I area. This information is used to determine the appropriate time to conduct the planned prescribed burn, to minimize smoke emissions from prescribed fire. The BLM must follow these instructions in compliance with Oregon's administration of the Clean Air Act, including the Best Burn Practices; Emission Reduction Techniques section (629-048-0210) of the Oregon Smoke Management Plan and the Oregon State Implementation Plan for Air Quality (ODEQ 2021). Additionally, all prescribed burn plans must also comply with the Interagency Prescribed Fire Planning and Implementation Procedures Guide (NWCG 2017).

Smoke from prescribed fire and wildfire produces carbon monoxide, particulates, and other air toxins. The main criteria pollutant of concern for BLM management activities is particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) (ODEQ 2003, 2009, 2012, 2013); in addition to posing a human health risk due to their small size, particulate matter from wildland fuels are excellent at scattering light, thereby reducing visibility. Carbon monoxide, on the other hand, while a substantial human health risk, dilutes rapidly, making it a hazard to firefighters only. As such the BLM analyzed effects of particulate matter emissions and visibility in the PMRP/FEIS (pp. 145 – 163). That analysis, incorporated here by reference, examined emissions (PM<sub>10</sub> and PM<sub>2.5</sub>) from prescribed fire treatment of both natural hazardous fuels and activity fuels. The PRMP/FEIS concluded that the SWO ROD/RMP would result in an approximate 7 percent increase, over current conditions, of particulate emissions (PM<sub>10</sub> and PM<sub>2.5</sub>) created from prescribed fire actions implemented across the Western Oregon Decision Area. On the Medford District, implementation of the SWO ROD/RMP would produce an expected 690 PM<sub>2.5</sub> tons per year (USDI BLM 2016a, p. 161 Figure 3-12), over the 50-year analytic period. However, adherence to the requirements of the Oregon Smoke Management Plan would continue to limit impacts to human health and visibility from prescribed fires.

**Rationale:** This issue was considered but not analyzed in detail because 1) this analysis tiers to the PRMP/FEIS analysis, which estimated the effects on air quality based on the magnitude of treatments on this landscape and disclosed those activities PRMP/FEIS (USDI BLM 2016a, pp. 4-9); and 2) there is no potential for significant effects from this EA beyond the magnitude of treatments analyzed in the PMRP/FEIS, because anticipated effects under any Alternative would not exceed those analyzed in the PRMP/FEIS. Additionally, there are no new circumstances or information at the site-specific level that would change the effects anticipated for this EA.

While the action alternatives differ in the acres of proposed prescribed fire, the proposed actions under all alternatives would be consistent with the actions analyzed in the PRMP/FEIS. Required measures would apply to all action alternatives to meet the Oregon State Implementation Plan of the Clean Air Act and the EPA's Interim Air Quality Policy on Wildland and Prescribed Fires. Common to all action alternatives, the BLM also has the discretion to haul away, as biomass, or sell, as firewood, whole trees, or treetops yarded to landings as well as the limbs removed and piled at the landings that would result in less smoke emissions than prescribed burning. However, prescribed fire may be necessary to meet ecological

objectives and complete and maintain proposed actions in most instances.

Proposed actions are expected to reduce the likelihood of stand-replacing fire (*Issue #3*) and could result in reduced smoke production, when interacting with future wildfires (Liu et al. 2017; Long et al. 2017). The PMRP/FEIS suggests future climate impacts could create more smoke production from wildfires than historic levels (USDI BLM 2016a, p. 163), due to longer fire seasons and more severe burning conditions, which would lead to more acres burned and increased fire severity. However, as wildfires interact with areas treated to result in fire-resistant structure, smoke emissions may be reduced, as less forest fuel (e.g., tree canopy fuel) would be consumed by wildfire (see *Issue #3* effects). With the available information, it is uncertain how these future cumulative effects may interact in timing and synergy.

For the above reasons, further analysis of this issue is not necessary for making a reasoned choice among alternatives in that it would not inform the decision maker how the alternatives respond to the purpose and need. Additionally, effects among all alternatives would be within those analyzed in the PMRP/FEIS, therefore, was not carried forward for further analysis.

## **Fuels 2: How would road building contribute to human caused fire ignitions?**

**Background:** Road corridors have been found to be correlated with human ignitions (Narayanaraj and Wimberly, 2011, and Syhard et al. 2007), however roads may also contribute toward wildfire containment and limiting fire spread (Price & Bradstock, 2010; Syphard et al. 2007). Studies have shown mixed results, regarding the influence that road density and road proximity to populated areas have on wildfire ignitions. Narayanaraj and Wimberly (2011) did not find a correlation between road proximity to population density and human caused ignitions, while Romero-Calcerrada and others (2008) and Syphard and others (2007) found positive relationships. Arienti and others (2009) even found a positive relationship between road density and lightning caused ignitions. The abstract by Eastman and others (2002) submitted in public scoping indicates that in roadless US National Forest Service areas, average fire frequency and average area burned was less than in managed forests.

Between 2000 and 2018, human caused wildfire ignitions within the Rogue Gold FMP Planning Area accounted for 77 percent of all wildfires. Across the BLM Medford District between 1984 and 2013, the vast majority (91 percent) of all human caused fire ignitions occurred within one mile of Wildland Developed Areas (or where people live) (USDI BLM 2016a, Figures 3-22 p. 227 and 3-34 p. 254).

**Rationale:** The local data clearly illustrate human actions have an influence on wildfire ignition patterns within the BLM Medford District and Rogue Gold FMP planning area, particularly within proximity to populated areas, however based on studies reviewed, there is mixed evidence on road density influence on human caused ignitions, ranging from no detectable evidence to a positive correlation. The proposed permanent and temporary road construction and road opening, renovation and long-term closures are common among action alternatives. Temporary roads would be decommissioned after use common to all action alternatives. Common to all action alternatives is the proposed 1.43 miles of permanent road construction. Of the 1.43 miles of permanent road construction, 1.22 miles are behind a BLM locked gate and 0.21 miles are on a parcel of BLM-administered lands, surrounded by private lands. Additionally, as fire season increases in severity, land management agencies impose restrictions pertaining to public and work-related activities to prevent fire ignitions; in extreme fire weather conditions, restrictions can include public land closures, which is intended to limit access and reduce potential human caused ignitions. As stated in the background, roads may also contribute toward wildfire containment and limiting fire spread and approximately 0.6 miles of the proposed permanent road construction, behind a BLM locked gate, coincide with identified Potential wildfire Operational Delineation (POD) boundaries as described by Thompson and others (2016) and Stratton (2020), which represent geographic features

that could aid in wildfire containment and limit large fire growth. Additionally, long-term decommissioned roads could be easily opened for use in wildfire containment, particularly those located on ridgetops, landscape locations that would need little infrastructure (e.g., cross drains) to reduce erosion or sediment delivery to streams.

For the reasons above, the alternatives do not present the potential for significant effects from roads to human caused fire ignitions, and further analysis of this issue is not necessary for making a reasoned choice among alternatives.

## **D-8 Climate Change**

### **Climate 1: What are the project level effects on greenhouse gasses and carbon production/emission associated with timber harvest, yarding activities, transportation of logs, etc. in the Rogue Gold FMP?**

**Background:** The effects of the Rogue Gold FMP on greenhouse gas emissions, carbon storage, and climate change were not analyzed in detail because, regardless of project-specific or site-specific information, there would be no potential for reasonably foreseeable significant effects of the Proposed Action beyond those disclosed in the 2016 PRMP/FEIS.

**Rationale:** The effects of the alternatives contained within the Rogue Gold FMP on carbon storage and greenhouse gas emissions tiers to the analysis in the 2016 PRMP/FEIS. As described below, the alternatives are consistent with the 2016 ROD/RMP. The BLM does not expect the alternatives to have significant effects beyond those already analyzed in the 2016 PRMP/FEIS. While analysis of the project-specific and site-specific conditions could give greater specificity to the analysis in the 2016 PRMP/FEIS, there is no potential for reasonably foreseeable significant effects of the alternatives beyond those disclosed in the 2016 PRMP/FEIS. The analysis in the 2016 PRMP/FEIS addressed the effects on carbon storage and greenhouse gas emissions of implementing the entire program of work associated with forest management and other activities based on high quality and detailed information (2016 PRMP/FEIS, pp. 165-180 and 1295-1304). The information available on project-specific and site-specific conditions, while more specific, is not fundamentally different from the information used in the 2016 PRMP/FEIS analysis of effects on carbon storage and greenhouse gas emissions, and thus cannot reveal any fundamentally different effects than that broader analysis.

The 2016 PRMP/FEIS upon which the 2016 ROD/RMP was based examined the most recent science regarding climate change, carbon storage, and greenhouse gas emissions. The analysis in Volume 1 on Pages 165-211 is relevant to this project and BLM is incorporating it by reference. The 2016 PRMP/FEIS concluded that the approved 2016 ROD/RMP supports the state of Oregon's interim strategy for reducing greenhouse gas emissions (2016 PRMP/FEIS, p. 173). Both the state of Oregon's strategy and Federal climate change strategies have goals to increase carbon storage on forest lands to partially mitigate greenhouse gas emissions from other sectors of the economy. Neither the state of Oregon nor the federal government have established specific carbon storage goals so quantifying BLM's contribution to that goal is not possible. Assuming no changes in disturbance regimes such as fire and insects (acres affected and severity of impact) from the recent past, timber harvesting is the primary activity affecting carbon storage (2016 PRMP/FEIS, p.169).

The 2016 PRMP/FEIS estimated the effects of implementing actions consistent with the Northwestern and Coastal Oregon and the Southwestern Oregon RMPs as follows:

**Table D-9: Table A-1 from the 2016 Final Environmental Impact Statement Estimation of Carbon and Greenhouse Gas Emissions**

	Current	2033	2063
Carbon Storage	336 Tg C	404 Tg C	482 Tg C
Greenhouse Gas Emissions	123,032 Mg CO <sub>2</sub> e/yr	256,643 Mg CO <sub>2</sub> e/yr	230,759 Mg CO <sub>2</sub> e/yr

Tg – Teragram. One million metric tons; Mg – Megagram. Metric ton. Approximately 2,205 pounds; CO<sub>2</sub>e – carbon dioxide equivalent

The carbon storage and greenhouse gas emissions analysis were based on assumptions concerning the level of management activity:

The 2016 PRMP/FEIS assumed an average annual harvest level of 278 MMbf per year (205 MMbf from the HLD and 73 MMbf from non-ASQ related harvest) over the entire decision area (2016 PRMP/FEIS, p. 307). The expected average annual harvest for the BLM Medford District is 51 MMbf (37 MMbf from the HLB and 14 MMbf from non-ASQ related harvest). Projected harvest levels from the Rogue Gold FMP, when added to projected harvest levels from other projects on the BLM Medford District, fall within the FEIS analysis.

Activity fuels treatments align with the harvest program with estimated acres of prescribed fire treatment type provided by the Woodstock model (2016 PRMP/FEIS, p. 1300). The decadal average of activity fuels prescribed burning for the first 20 years of the 2016 ROD/RMP would be an estimated 64,806 acres over the entire decision area (2016 PRMP/FEIS, p. 362). Slash and scatter treatments would add an estimated 28,109 acres. Proposed treatment of harvest related activity fuels within the Rogue Gold FMP falls within 2016 PRMP/FEIS analysis.

There is no new information or changed circumstances that would substantially change the effects anticipated in the 2016 PRMP/FEIS. This is because the harvest levels remain within the range of that analyzed in the 2016 PRMP/FEIS and the acres of activity fuels prescribed burning and expected tonnage consumed remains within the range analyzed in the 2016 PRMP/FEIS.

## D-9 Silviculture

### Silviculture 1: How would logging change the canopy and potentially change the potential for edge effect and blowdown?

**Background:** Blowdown (i.e., windthrow) is defined by a tree or trees uprooted or felled by the wind. While there is a level of risk for blowdown events, depending on many biotic and abiotic influences, predicting blowdown would be speculative. It has been documented that post-logging blowdown or windthrow can be an undesirable side effect of thinning, especially during the first 3-5 years following treatment (Cremer et al. 1982). Two of the main factors that predispose stands to windthrow include high height to diameter ratios (large/long canopies) and the topographic position (ridge, mid slope, valley bottom) (Mitchell 2000). The residual stand's spatial arrangement of trees and where they sit on the landscape as well as the crown condition of leave trees can both be incorporated into a prescription and logging operation implementation to decrease the probability of a damaging wind event that could potentially lengthen the time for canopy cover to recover to the desired condition. Smith et al. (1997) notes that larger trees, because of their strength, "are the least likely to be blown down in a windstorm" (p. 111). The 2016 ROD/RMP direction to retain all trees  $\geq$  40 inches DBH that were established before 1850 ensures that some larger trees would be retained on the landscape, helping to reduce instances of blowdown.

**Rationale:** This issue was considered but not analyzed in further detail because wind events of enough magnitude to substantially modify the post-treatment stands are inherently random in nature and occur chaotically across the landscape. The prescriptions designed for the Rogue Gold FMP focus on removing low vigor trees, and leaving the structural elements in the stand, which would allow the “stronger” retained trees to respond physiologically to the decrease in stand density. Therefore, the project design minimizes the potential impact to windthrow in the event of such a windstorm. Further analysis would not provide additional predictability or provide additional clarity on effects from blowdown or contribute to the decision-making process.

## **Silviculture 2: What is the impact on the sustainable production of timber from the construction of new roads and landings that are not fully decommissioned?**

**Background:** Forest management activities require the use of transportation systems and infrastructure. The 2016 ROD/RMP analyzed for new road construction, determining that the BLM Medford District in the first decade of the RMP implementation would require more new road construction than any other Western Oregon District. The BLM Medford District accounted for 35 percent of all new road construction while producing only 18 percent of the total harvest volume.

Landings are areas cleared in the forest to which logs are yarded for loading onto trucks for transport. These areas play a key role in active forest management treatments for multiple use.

**Rationale:** The issue was considered but not analyzed in detail because the Southwest Oregon RMP has already analyzed for these effects. The 2016 ROD/RMP already analyzed for new road construction (FEIS pg. 788). Unven-aged management and commercial thinning harvest typically require more new road construction than regeneration harvest. The average road ratios (feet/Mbf) across the decision area for unven-age management harvest are 20 percent higher than the road ratios for regeneration harvest, and the road ratios for commercial thinning harvest are 70 percent higher than for regeneration harvest (SWO ROD/RMP pg 785). The estimated new road construction for unven-aged harvest was estimated to be at 171 miles for the first decade of the new plan. The Rogue Gold FMP Action Alternatives do not propose anything that was not already analyzed in the 2016 ROD/RMP. Sustainable production would be for long-term treatments since these areas could be accessed and treated in the future.

The BLM would utilize existing landings and roads when applicable to minimize creating new roads and landings where unnecessary to treat stands. Future treatments could utilize the existing landings and roads for sustained yield. By keeping this key forest infrastructure, the BLM can leave these areas open for long term sustained yield.

## **Appendix E: Alternatives Considered but Eliminated from Detailed Analysis**

The BLM's NEPA Handbook (BLM 2008) describes circumstances for the elimination of an action alternative from detailed analysis. The BLM did not consider alternatives that are within the jurisdiction of state, county, or city agencies, which determine what actions are allowed or disallowed. The BLM has considered the following additional action alternatives and provides rationale as to why it did not complete detailed analysis.

1. An alternative that includes non-Commercial (natural hazardous fuels) treatments within the HLB, LSR-Dry and RR-Dry as part of the Rogue Gold FMP.

**Rationale:** When the Rogue Gold FMP originally went out for scoping, in October of 2021, the project then named the Rogue Gold Vegetation Management Project (Rogue Gold VMP) included fuels treatments (or small diameter thinning) for the purpose of maintenance of previously treated areas, protection of highly valued resources, reducing fuel loading and restoring or maintaining community-level structural characteristics. The Rogue Gold VMP included approximately 2,052 acres of commercial treatments and 6,000 acres of non-commercial treatments (fuels treatments).

**Background:** The Ashland Field Office usually completes fuels projects using non-commercial treatments and in some cases stewardship contracts which, in either case, require the expenditure of monies to accomplish the work. The Ashland Field Office did not expect to finalize the Rogue Gold VMP until fiscal year 2023 with actual implementation of commercial timber harvest treatments in fiscal year 2024. In order to utilize monies available for fuels as early as possible, BLM plans to utilize the Integrated Vegetation Management Plan EA for the Medford District to develop a DNA for the fuels treatments originally proposed Rogue Gold VMP.

2. An Alternative that withdraws all Nesting, Roosting foraging NSO habitat (across all LUAs) to maintain habitat and reduce barred owl competition.

**Rationale:** The BLM analyzed in the 2016 PRMP/FEIS an alternative that would protect all NSO nesting-roosting habitat and concluded that it would contribute negligible added benefits to NSO conservation when compared to some other alternatives and performed less well with respect to owl conservation than did some other alternatives (USDI 2016b, pp. 70, 928, 1,986). That analysis is incorporated here by reference. An alternative that would avoid timber harvest in NSO nesting-roosting habitat does not need to be analyzed in detail, because that alternative was considered in the FEIS, to which this EA is tiered.

Additionally, the SWO ROD/RMP (p. 127) states that *"the BLM will not defer or forego timber harvest of stands in the HLB for reasons not described in the management direction and this appendix [Appendix A, Guidance for Use of the RMP]."* There is no management direction in the RMP that supports retention of NSO habitat in the Harvest Land Base, other than *"Do not authorize timber sales that would cause the incidental take of northern spotted owl territorial pairs or resident singles from timber harvest until implementation of a barred owl management program consistent with the assumptions contained in the Biological Opinion on the RMP has begun"* (USDI 2016a, p. 121). This proposed alternative to withdraw all NRF NSO habitat is inconsistent with the management direction in the 2016 ROD/RMP (i.e., the SWO ROD/RMP); therefore, this alternative was not considered in detail.

3. An Alternative to that creates the minimum percentage of skips (10 percent) and the maximum percentage of gaps (30 percent) using Group Selection Harvest in HLB.

**Background:** The BLM received a comment during scoping that proposed treating the minimum percentage of skips and the maximum percentage of group selection harvest in HLB.

**Rationale:** This alternative does not meet the purpose and need for the Rogue Gold Forest management project. Although this was analyzed in the 2016 ROD/RMP, this treatment would not be feasible on all HLB units within the project area. The BLM may elect to defer harvest at particular times on particular stands in the Harvest Land Base for reasons described in the management direction or in appendix A SWO ROD/RMP (pgs. 126-127). Resource concerns such as known northern spotted owl habitat may make it unfeasible to treat stands at the maximum. Treating stands would not allow for creating resistance stands across the different LUAs. In addition to that treating at the maximum may lower the matrix treatments in the stands without going below 0.20 RDI.

4. An Alternative where there is no removal of trees over 20 inches.

**Background:** The BLM received a comment during scoping that proposed removing only trees less than 20 inches.

**Rationale:** This alternative is not consistent with management direction in the 2016 ROD/RMP for the HLB and therefore was not analyzed in detail. During the RMP revision process, the BLM considered but did not analyze in detail an alternative that would only harvest small diameter trees as a one-time entry as it would not be a reasonable alternative because it would not meet the purpose and need to provide a sustained yield of timber (2016 ROD/RMP, p. 103). The same logic is applicable to this Project. Additionally, there is no management direction in the RMP that requires the retention of mature forests or trees >20 inches DBH. The 2016 ROD/RMP (p. 127) states that “the BLM will not defer or forego timber harvest of stands in the HLB for reasons not described in the management direction and this appendix [Appendix A, Guidance for Use of the RMP].”

5. An Alternative to conduct understory thinning only, no overstory thinning.

**Background:** The BLM received a comment during scoping that proposed only treating understory thinning and no overstory thinning.

**Rationale:** The alternative does not meet the purpose and need. The Rogue Gold Forest Management Project, which looks to treat stands depending on the land use allocation between 0.20 and 0.45 relative density index. Treating stands with understory thinning (less than 8-inch DBH), stands would not be within the 2016 ROD/RMP management direction of treating between 0.20 to 0.45 RDI (pg. 68). The purpose and need calls for treating stands for resistance and contribute towards ASQ for the Medford SYU; stands that are dense, 0.60 plus RDI range and facing stem exclusion could not be treated with understory thinning alone.

6. An Alternative that increases the construction of roads to reduce helicopter yarding.

**Background:** A new construction permanent road, 37-3-17.1, approximately 4 miles in length was analyzed. The road layout traversed steep side slopes >60% requiring full bench construction, end haul, and blasting. Initial cost estimates in 2020 exceeded 1.5 million dollars. This dead-end road would have converted most of the helicopter acres to cable in T37SR03W Sections 17 and 20. Additionally, most of the proposed 37-3-17.1 new road construction would have occurred within an occupied NSO site which was not permitted due to wildlife concerns.

**Rationale:** The 37-3-17.1 was not analyzed in detail for reasons including construction costs, slope conditions, and wildlife concerns.

7. An Alternative with no helicopter logging operations.

**Background:** Several dispersed commercial units lack legal road access for BLM including many which would require easements across multiple ownerships. These scattered units would each require construction of a new road. The costs of building roads on steep side slopes >60% requiring full bench construction, end haul, and blasting would not be offset by replacing helicopter yarding with cable yarding costs for these widely distributed individual units. Eliminating commercial helicopter yarding units from the unit pool entirely would reduce estimated harvest volume by up to 30-45%, which would fail to meet the purpose and need for ASQ.

		Alternative		
		2	3	4
Including Helicopter yarding	Acres Treated	1175	1463	1477
	MMbf	4.3	7.3	10.3
Excluding Helicopter Yarding	Acres Treated	832	931	931
	MMbf	3	5.6	7.4

**Rationale:** Due to the lack of legal access, terrain features, and dispersed physical location of many proposed helicopter units, road construction in lieu of helicopter logging would not be economical. Unit volume from scattered individual helicopter yarding units would not offset road construction costs to reach them for cable yarding. Commercial helicopter yarding units were included because they are necessary for Medford District to meet the Purpose and Need, manage forests, and meet ASQ commitments.

8. An Alternative with no new roads.

**Background:** Without new and temporary road construction, many commercial cable yarding units would require helicopter logging, many helicopter logging units would become too far from landings to be economically feasible, and the resulting drop in helicopter product and service landing locations would eliminate further commercial acres.

**Rationale:** An alternative with no new roads would require more helicopter yarding and helicopter landings which would be uneconomical. New permanent and temporary road construction is necessary for Medford District to meet the Purpose and Need, manage forests, and meet ASQ commitments.

9. An Alternative to reduce road density by full decommissioning and obliteration of decommissioned, permanent, and new roads.

**Background:** The BLM evaluated opportunities to fully decommission roads within the planning area to reduce the road density. Roads that could be fully decommissioned are mostly roads that are entirely on BLM administered lands that did not access other property and were not needed for future access. No additional opportunities for full decommissioning remain as many roads in the planning area are encumbered with right-of-way agreements for access to privately owned lands and/or are identified for use to support timber harvest under this project and future projects.

**Rationale:** The BLM took a hard look for more opportunities to reduce road density, while still providing a transportation system that can support access for dispersed recreational use, administrative access, and fire suppression. The BLM did not identify any opportunities to reduce road density without compromising future access.

## Appendix F: Proposed Forest Management Treatment Alternatives Identified by Unit F-1 Alternative 2 – Proposed Forest Management Treatment Units

Table F-1

Alternative 2 – Proposed Forest Management Treatment Units							
Unit	T-R	Section	Commercial Treatment	Acres	Harvest Method	LUA	Associated Non-Commercial Treatment
1-1	37S, 03W	1	SH	16	CABLE	UTA	Activity, UR
1-2	37S, 03W	1	SH	20	CABLE	UTA	Activity, UR
3-1	37S, 03W	3	SH	7	CABLE	UTA	Activity, UR
5-1	37S, 03W	5	SH	26	HELICOPTER	UTA	Activity, UR
5-2	37S, 03W	5	SH	24	CABLE	UTA	Activity, UR
5-3	37S, 03W	5	SH	21	CABLE	UTA	Activity, UR
5-4	37S, 03W	5	SH	40	CABLE	UTA	Activity, UR
6-1	37S, 03W	6	SH	24	HELICOPTER	UTA	Activity, UR
7-1	37S, 03W	7	SH	79	HELICOPTER	UTA	Activity, UR
8-1	37S, 03W	8	SH	20	CABLE	UTA	Activity, UR
8-2	37S, 03W	8	SH	21	GROUND BASE	UTA	Activity, UR
9-2A	37S, 03W	9	SH	18	CABLE	UTA	Activity, UR
9-2B	37S, 03W	9	RRT	2	CABLE	RR	Activity, UR
9-3	37S, 03W	9	SH	19	CABLE	UTA, DDR	Activity, UR
9-4	37S, 04W	9	SH	5	CABLE	UTA	Activity, UR
9-5	37S, 04W	9	SH	49	CABLE	UTA	Activity, UR

11-1	37S, 03W	11	SH	54	CABLE	LSR	Activity, UR
11-2	37S, 03W	11	SH	4	CABLE	LSR	Activity, UR
12-1	37S, 04W	12	SH	33	HELICOPTER	UTA	Activity, UR
13-1	37S, 03W	13	SH	209	CABLE/GROUNDBASE	UTA	Activity, UR
14-2	37S, 04W	14	SH	66	HELICOPTER	UTA, LSR	Activity, UR
15-1	37S, 03W	15	SH	20	CABLE	UTA	Activity, UR
15-2	37S, 03W	15	SH	2	CABLE	UTA, DDR	Activity, UR
17-1	37S, 03W	17	SH	25	CABLE	UTA	Activity, UR
17-2A	37S, 03W	17	SH	16	CABLE	UTA	Activity, UR
17-2B	37S, 03W	17	RRT	4	CABLE	RR	Activity, UR
17-3	37S, 03W	17	SH	3	CABLE	UTA	Activity, UR
17-4	37S, 03W	17	SH	105	CABLE	UTA	Activity, UR
18-1	37S, 03W	18	SH	55	CABLE/HELICOPTER	UTA	Activity, UR
21-1	37S, 03W	21	SH	5	CABLE	LSR	Activity, UR
21-2	37S, 03W	21	SH	18	CABLE	LSR	Activity, UR
21-3	37S, 03W	21	SH	30	CABLE	LSR	Activity, UR
21-4	37S, 04W	21	SH	21	CABLE	LSR	Activity, UR
21-5	37S, 04W	21	SH	35	CABLE	UTA	Activity, UR
27-1	37S, 04W	27	SH	8	CABLE	LSR	Activity, UR
27-2	37S, 04W	27	SH	11	CABLE	UTA	Activity, UR
27-3	36S, 04W	27	SH	7	HELICOPTER	UTA	Activity, UR
27-4	36S, 04W	27	SH	33	HELICOPTER	UTA	Activity, UR
29-1A	36W, 03W	29	SH	39	CABLE	UTA	Activity, UR
29-1B	36W, 03W	29	RRT	1	CABLE	RR	Activity, UR
31-1	36W, 03W	31	SH	40	CABLE	UTA	Activity, UR
31-2	36W, 03W	31	SH	20	HELICOPTER	UTA	Activity, UR
31-3	36W, 03W	31	SH	71	CABLE/HELICOPTER	LSR	Activity, UR
35-1	37S,	35	SH	47	HELICOPTER	LSR,	Activity, UR

	04W					UTA	
<b>SH</b> = Selection Harvest <b>LSR</b> = Late-Successional Reserve <b>UTA</b> = Uneven-aged Treatment <b>RR</b> = Riparian Reserve <b>RRT</b> = Riparian Reserve Thin <b>Activity</b> = Pile & Burn tree tops and limbs to reduce fuels <b>DDR</b> <b>TPCC</b> = District Designated Reserve <b>UR</b> = Understory Reduction							

## F-2 Alternative 3 – Proposed Forest Management Treatment Units

Table F-2

Alternative 3 – Proposed Forest Management Treatment Units							
Unit	T-R	Section	Commercial Treatment	Acres	Harvest Method	LUA	Associated Non-Commercial Treatment
1-1	37S, 03W	1	SH	16	CABLE	UTA	Activity, UR
1-2	37S, 03W	1	SH	20	CABLE	UTA	Activity, UR
3-1	37S, 03W	3	SH	7	CABLE	UTA	Activity, UR
5-1	37S, 03W	5	SH	26	HELICOPTER	UTA	Activity, UR
5-2	37S, 03W	5	SH	24	CABLE	UTA	Activity, UR
5-3	37S, 03W	5	SH	21	CABLE	UTA	Activity, UR
5-4	37S, 03W	5	SH	40	CABLE	UTA	Activity, UR
5-5	37S, 03W	5	SH	24	CABLE	LSR	Activity, UR
6-1	37S, 03W	6	SH	79	HELICOPTER	UTA	Activity, UR
7-1	37S, 03W	7	SH	20	HELICOPTER	UTA	Activity, UR
8-1	37S, 03W	8	SH	21	CABLE	UTA	Activity, UR
8-2	37S, 03W	8	SH	18	GROUNDBASE	UTA	Activity, UR
9-1	37S, 03W	9	SH	2	CABLE	UTA	Activity, UR
9-2A	37S, 03W	9	SH	19	CABLE	UTA	Activity, UR
9-2B	37S, 03W	9	RRT	5	CABLE	RR	Activity, UR
9-3	37S, 03W	9	SH	49	CABLE	LSR, UTA	Activity, UR
9-4	37S, 03W	9	SH	54	CABLE	UTA	Activity, UR
9-5	37S, 04W	9	SH	4	CABLE	UTA	Activity, UR
11-1	37S, 03W	11	SH	33	CABLE	LSR	Activity, UR
11-2	37S, 03W	11	SH	3	HELICOPTER	UTA	Activity, UR
12-1	37S, 04W	12	SH	33	HELICOPTER	UTA	Activity, UR
13-1	37S, 03W	13	SH	209	CABLE/GROUNDBASE	UTA	Activity, UR
14-1	37S, 04W	14	SH	20	HELICOPTER	LSR, UTA	Activity, UR
14-2	37S, 04W	14	SH	66	HELICOPTER	LSR, UTA	Activity, UR
15-1	37S, 03W	15	SH	20	CABLE	UTA	Activity, UR
15-2	37S, 03W	15	SH	2	CABLE	UTA	Activity, UR
15-3	37S, 03W	15	SH	23	CABLE	LSR	Activity, UR
17-1	37S, 03W	17	SH	25	CABLE	UTA	Activity, UR
17-2A	37S, 03W	17	SH	16	CABLE	UTA	Activity, UR
17-2B	37S, 03W	17	RRT	4	CABLE	RR	Activity, UR
17-3	37S, 03W	17	SH	3	CABLE	UTA	Activity, UR
17-4	37S, 03W	17	SH	105	CABLE	UTA	Activity, UR
17-5	37S, 03W	17	SH	39	HELICOPTER	LSR	Activity, UR
17-7	37S, 03W	17	SH	21	HELICOPTER	LSR	Activity, UR
18-1	37S, 04W	18	SH	55	CABLE	UTA	Activity, UR
20-1	37S, 03W	20	SH	19	HELICOPTER	LSR	Activity, UR
21-1	37S, 03W	21	SH	5	CABLE	LSR	Activity, UR
21-2	37S, 03W	21	SH	18	CABLE	LSR	Activity, UR
21-3	37S, 03W	21	SH	30	CABLE	LSR	Activity, UR

21-4	37S, 04W	21	SH	21	CABLE	UTA	Activity, UR
21-5	37S, 04W	21	SH	35	CABLE	UTA	Activity, UR
21-6	37S, 04W	21	SH	37	CABLE	LSR, DDR, UTA	Activity, UR
27-1	37S, 04W	27	SH	8	CABLE	LSR	Activity, UR
27-2	37S, 04W	27	SH	11	CABLE	UTA	Activity, UR
27-3	36S, 04W	27	SH	7	HELICOPTER	UTA	Activity, UR
27-4	36S, 04W	27	SH	33	HELICOPTER	UTA	Activity, UR
27-5	37S, 04W	27	SH	9	CABLE	LSR	Activity, UR
29-1A	36W, 03W	29	SH	39	CABLE	UTA	Activity, UR
29-1B	36W, 03W	29	RRT	1	CABLE	RR	Activity, UR
31-1	36W, 03W	31	SH	40	CABLE	UTA	Activity, UR
31-2	36W, 03W	31	SH	20	HELICOPTER	LSR, UTA	Activity, UR
31-3	36W, 03W	31	SH	71	CABLE/HELICOPTER	LSR	Activity, UR
31-4	36W, 03W	31	SH	95	CABLE/HELICOPTER	LSR	Activity, UR
35-1	37S, 04W	35	SH	47	HELICOPTER	LSR	Activity, UR

**SH** = Selection Harvest   **LSR** = Late-Successional Reserve   **UTA** = Uneven-aged Treatment   **RR** = Riparian Reserve  
**Activity** = Pile & Burn tree tops and limbs to reduce fuels   **UR** = Understory Reduction

### F-3 Alternative 4 – Proposed Forest Management Treatment Units

Table F-3

Alternative 4 – Proposed Forest Management Treatment Units							
Unit	T-R	Section	Commercial Treatment	Acres	Harvest Method	LUA	Associated Non-Commercial Treatment
1-1	37S, 03W	1	SH	16	CABLE	UTA	Activity, UR
1-2	37S, 03W	1	SH	20	CABLE	UTA	Activity, UR
3-1	37S, 03W	3	SH	7	CABLE	UTA	Activity, UR
5-1	37S, 03W	5	SH	26	HELICOPTER	UTA	Activity, UR
5-2	37S, 03W	5	SH	24	CABLE	UTA	Activity, UR
5-3	37S, 03W	5	SH	21	CABLE	UTA	Activity, UR
5-4	37S, 03W	5	SH	40	CABLE	UTA	Activity, UR
5-5	37S, 03W	5	SH	24	CABLE	LSR	Activity, UR
6-1	37S, 03W	6	SH	79	HELICOPTER	UTA	Activity, UR
7-1	37S, 03W	7	SH	20	HELICOPTER	UTA	Activity, UR
8-1	37S, 03W	8	SH	21	CABLE	UTA	Activity, UR
8-2	37S, 03W	8	SH	18	GROUND BASE	UTA	Activity, UR
9-1	37S, 03W	9	SH	2	CABLE	UTA	Activity, UR
9-2A	37S, 03W	9	SH	19	CABLE	UTA	Activity, UR
9-2B	37S, 03W	9	RRT	5	CABLE	RR	Activity, UR
9-3	37S, 03W	9	SH	49	CABLE	LSR, UTA	Activity, UR
9-4	37S, 03W	9	SH	54	CABLE	UTA	Activity, UR
9-5	37S, 04W	9	SH	4	CABLE	UTA	Activity, UR

11-1	37S, 03W	11	SH	33	CABLE	LSR	Activity, UR
11-2	37S, 03W	11	SH	3	HELICOPTER	UTA	Activity, UR
12-1	37S, 04W	12	SH	33	HELICOPTER	UTA	Activity, UR
13-1	37S, 03W	13	SH	209	CABLE/GROUNDBASE	UTA	Activity, UR
14-1	37S, 04W	14	SH	20	HELICOPTER	LSR, UTA	Activity, UR
14-2	37S, 04W	14	SH	66	HELICOPTER	LSR, UTA	Activity, UR
15-1	37S, 03W	15	SH	20	CABLE	UTA	Activity, UR
15-2	37S, 03W	15	SH	2	CABLE	UTA	Activity, UR
15-3	37S, 03W	15	SH	23	CABLE	LSR	Activity, UR
17-1	37S, 03W	17	SH	25	CABLE	UTA	Activity, UR
17-2A	37S, 03W	17	SH	16	CABLE	UTA	Activity, UR
17-2B	37S, 03W	17	RRT	4	CABLE	RR	Activity, UR
17-3	37S, 03W	17	SH	3	CABLE	UTA	Activity, UR
17-4	37S, 03W	17	SH	105	CABLE	UTA	Activity, UR
17-5	37S, 03W	17	SH	39	HELICOPTER	LSR	Activity, UR
17-7	37S, 03W	17	SH	21	HELICOPTER	LSR	Activity, UR
18-1	37S, 04W	18	SH	55	CABLE	UTA	Activity, UR
20-1	37S, 03W	20	SH	19	HELICOPTER	LSR	Activity, UR
21-1	37S, 03W	21	SH	5	CABLE	LSR	Activity, UR
21-2	37S, 03W	21	SH	18	CABLE	LSR	Activity, UR
21-3	37S, 03W	21	SH	30	CABLE	LSR	Activity, UR
21-4	37S, 04W	21	SH	21	CABLE	UTA	Activity, UR
21-5	37S, 04W	21	SH	35	CABLE	UTA	Activity, UR
21-6	37S, 04W	21	SH	37	CABLE	LSR, DDR, UTA	Activity, UR
27-1	37S, 04W	27	SH	8	CABLE	LSR	Activity, UR
27-2	37S, 04W	27	SH	11	CABLE	UTA	Activity, UR
27-3	36S, 04W	27	SH	7	HELICOPTER	UTA	Activity, UR
27-4	36S, 04W	27	SH	33	HELICOPTER	UTA	Activity, UR
27-5	37S, 04W	27	SH	9	CABLE	LSR	Activity, UR
29-1A	36W, 03W	29	SH	39	CABLE	UTA	Activity, UR
29-1B	36W, 03W	29	RRT	1	CABLE	RR	Activity, UR
31-1	36W, 03W	31	SH	40	CABLE	UTA	Activity, UR
31-2	36W, 03W	31	SH	20	HELICOPTER	LSR, UTA	Activity, UR
31-3	36W, 03W	31	SH	71	CABLE/HELICOPTER	LSR	Activity, UR
31-4	36W, 03W	31	SH	95	CABLE/HELICOPTER	LSR	Activity, UR
35-1	37S, 04W	35	SH	47	HELICOPTER	LSR, UTA	Activity, UR

**SH** = Selection Harvest   **LSR** = Late-Successional Reserve   **UTA** = Uneven-aged Treatment   **RR** = Riparian Reserve  
**RRT** = Riparian Reserve Thin   **Activity** = Pile & Burn tree tops and limbs to reduce fuels   **DDR** **TPCC** = District Designated Reserve   **Activity** = Pile & Burn tree tops and limbs to reduce fuels   **UR** = Understory Reduction

## Appendix G: Action Alternatives for Commercial Units

## G-1 Alternative 2

Table G-1

Alternative 2								
Unit	Acres	LUA	Logging System	Commercial Treatment	Target Relative Density	Target Basal Area	Canopy Cover %	Associated Non-Commercial Treatment
1-1	16	UTA	C	SH	40 – 45	130 – 150	50 – 60	Activity, UR
1-2	20	UTA	C	SH	40 – 45	130 – 150	50 – 60	Activity, UR
3-1	7	UTA	C	SH	40 – 45	130 – 150	50 – 60	Activity, UR
5-1	26	UTA	H	SH	40 – 45	130 -150	50 – 60	Activity, UR
5-2	24	UTA	C	SH	40 – 45	130 – 150	50 – 60	Activity, UR
5-3	21	UTA	C	SH	40 – 45	160 – 180	60	Activity, UR
5-4	40	UTA	C	SH	40 – 45	160 -180	60	Activity, UR
6-1	24	UTA	H	SH	40 – 45	130 – 150	50 – 60	Activity, UR
7-1	79	UTA	H	SH	40 – 45	120 – 160	40 – 60	Activity, UR
8-1	20	UTA	C	SH	40 – 45	140 – 160	50 – 60	Activity, UR
8-2	21	UTA	G	SH	40 – 45	140 – 160	50 – 60	Activity, UR
9-1	8	UTA	C	SH	40 – 45	140 – 160	50 – 60	Activity, UR
9-2A	18	UTA	C	SH	40 – 45	140 – 160	50 – 60	Activity, UR
9-2B	2	RR	C	RRT	40 – 45	120 – 160	40 – 60	Activity, UR
9-3	19	LSR, UTA	C	SH	40 – 45	160 -180	60	Activity, UR
9-4	5	UTA	C	SH	40 – 45	120 -160	40 – 60	Activity, UR
9-5	49	UTA	C	SH	40 – 45	130 – 150	30 – 50	Activity, UR
11-1	54	LSR	C	SH	40 – 45	120 – 160	40 – 60	Activity, UR
11-2	4	LSR	C	SH	40 – 45	160-180	60	Activity, UR
12-1	33	UTA	H	SH	40 – 45	120-180	40 – 60	Activity, UR
13-1	209	UTA	C/G	SH	40 – 45	120-180	40 – 60	Activity, UR
14-2	66	UTA, LSR	H	SH	40 – 45	120 – 180	40 – 60	Activity, UR
15-1	20	UTA	H	SH	40 – 45	160-180	60	Activity, UR
15-2	2	UTA, DDR	H	SH	40 – 45	100 – 120	40	Activity, UR
17-1	25	UTA	C	SH	40 – 45	160 -180	60	Activity, UR
17-2A	16	UTA	C	SH	40 – 45	120 -180	40 – 60	Activity, UR
17-2B	4	RR	C	RRT	40 – 45	120-180	40 – 60	Activity, UR
17-3	3	UTA	C	SH	40 – 45	160-180	60	Activity, UR
17-4	105	UTA	C	SH	40 – 45	160-180	60	Activity, UR
18-1	55	UTA	C/H	SH	40 – 45	120 – 180	40 – 60	Activity, UR

21-1	5	LSR	C	SH	40 – 45	160-180	60	Activity, UR
21-2	18	LSR	C	SH	40 – 45	160-180	60	Activity, UR
21-3	30	LSR	C	SH	40 – 45	160-180	60	Activity, UR
21-4	21	UTA	C	SH	40 – 45	140 – 160	50 – 60	Activity, UR
21-5	35	UTA	C	SH	40 – 45	140 -160	50 – 60	Activity, UR
27-1	8	LSR	C	SH	40 – 45	160 -180	60	Activity, UR
27-2	11	UTA	C	SH	40 – 45	120-10	40 – 60	Activity, UR
27-3	7	UTA	H	SH	40 – 45	140-160	50 – 60	Activity, UR
27-4	33	UTA	H	SH	40 – 45	140-160	50 – 60	Activity, UR
29-1A	39	UTA	C	SH	40 – 45	140-160	50 – 60	Activity, UR
29-1B	1	RR	C	RRT	40 – 45	120-160	40 – 60	Activity, UR
31-1	40	UTA	C	SH	40 – 45	120-160	40 – 60	Activity, UR
31-2	20	UTA	C/H	SH	40 – 45	140-160	50 – 60	Activity, UR
31-3	71	LSR	C/H	SH	40 – 45	120-160	40 – 60	Activity, UR
35-1	47	LSR, UTA	H	SH	40 – 45	120-160	40 – 60	Activity, UR

**SH** = Selection Harvest   **LSR** = Late-Successional Reserve   **UTA** = Uneven-aged Treatment   **RR** = Riparian Reserve   **RRT** = Riparian Reserve Thin   **DDR TPCC**= District Designated Reserve   **Activity** = Pile & Burn tree tops and limbs to reduce fuels   **UR** = Understory Reduction

## G-2 Alternative 3

Table G-2

Alternative 3								
Unit	Acres	LUA	Logging System	Commercial Treatment	Target Relative Density	Target Basal Area	Canopy Cover %	Associated Non-Commercial Treatment
1-1	16	UTA	C	SH	30 – 40	100-150	30 – 50	Activity, UR
1-2	20	UTA	C	SH	30 – 40	100-150	30 – 50	Activity, UR
3-1	7	UTA	C	SH	30 – 40	120-160	40 – 60	Activity, UR
5-1	26	UTA	H	SH	30 – 40	120-160	40 – 60	Activity, UR
5-2	24	UTA	C	SH	30 – 40	120-160	40 – 60	Activity, UR
5-3	21	UTA	C	SH	30 – 40	160 -180	60	Activity, UR
5-4	40	UTA	C	SH	30 – 40	160 -180	60	Activity, UR
5-5	24	LSR	C	SH	40 – 45	160 -180	60	Activity, UR
6-1	79	UTA	H	SH	30 – 40	120-160	40 – 60	Activity, UR
7-1	20	UTA	H	SH	30 – 40	120-160	40-60	Activity, UR
8-1	21	UTA	C	SH	30 – 40	120-160	40 – 60	Activity, UR
8-2	18	UTA	G	SH	30 – 45	120-160	40 – 60	Activity, UR
9-1	8	UTA	C	SH	30 – 40	120-160	40 – 60	Activity, UR
9-2A	19	UTA	C	SH	30 – 40	120-160	40 – 60	Activity, UR
9-2B	5	RR	C	RRT	40 – 45	80-100	30 <	Activity, UR
9-3	19	LSR, UTA	C	SH	40 – 45	160 -180	60	Activity, UR
9-4	5	UTA	C	SH	30 – 40	120-160	40 – 60	Activity, UR
9-5	49	UTA	C	SH	40 – 45	120-160	40 – 60	Activity, UR
11-1	33	LSR	C	SH	40 – 45	120-160	40 – 60	Activity, UR
11-2	3	UTA	H	SH	40 – 45	120-160	40 – 60	Activity, UR
12-1	33	UTA	H	SH	30 – 40	120-150	40 – 50	Activity, UR
13-1	209	UTA	C/G	SH	30 – 40	120-150	40 – 50	Activity, UR
14-1	20	LSR, UTA	H	SH	40 – 45	150-160	50 – 60	Activity, UR
14-2	66	LSR,	H	SH	30 – 45	120-160	40 – 60	Activity, UR

		UTA						
15-1	20	UTA	C	SH	40 – 45	160 -180	60	Activity, UR
15-2	2	UTA	C	SH	40 – 45	130 – 150	40 – 60	Activity, UR
15-3	23	LSR	C	SH	40 – 45	160 -180	60	Activity, UR
17-1	25	UTA	C	SH	40 – 45	160-180	60	Activity, UR
17-2A	16	UTA	C	SH	40 – 45	120-180	40 – 60	Activity, UR
17-2B	4	RR	C	RRT	40 – 45	120-180	40 – 60	Activity, UR
17-3	3	UTA	C	SH	40 – 45	120-160	40 – 60	Activity, UR
17-4	105	UTA	C	SH	40 – 45	160 -180	60	Activity, UR
17-5	39	LSR	H	SH	40 – 45	160 -180	60	Activity, UR
17-7	21	LSR	H	SH	40 – 45	120-160	40 – 60	Activity, UR
18-1	55	UTA	C	SH	30 – 40	100-160	30 – 60	Activity, UR
20-1	19	LSR	H	SH	40 – 45	160 -180	60	Activity, UR
21-1	5	LSR	C	SH	40 – 45	160 -180	60	Activity, UR
21-2	18	LSR	C	SH	40 – 45	160 -180	60	Activity, UR
21-3	30	LSR, UTA	C	SH	40 – 45	120-160	40 – 60	Activity, UR
21-4	21	UTA	C	SH	30 – 40	120-160	40 – 60	Activity, UR
21-5	35	UTA	C	SH	30 – 40	120-160	40 – 60	Activity, UR
21-6	37	LSR, DDR, UTA	C	SH	40 – 45	120-160	40 – 60	Activity, UR
27-1	8	LSR	C	SH	40 – 45	120-160	40 – 60	Activity, UR
27-2	11	UTA	C	SH	30 – 40	100-160	30 – 60	Activity, UR
27-3	7	UTA	H	SH	30 – 40	120-160	40 – 60	Activity, UR
27-4	33	UTA	H	SH	30 – 40	120-160	40 – 60	Activity, UR
27-5	9	LSR	C	SH	40 – 45	160 -180	60	Activity, UR
29-1A	39	UTA	C	SH	30 – 40	120-160	40 – 60	Activity, UR
29-1B	1	RR	C	RRT	30 – 40	80-120	30	Activity, UR
31-1	40	UTA	C	SH	40 – 45	100-160	30 – 60	Activity, UR
31-2	20	LSR, UTA	C	SH	30 – 45	120-160	40 – 60	Activity, UR
31-3	71	LSR	C/H	SH	40 – 45	120-160	40 – 60	Activity, UR
31-4	95	LSR	C/H	SH	40 – 45	120-160	40 – 60	Activity, UR
35-1	47	LSR, UTA	H	SH	30 – 45	120-160	40 – 60	Activity, UR

**SH** = Selection Harvest   **LSR** = Late-Successional Reserve   **UTA** = Uneven-aged Treatment   **RR** = Riparian Reserve   **RRT** = Riparian Reserve Thin   **Activity** = Pile & Burn tree tops and limbs to reduce fuels   **DDR** = District Designated Reserve   **UR** = Understory Reduction

### G-3 Alternative 4

Table G-3

Alternative 4								
Unit	Acres	LUA	Logging System	Commercial Treatment	Target Relative Density	Target Basal Area	Canopy Cover %	Associated Non-Commercial Treatment
1-1	16	UTA	C	SH	20 – 30	80-120	30 – 40	Activity, UR
1-2	20	UTA	C	SH	20 – 30	80-120	30 – 40	Activity, UR
3-1	7	UTA	C	SH	20 – 30	80-120	30 – 40	Activity, UR

5-1	26	UTA	H	SH	20 – 30	80-120	30 – 40	Activity, UR
5-2	24	UTA	C	SH	20 – 30	80-120	30 – 40	Activity, UR
5-3	21	UTA	C	SH	40 – 45	160 -180	60	Activity, UR
5-4	40	UTA	C	SH	40 – 45	160 -180	60	Activity, UR
5-5	24	LSR	C	SH	20 – 45	150-160	50 – 60	Activity, UR
6-1	79	UTA	H	SH	20 – 30	80-120	30 – 40	Activity, UR
7-1	20	UTA	H	SH	20 – 30	80-120	30 – 40	Activity, UR
8-1	21	UTA	C	SH	20 – 30	80-120	30 – 40	Activity, UR
8-2	18	UTA	G	SH	40 – 45	160 -180	60	Activity, UR
9-1	2	UTA	C	SH	20 – 30	100-120	30 – 40	Activity, UR
9-2A	19	UTA	C	SH	20 – 30	100-120	30 – 40	Activity, UR
9-2B	5	RR	C	RRT	20 – 30	80-100	30	Activity, UR
9-3	49	LSR, UTA	C	SH	40 – 45	160 -180	60	Activity, UR
9-4	54	UTA	C	SH	40 – 45	160 -180	60	Activity, UR
9-5	4	UTA	C	SH	40 – 45	160 -180	60	Activity, UR
11-1	33	LSR	C	SH	20 – 45	160 -180	60	Activity, UR
11-2	3	UTA	H	SH	20 – 45	80-120	30 – 40	Activity, UR
12-1	33	UTA	H	SH	20 – 30	80-120	30 – 40	Activity, UR
13-1	209	UTA	C/G	SH	20 – 30	80-120	30 – 40	Activity, UR
14-1	20	LSR, UTA	H	SH	40 – 45	150-160	50 – 60	Activity, UR
14-2	66	LSR, UTA	H	SH	20 – 45	100-150	30 – 50	Activity, UR
15-1	20	UTA	C	SH	40 – 45	160 -180	60	Activity, UR
15-2	2	UTA	C	SH	40 – 45	160 -180	60	Activity, UR
15-3	23	LSR	C	SH	40 – 45	160 -180	60	Activity, UR
17-1	25	UTA	C	SH	40 – 45	160 -180	60	Activity, UR
17-2A	16	UTA	C	SH	20 – 30	80-120	40	Activity, UR
17-2B	4	RR	C	RRT	20 – 30	80-120	40	Activity, UR
17-3	3	UTA	C	SH	20 – 30	80-120	40	Activity, UR
17-4	105	UTA	C	SH	40 – 45	160-180	60	Activity, UR
17-5	39	LSR	H	SH	40 – 45	160-180	60	Activity, UR
17-7	21	LSR	H	SH	40 – 45	160 -180	60	Activity, UR
18-1	55	UTA	C	SH	20 – 30	100-150	30 – 50	Activity, UR
20-1	19	LSR	H	SH	40 – 45	160 -180	60	Activity, UR
21-1	5	LSR	C	SH	40 – 45	160 -180	60	Activity, UR
21-2	18	LSR	C	SH	40 – 45	160 -180	60	Activity, UR
21-3	30	LSR	C	SH	40 – 45	160 -180	60	Activity, UR
21-4	21	UTA	C	SH	20 – 30	100-150	30 – 50	Activity, UR
21-5	35	UTA	C	SH	20 – 30	100-150	30 – 50	Activity, UR
21-6	37	LSR, DDR, UTA	C	SH	20 – 45	120-160	40 – 60	Activity, UR
27-1	8	LSR	C	SH	35 -40	160 -180	60	Activity, UR
27-2	11	UTA	C	SH	20 – 30	80-120	30 – 40	Activity, UR
27-3	7	UTA	H	SH	20 – 30	80-120	30 – 40	Activity, UR
27-4	33	UTA	H	SH	20 – 30	80-120	30 – 40	Activity, UR
27-5	9	LSR	C	SH	20 – 45	-160	50 – 60	Activity, UR
29-1A	39	UTA	C	SH	20 – 30	80-120	30 – 40	Activity, UR
29-1B	1	RR	C	RRT	20 – 30	80-100	30	Activity, UR
31-1	40	UTA	C	SH	20 – 30	80-120	30 – 40	Activity, UR
31-2	20	LSR, UTA	C	SH	20 – 45	100-160	30 – 60	Activity, UR

31-3	71	LSR	C/H	SH	20 – 45	120-160	40 – 60	Activity, UR
31-4	95	LSR	C/H	SH	20 – 45	120-160	40 – 60	Activity, UR
35-1	47	LSR, UTA	H	SH	20 – 45	120-160	40 – 60	Activity, UR
<b>SH</b> = Selection Harvest <b>LSR</b> = Late-Successional Reserve <b>UTA</b> = Uneven-aged Treatment <b>RR</b> = Riparian Reserve <b>Activity</b> = Pile & Burn tree tops and limbs to reduce fuels <b>DDR TPCC</b> = District Designated Reserve <b>Activity</b> = Pile & Burn tree tops and limbs to reduce fuels <b>UR</b> = Understory Reduction								

## Appendix H: Fuels Supporting Information

### H-1 Fire Resistance

#### Analytical Assumptions Fire Behavior Input Background

The Nexus 2.1 crown fire assessment software developed by Scott and Reinhardt (2014) and available from Pyrologix <http://pyrologix.com/downloads/>, is a useful tool to compare crown fire potential for different forest stands, and was used to compare the effects of alternative proposed actions for combined commercial, small-diameter, and prescribed fire actions on crown fire potential. Nexus links separate models of surface and crown fire behavior, to calculate indices of relative crown fire potential (e.g., CI and TI). The BLM used a standard approach to derive a relative resistance to stand-replacement fire for Mixed relative resistance to stand-replacing fire categories, based on review of typical wind speeds (see weather discussion below) and CI and TI. The rating was as follows: CI <20 mph = Low; CI 20-30 mph = Moderate; CI >30 mph = High, unless TI <30 mph, then = Moderate. A CI greater than a TI, indicates that the stand would support a crown fire entering from adjacent areas at the given CI, however crown fire initiation within the stand is not likely, until TI wind speed occurs.

CI (mph): “The open (20 foot) wind speed at which active crown fire is possible for the specified fire environment” (Scott and Reinhardt 2001). Crowning index can be used to compare relative susceptibility of stands to crown fire. An increase in the CI corresponds to a decreased likelihood of an active crown fire moving through a stand, particularly one impacting a given stand from an adjacent area. Crowning index provides an index for relative comparison-Fule et al. (2004) note, “...it would be unrealistic to expect that CI values are precise estimates of the exact windspeed at which any real crownfire will be sustained. However, it is reasonable to compare CI values across space and time to assess crown fire susceptibility in relative terms.”

Torching index (mph): “The open (20-foot) wind speed at which crown fire activity can initiate for the specified fire environment” (Scott and Reinhardt 2001). An increased torching index would result in a decreased likelihood of torching initiating within the stand. Torching events within a stand can lead to an active crown fire depending on weather, surface, and canopy fuel conditions. As with CI, torching index may be interpreted as the relative susceptibility forests may have to tree torching also called “passive crown fire”.

#### H-1.1 Wildland Fuel Profile Continuity

Canopy base height and surface fire intensity are key variables (along with the moisture content of leaves and branches) in determining the transition between surface fire to torching or passive crown fire. Canopy bulk density (or connectivity) then differentiates between passive and active crown fire (VanWagner 1977).

### H-2 Canopy Fuels (Canopy Connectivity [Canopy Cover and Canopy Bulk Density] and Large Trees)

Canopy fuels consist of live and dead tree branches and crowns. Tree crowns can be separated or

interlocking (i.e., canopy connectivity) and dense or sparse. Large trees, particularly of fire-resistant species, are an important component of fire-resistant stand structure (Martinson and Omi 2013; USDI BLM 2016a, pp. 243, 252).

A necessary input into NEXUS is available canopy fuel. The BLM used a value of 6 tons/acre for all model runs, based on estimates for Douglas-fir and Sierra Nevada mixed conifer, as presented by Scott and Reinhard (2002).

### **H-3 Ladder Fuels (Canopy Base Height)**

Ladder fuels typically consist of small trees and tall shrubs that span from the forest floor to the overstory canopy. The vertical arrangement of fuels refers to the continuity of fuels from the ground up through the overstory canopy, termed as CBH. Low vertical separation between surface and canopy fuels, or low CBH, is the most common vector for surface fire to transition into crown fire and is commonly identified as the ladder fuel component of the Wildland fuel profile. Canopy base height supplies information used in fire behavior models, to determine the point at which a surface fire would transition to a crown fire. This CBH describes the lowest point in a stand where there is sufficient available fuel ( $>0.25$  in diameter) to propagate fire vertically through the canopy. Specifically, CBH is defined as the lowest point at which the canopy bulk density is  $0.012 \text{ kg m}^{-3}$ .

Removal of ladder fuels increases vertical and horizontal separation or discontinuity in the fuel profile and reduces the probability of surface fire flames ascending into and igniting tree crowns and subsequently decrease the likelihood of tree torching and crown fire initiation (Scott and Reinhard 2001; Van Wagner 1977). Application of prescribed fire, via underburning, can further raise CBH and reduce ladder fuels.

### **H-4 Surface Fuels (Surface Fire Behavior Fuel Models)**

Surface fuels consist of grasses, shrubs, small trees, litter, and woody material on the forest floor and up to six feet from the surface (Scott and Burgan 2005) and are usually measured in tons per acre. Fine surface fuels consist of small diameter surface fuels ( $<3$  inches), litter, grass, and shrubs and would ignite easily and burn rapidly at times producing high rates of spread and high flame lengths. Wildfires in light surface fuels react quickly to diurnal changes in relative humidity and wind. Large surface fuels consist of larger ( $>3$  inches in diameter) limbs, down woody debris, logs, and stumps that ignite and burn more slowly. Large surface fuels are more influenced by seasonal weather patterns and less influenced by changes in daily wind and moisture. Fire Behavior Fuel Models (FBFM) (Scott and Burgan 2005) are used to represent surface fuels and estimate potential surface fire behavior flame lengths and rates of spread under various environmental conditions (fuel moisture and wind scenarios). Surface fire behavior has a direct effect on fire severity, mortality, suppression tactics, and the initiation of crown fire. Rates of spread and flame lengths are key components affecting fire size and resistance to control. Surface fire behavior has a direct effect on fire severity, mortality, suppression tactics, and the initiation of crown fire, lower surface fuel loading produces lower flame lengths.

Handpile burning primarily reduces ladder fuels and does not reduce surface fuel loading as much as underburning (Figure H-1) thus changes to surface fuels are not pronounced. Prescribed underburning is the most effective treatment at reducing surface fuels (Prichard et al. 2010, Figure H-1). In areas with high crown fire potential, or low resistance to replacement fire and high fuel loading, it is necessary to reduce ladder fuels, prior to introducing prescribed fire (i.e., underburning), in order to minimize mortality to the residual stand (Martinson and Omi 2013). Reducing ladder fuels would make it possible to use prescribed fire as a tool to reduce surface fuels (underburning) and increase CBH in these stands.

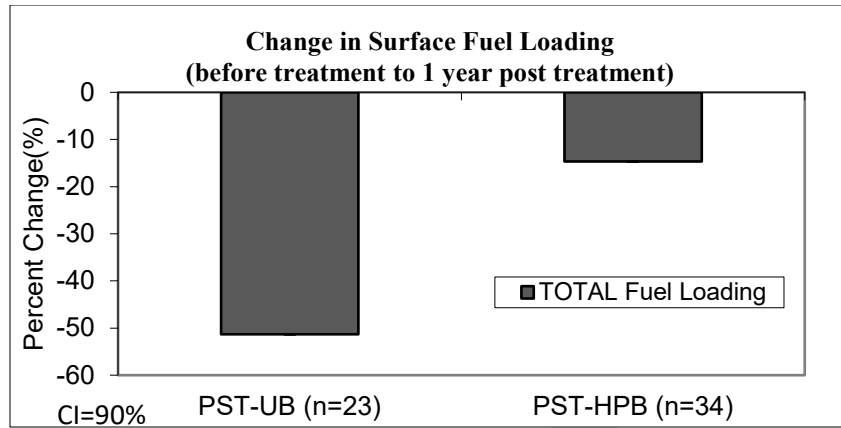


Figure H-1. Average Percent Change in Total Surface Fuel Loading from Pre-Treatment to one year After Underburning (PST-UB) and One Year After Handpile Burning (PST-HPB). Error bars indicate confidence interval of 90 percent and n indicates number of plots sampled. Data was collected on Medford District BLM-administered lands.

Figures H-2 and H-3 below illustrate predicted flame length and rate of spread for common standard fire behavior fuel models (see Table 50 for fuel model descriptions).

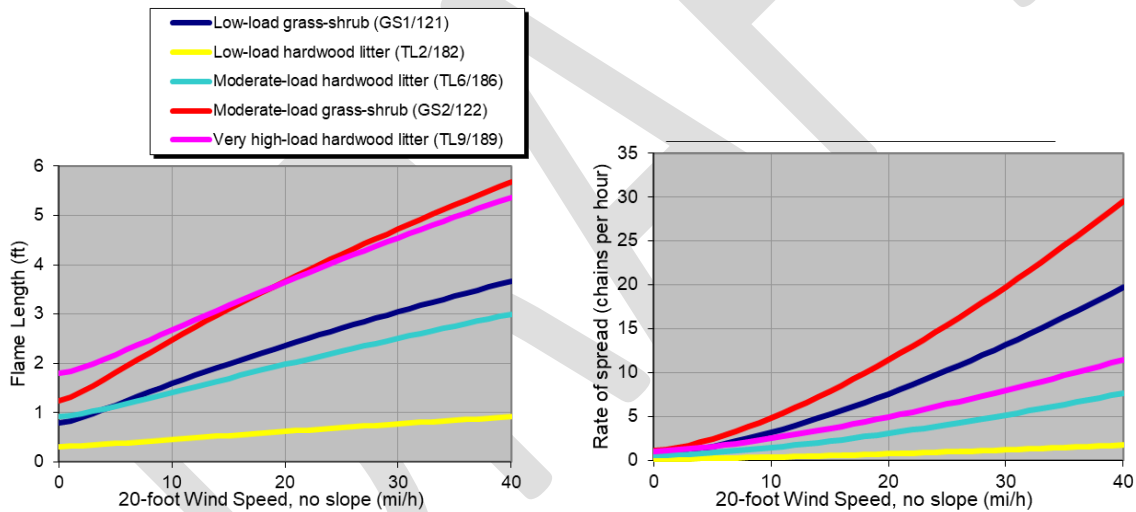


Figure H-2. Comparison of Flame Length (FL) and Rate of Spread Under Dry Fuel Moisture Scenario. (Fine fuels – 1hr@6%, 10hr@7%, and 100hr@8%; herbaceous@60%; and woody @90%) for common mixed-conifer woodland and non-conifer fuel

models from low to high load with 30-50% canopy cover using CompareModel495 spreadsheet available from <http://pyrologix.com/>.

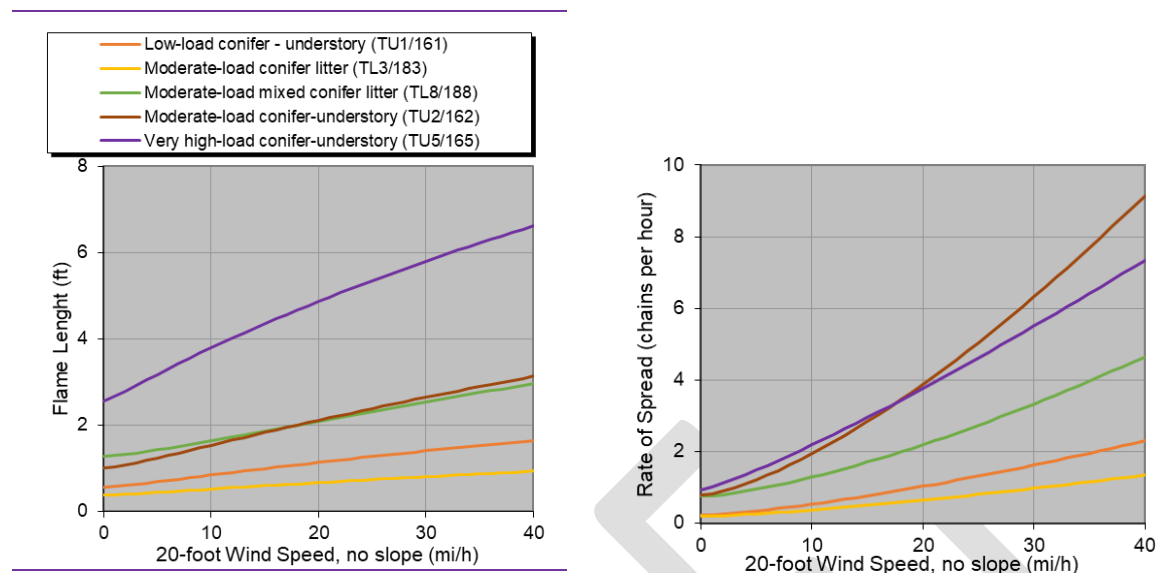


Figure H-3. Comparison of Flame Length (FL) and Rate of Spread Under Dry Fuel Moisture Scenario. (Fine fuels – 1hr@6%, 10hr@7%, and 100hr@8%; herbaceous@60%; and woody @90%) for common conifer forested fuel models from low to high loading. With 30-50% canopy cover using CompareModel495 spreadsheet available from <http://pyrologix.com/>.

## H-5 Fuel Heterogeneity

There is considerable evidence that many historic frequent-fire dry forests were comprised of a fine-scale patchy composition of openings and clumps (Churchill et al. 2013; Hessburg et al. 2015; Larson and Churchill 2008; Taylor 2010; Larson and Churchill 2012; Lydersen et al. 2013; Churchill et al. 2017; Pawlikowski et al. 2019), creating vegetation or fuel patterns representative of frequent-fire dry forest low-mixed fire regime fuel loading (USDI BLM 2016a, pp. 225-226). Among the many ways that variable and complex fine-scale heterogeneous patterning contributes toward stand resistance to replacement fire are heterogeneous fuel profiles which may inhibit the spread of crown fires, patchy regeneration of diverse species to respond to disturbance, and variability in litter fall and surface fuel accumulations.

Reference conditions provide a robust guide for management targets related to fine-scale spatial patterning attributed to frequent low-mixed severity fire dry forest. As Churchill and other (2017) eloquently explained “the rationale for using reference conditions to guide management targets in dry forests is that historical forest conditions persisted through centuries of frequent disturbances and significant climatic fluctuation while sustaining native biodiversity and other ecosystem services.”

Reference conditions from western sites with low-mixed severity fire regimes provide valuable context for southwestern Oregon to inform ecological relevant fine-scale patterning of forests functioning under a frequent low- mixed severity wildfire disturbance regime. At a mixed ponderosa pine-California black oak (*Quercus kelloggii*) forest in southern Cascades, California, akin to the drier gradients of southwestern Oregon, Pawlikowski and others (2019) found that gaps comprised less than 30 percent of the approximately 2.5 acres (1-hectare) plots, in other words the maximum area in gaps was approximately 0.75 acres. Gaps were identified using an inter-tree distance algorithm for empty space greater than approximately 30 feet (9 meters). Taylor (2010) quantified spatial patterning at the same site and found average gap size to be 0.14 acres (585m<sup>2</sup>), with a range in sizes from 0.02 – 0.6 acres (100 to

2400 m<sup>2</sup>), similar to results from other ponderosa pine forests 0.05 – 1.6 acres (0.02-0.64 hectare) (Cooper 1960; White 1985; Harrod et al. 1999; Taylor 2004; Youngblood et al. 2004). Gaps were defined as areas with contiguous canopy cover less than 33 percent.

An examination of historic (1929) stand structure by Lydersen and others (2013) at a mixed-conifer site in central Sierra Nevada, California, representing the more productive end of gradients in southwestern Oregon, found that at the 4-hectare plot scale (approximately 10 acres) gaps occupied approximately 35 percent of plot areas. In the 1929 forest, gaps were commonly smaller than 0.12 acres (0.05 hectares) and ranged from 0.02 – 1 acre (0.01 – 0.4 hectare). Canopy cover averaged 45 percent for trees greater than (4-inch DBH) (10 cm) and 36 percent for trees greater than 10-inch DBH (25 cm).

Skinner (1995) examined aerial photos from 1944 three north -western Siskiyou County, California mixed evergreen forested watersheds, representing similar climate and vegetation as southwestern Oregon. In 1944, these watersheds had had minimal human disturbance, except for fire exclusion, which became effective on a large scale in the region around 1941 (Atzet 1996). Taylor estimated that in 1944 openings occupied approximately 26 percent of the area. The openings were defined as 0.1 hectares or larger occupied by vegetation no greater than 1/3 of the surrounding stand and the mean size was approximately 1.2 acres (0.48 hectare), while the median was 1.75 acres (0.71 hectare).

In a report to OWEB Metlen and others (2013) found that gaps capable of regenerating pine have disappeared, based on four 3-ha stem maps in the Ashland watershed. In the stand reconstructions (to 1865), they found that regenerating patch sizes averaged between 0.1-0.3 acres. In the four plots in the Ashland watershed, Metlen and others (2013) found the distribution of tree cluster sizes to be very similar as compared to patterns found throughout the Pacific Northwest by Churchill and others (2017, Appendix 3a.2), and markedly different from contemporary cluster size distributions. In summary, gap sizes from reference conditions reflective of low to mixed severity fire regimes were less than 2 acres and generally less than 1 acre.

Recent characterization of fine-scale spatial patterning for reference conditions has focused on characterizing tree clusters, rather than delineating and identifying gaps, which can be challenging, especially in open forest stands. In stem-maps of reference conditions, canopy gaps are typically in complex ameba-like shapes (Pawlikowski et al. 2019; Churchill et al. 2013; Lydersen et al. 2013; Metlen et al. 2013) and work still needs to be done to quantify openings in reference patterns to provide more explicit guidelines for creating relevant functional openings in implementation.

## **H-6 Maintenance**

Between 2008 to 2022, 274 previously treated units, totaling approximately 9,000 acres interacted with wildfire on the Medford District, either being burned by wildfire or providing areas of safe and effective response opportunity. In those units that burned, surface fire was the predominant fire type in 68 percent of all previously treated units. In a sub-set of these treatments intersected by recent large wildfires (2013-2018), it took multiple days for fire to travel through 58 percent of treated units, average unit size was 35 acres (USDI BLM 2021b). This slowed rate of fire spread illustrates moderated fire behavior (i.e., no stand replacement fire) which presents favorable conditions for wildfire containment (Finney et al. 2009). Local monitoring of fuel treatment wildfire intersections shows that 61 percent of units treated contribute toward wildfire control. Treatments were found to be effective in some areas for up to 14 years (USDI BLM 2021b, Figure 14), and up to 17 years in fuel treatments intersected in the Rum creek wildfire (2022), and up to 22 years as found by Lydersen and others (2014).

Vegetation growth is dependent on a variety of factors and variables (EA Section 3.3.6)  
In areas thinned to open canopy conditions (e.g., <40 percent canopy cover), regeneration of a diverse

understory is expected (Wayman and North 2007) and could contribute toward more rapid live fuel loading accumulation or shift fuel models from moderate timber litter to moderate timber understory or grass-shrub in the moderate-term (10-30 years) (USDI BLM 2022b, Agee et al. 2000). While this shift in surface fuel type could increase rates of surface fire spread from low-load surface fuel types (Figures H-2 and H-3), these rates of spread would be approximately 5.75 times less than those presented by crown fires in stands with greater than 50 percent cover under 10 mph 20-foot windspeeds (Figure H-4).

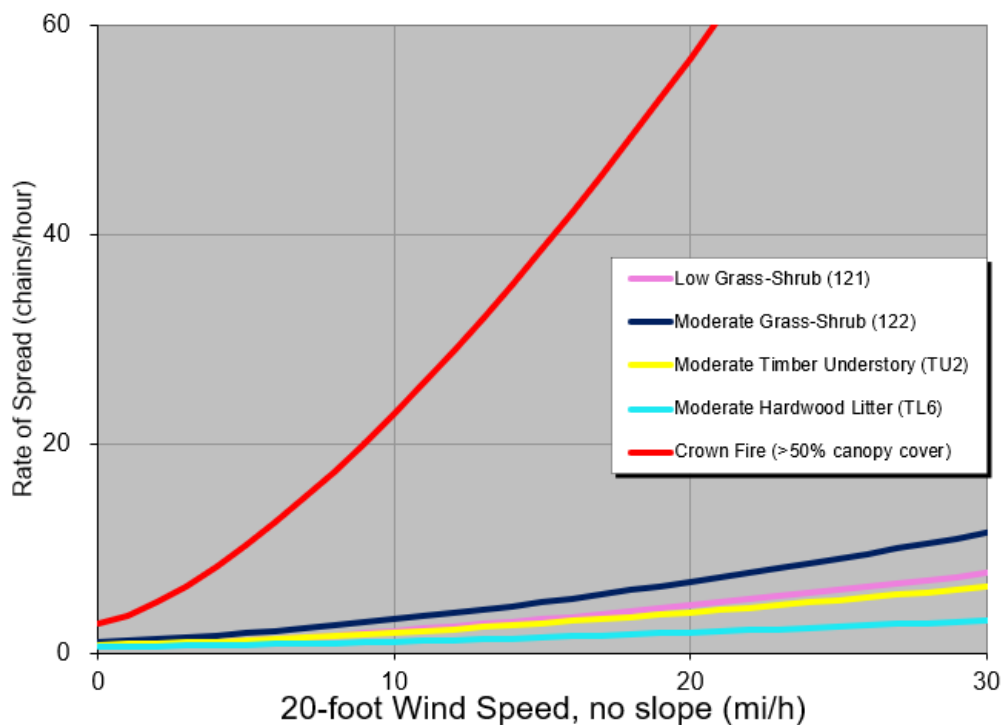


Figure H-4. Comparison of Fire Rate of Spread Under Dry Fuel Moisture Scenarios (Fine fuels – 1hr@6%, 10hr@7%, and 100hr@8%; herbaceous@60%; and woody @90%) for low load timber litter surface fuel model (turquoise), low load grass-shrub (pink), moderate load surface fuel models (grass-shrub (dark blue) and timber-understory (yellow)) and crown fire (red) in stands with greater than 50% canopy cover using CompareModel495 spreadsheet available from <http://pyrologix.com/>.

## H-7 Weather

Fire behavior was modeled under 90<sup>th</sup> percentile fire weather fuel moisture conditions (Table H-1) fuel moisture and other weather values were determined from analysis SQUAW Remote Automated Weather Station (RAWS) data representing eight fire seasons (July to October 2000-2008). Based on analysis of the RAWS data, approximately 90 percent of the recorded 10-minute average 20-foot winds and wind gusts are less than 15 mph. SQUAW RAWS is notorious for capturing high wind speeds in the Applegate and in the Rogue Basin, in general. During this analysis period, approximately 10 percent of average windspeeds and gusts exceeded 20 mph, reaching up to 36 mph and 53 mph, respectively. For this analysis, a 20 foot windspeed of 15 mph was used for modeling.

Per NEXUS recommendations and guidance for estimating wind speeds in the Fire Behavior Field Reference Guide (NWCG 2021), the BLM applied a standard wind adjustment factor of 0.1 to canopy cover greater than 50 percent, 0.15 for canopy cover of 30-50 percent, and 0.2 for canopy cover 20-30 percent. For canopy cover >50 percent fine dead fuel (or 1 hour fuel) moisture was adjusted to 7 percent to reflect sheltering effect on fine dead fuel moisture (Rothermel 1983; NWCG 2021, Nexus).

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Table H-1. Dry (90<sup>th</sup> Percentile) Fuel Moisture Scenario Inputs for Dead and Live Fuels. These Values are Consistent with an 80 °F Day.

Fuel Type	Dead fuel Size class/ Live Fuel Type	Percent Moisture
Dead Fuels	0 – 0.25 inch (1 hr.)	5
	0.25 – 1.0 inch (10 hr.)	6
	1.0 – 3.0 inch (100 hr.)	8
Live Fuels	Live Woody	75
	Live Herbaceous	35

## H-8 Topography

Slope is an important input for fire behavior predictions. Slope is variable across the Treatment Area. The mean slope of 50 percent was used in model predictions.

## H-9 Resistance to Other Disturbance

Halofsky et al (2016) studied adaptation to climate change and found that “in a drought-prone and fire-prone region, such as southwestern Oregon, reducing stand density and reintroducing characteristic low and mixed severity fire are primary actions for increasing forest resilience to climate change. Trees that are less vigorous and slower growing are more susceptible to attack because stressed trees lack a sufficient amount of tree resin to eject attacking beetles (Fettig 2007). Reducing stand density with thinning can increase water availability and tree growth and vigor by reducing competition. Decreases in forest stand density, coupled with hazardous fuels treatment, can also increase forest resilience to wildfire” (Halofsky et. al 2016, pp. 7-8). Thinning and prescribed fire treatments can also “both reduce the risk of high-severity fire and mitigate the effects of drought” (Halofsky et. al 2016, p. 10). Similarly, Hood and others (2015) found that et al performed a 15-year study on the growth responses to from radial and stand-level thinning. They found that 15 years after thinning residual legacy ponderosa pine and Jeffrey pine trees within stand thinning treatments had higher growth rates and higher resilience to drought compared to similar trees in unthinned stands, suggesting thinning treatments can reduce drought-induced mortality (Hood et al 2018, pp. 5-6).

## H-10 Affected Environment

### *Fire Activity – current and historic*

Recently (2000 – 2018), most (77 percent) wildfire ignitions within the Rogue Gold project area have been human caused (Map X). Lightening caused less than a quarter of all wildfire ignitions. There has been a total of 188 wildfire ignitions in the area, since 2000. (Table H-2)

Table H-2: Wildfire ignitions (2000-2018) by cause and jurisdictional ownership in the project planning area. Data is from Oregon Department of Forestry (ODF).

Ownership and Fire Size Class	Human		Lightning	
	Number of Fires	% of Total	Number of Fires	% of Total
BLM	19	10%	22	12%
Non-BLM	125	66%	22	12%
Grand Total	144	77%	44	23%

Within the project area, landscape patterns of wildfire size distribution and occurrence have shifted overtime (Map X, Table X-3). Before the fire suppression and intensive management practices of the

twentieth century, the project area would have been characterized by high frequency, low severity fires that would have reduced fuel loadings and maintained a mosaic of open stand conditions different from what we see today. “Historically, frequent low- to mixed- severity fire interacted with the complex landscape, vegetation, and climate to create and maintain patchy, mixed seral stages of shrubland, woodland, and mixed conifer/hardwood forests, in both open and closed conditions” (USDI BLM 2016a, p. 225).

Despite frequent fire activity effectively ending in 1850 in southwest Oregon (Metlen et al. 2018), fire records from 1900 to 1939, still display considerable fire activity, relative to more recent time periods. Between 1900 and 1939, the total number of recorded fires greater than 10 acres, was approximately two times greater than any recent period between 1940 to present (Figure A-2, Table H-3). The total wildfire acres between 1940 and 1979 was about 25 percent of acres burned between 1900 and 1939, and wildfire acres between 1980 and 2018 account for approximately 6 percent of the acres between 1900 and 1939. For wildfires greater than 10 acres, average wildfire size has also decreased over time (Table H-3). Fires burning between 1900-1939, were prior to widespread use of mechanized equipment in fire suppression and establishment of Cave Junction Smoke Jumper Base in 1940 (Atzet 1996). While fires burning between 1940 – 1979 were under fuel conditions conducive to effective fire suppression and during a relatively cooler climatic period than in recent years (Halofsky et al. 2022). Fires burning between 1980 – 1999 were farther removed from fuel conditions under a functioning fire regime and a slightly warming climate; Fires burning between 2000-2022 were in fuels accumulated from years of missed fire cycles, intensely managed landscapes, and under warming climatic conditions (Westerling et al. 2006).

**Table H-3: Number of wildfires, wildfire acres, and average wildfire size for wildfires greater than 10 acres, burning into the Rogue Gold project boundary, by eras.**

Fire Era (Years)	Total Wildfires	Total Wildfire Acres	Average Wildfire Size
1900 – 1939	11	19,047	1,732
1940 – 1979	5	4,716	943
1980 – 1999	3	3,737	1,246
2000 – 2022	5	684	137

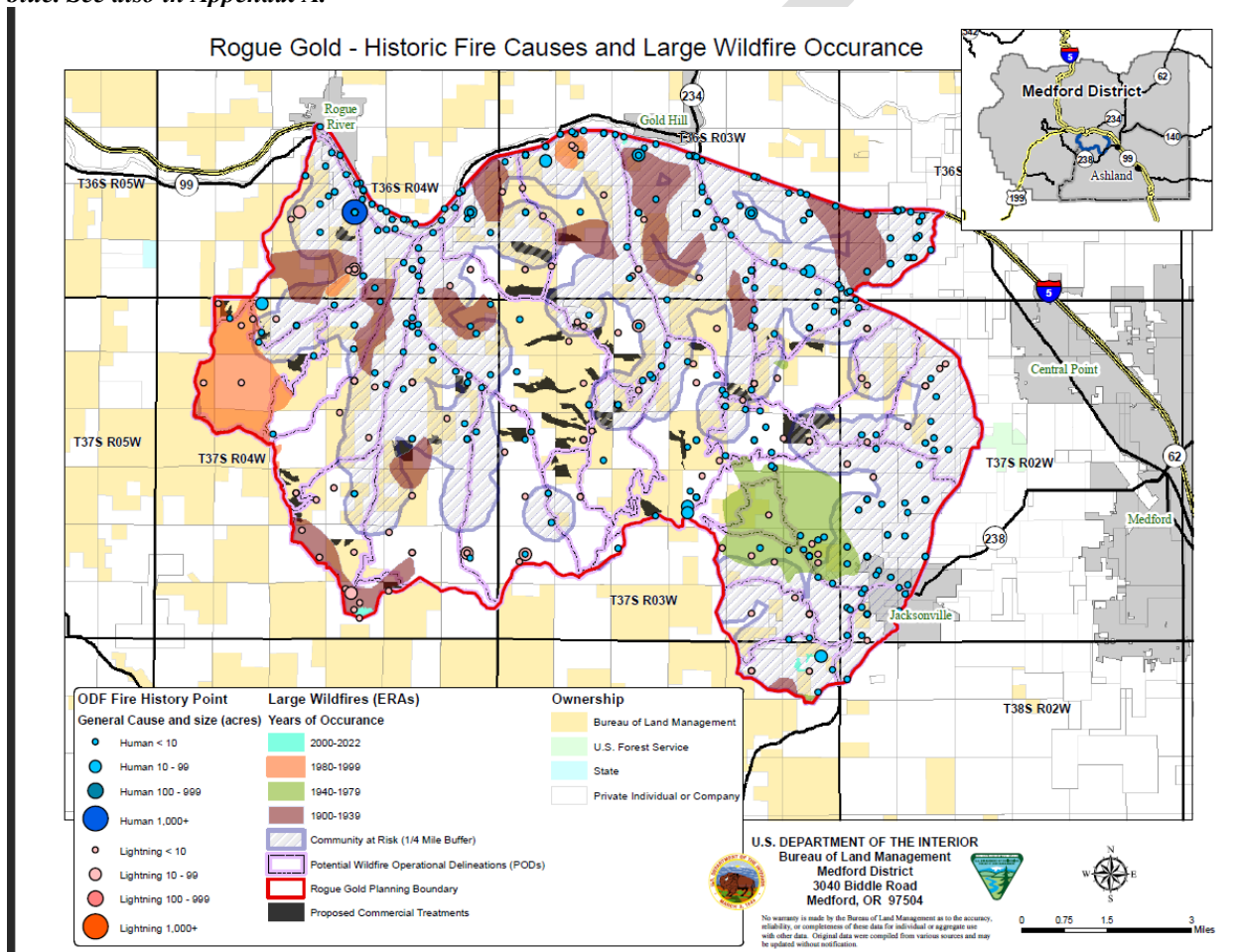
Within the Rogue Gold FMP, thousands of acres of hazardous surface and ladder fuel reduction treatments (handpile burning and underburning) have been implemented in the recent past (Table H-4). Many of these areas were treated more than 10 years ago.

**Table H-4. Previous acres of Underburn and Handpile burn treatments implemented within the Rogue Gold maximum proposed action footprint and Rogue Gold FMP Planning Area. Acres represent treatment type, not footprint acreage. Typically underburn and handpile burn acre overlap spatially.**

Time since treatment	ROGO maximum proposed action footprint	Rogue Gold Planning Area	Grand Total
<b>Underburn/Broadcast burn</b>	<b>47</b>	<b>1,036</b>	<b>1,082</b>
10-20 years	47	1,036	1,082
<b>Hand Pile Burn</b>	<b>569</b>	<b>4,882</b>	<b>5,451</b>
>20 years	62	529	591
10-20 years	507	4,353	4,861
<b>Grand Total</b>	<b>616</b>	<b>5,918</b>	<b>6,534</b>

Much of the Rogue Gold planning area lies within a quarter mile of Communities at Risk (CaR), a focused area within the Wildland Urban Interface (CWPP 2019; Metlen et al. 2017) and Wildland Developed Areas (WWRA 2013)f. Nearly 33 percent of the maximum proposed action extent (570 acres) is within the CaR (Figure H-5 and Appendix A) and 81% of proposed action acreage is within the Wildland Developed Areas (WWRA 2013)

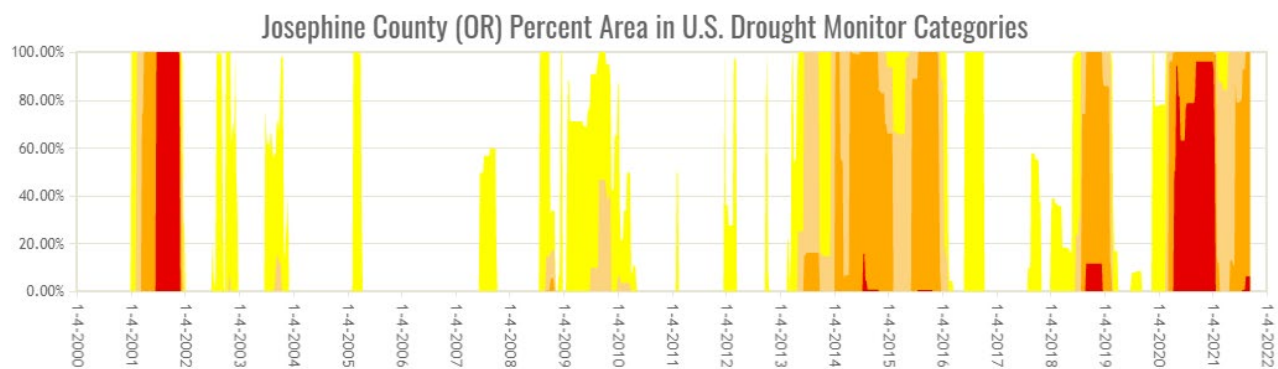
**Figure H-5: Wildfire activity within the analytic area for various fire eras: All ODF ignitions (1980 – 2018). Potential wildfire Operational Delineation (POD) boundaries, Quarter mile buffer around Communities at Risk from Wildfire (lavendar hashed poly). Maximum proposed action acreage (black), on-commercial units are in blue. See also in Appendix A.**

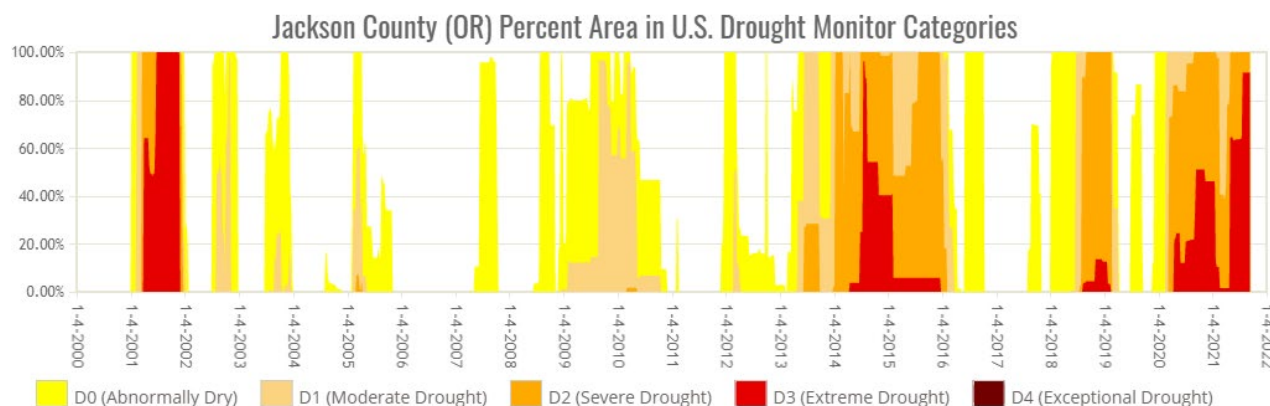


Ongoing changes to climate in southwestern Oregon include increasing temperatures, increasing drought frequency and severity, reduced snowpack, as well as fewer but more extreme precipitation events (Halofsky et al. 2022). Climate models generally project either no change in annual precipitation or a slight increase. Because of the large projected temperature increases, the modeled precipitation increases would still lead to a net water loss compared to 1970–1999 given higher evapotranspiration rates.” P.32-33 The Climate Change section of the PRMP/FEIS (USDI BLM 2016a, pp. 165-211), to which this EA tiers, analyzes issues associated with climate change. Issue 3 in the PRMP/FEIS, “How would climate interact with BLM management actions to alter the potential outcomes for key natural resources” (USDI BLM 2016a, p. 180), describes potential impacts to tree species (including adaptive genetic variation) and insects and pathogens, and describes the assumptions applied to the climate modelling for use in the

ROD/RMP. Issue 3 of the PRMP/FEIS describes the complications and unknowns in predicting the effects of climate change. Douglas fir is anticipated to decline, particularly in lower elevations and this trend has been observed in recent years (Bennet et al. 2023). Douglas-fir tree mortality would likely increase, due to the interactions of changing climate with disturbance events such as drought, fire, insects, and diseases. Species composition would likely shift, and growth rates and overall site productivity would decline (USDI BLM 2016a, pp. 193-196). “Not only does drought reduce tree growth and increase the likelihood and severity of fire, but prolonged or severe moisture stress can also increase the susceptibility of trees to insects and pathogens” (Bennett 2018, p. 7). Tree species differ in their vulnerability ratings to climate-induced stress (USDI BLM 2016a, p. 187). Insects and pathogen outbreaks may increase with hotter temperatures and more frequent periods of drought. Some pathogens, such as *Armillaria* root disease and various canker species which infect water-stressed hosts may become more problematic. Insect development and survival is also impacted by increased temperature. The response of pathogens that depend on insects for spread would likely be complex, depending on how the particular insect vector responds to changing climate (USDI BLM 2016a, pp. 178-188).

The trend for Jackson and Josephine Oregon counties over the past two decades indicates that projections of increased drought are on track (Figure H-6). A recent USDA forest health report for Oregon finds that aerial survey and site visit trends “indicate that drought stress is one of the main causes of tree dieback and decline” (USDA 2020, p. 5).





*Figure H-6.* U.S. Drought Monitor Category Graphs Displaying Percent Area in Various Drought Categories for Josephine and Jackson Counties from January 2000 to September 2021. Data acquired from <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>

Based on trends in the last 30 years, humans and lightning would continue to provide wildfire ignition sources (USDI BLM 2016a, Table 3-22 p. 227), and future trends suggest the suitability for large wildfire growth would increase (USDI BLM 2016a, Appendix D, Figure D-8 p. 1241; Davis et al. 2017). In recent years, total annual area burned has increased, so has the total area burned at high severity. Several analyses in recent decades have shown a positive correlation between annual area burned and area burned severely (in large patches) in the PNW (Cansler and McKenzie 2014, Dillon et al. 2011, Reilly et al. 2017). Fire suppression efforts are expected to continue; however, these efforts are not 100 percent successful. In fact, less than 1 percent of fires in the recent past account for the majority of acres burned by wildfire (USDI BLM 2016a, p. 227). These large fires tend to burn during more extreme fire weather conditions, potentially resulting in high fire severity (Long et al. 2017), when fire behavior and growth potential exceed or challenge suppression resource availability and capabilities. However, successful suppression efforts would continue to exclude fire and disturbance regimes would continue to be altered; these aspects, coupled with other expected climatological changes, such as increased background tree mortality, due to longer periods of hot drought (USDI BLM 2016a, p. 185), increase the likelihood for larger proportions of high severity fire (Mote et al. 2019).

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## Grants Pass Peak Non-motorized Trails Extensive Recreation Management Area

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**Status:**

Proposed for Development-Dispersed Use Occurring

- Develop implementation level Recreation Area Management plan
- Develop additional recreation facilities or features
- Develop implementation level Travel Management Plan (including completing route designations for motorized access and non-motorized use) during district-wide TMP

**RMA Description**

This 11,923 acre RMA is located on the Grants Pass Resource Area. Recreation development in this area is intended to provide direct benefits to residents and visitors to the greater urban area of the City of Grants Pass. The proposed Applegate Ridge Trail, if approved, would utilize a portion of this RMA.

**Important Recreation Values**

The Grants Pass Peak Non-motorized Trails ERMA provides access close to urban and suburban communities.

**Type of Visitors**

The Grants Pass Peak Non-motorized Trails ERMA has potential to draw non-motorized trail users.

**Outcome Objectives**

Participants in visitor assessments report an average 4.0 realization of the targeted experience and benefit outcomes listed below. (4.0 on a probability scale where: 1 = Not at all realized to 5 = Fully realized).

Visitor Activities	Visitor Experiences	Visitor Benefits
<ul style="list-style-type: none"> <li>• Mountain biking</li> <li>• Hiking</li> <li>• Equestrian</li> </ul>	<ul style="list-style-type: none"> <li>• Enjoying getting some needed physical exercise</li> <li>• Enjoying having access to outdoor amenities close to home</li> <li>• Enjoying having access to natural landscapes</li> </ul>	<p><b>Personal Benefits:</b></p> <ul style="list-style-type: none"> <li>• Better mental health and health maintenance</li> <li>• Better sense of my place within my community</li> <li>• Greater freedom from urban living</li> <li>• Improved capacity for outdoor physical exercise</li> </ul> <p><b>Community/Social Benefits:</b></p> <ul style="list-style-type: none"> <li>• Lifestyle improvement or maintenance</li> <li>• Greater community involvement in recreation and other land use decisions</li> <li>• More informed citizenry about where to go for different kinds of recreation experiences and benefits</li> <li>• Enlarged sense of community dependency on public lands</li> </ul> <p><b>Environmental Benefits:</b></p> <ul style="list-style-type: none"> <li>• Greater community ownership and stewardship of park, recreation, and natural resources</li> </ul>

Visitor Activities	Visitor Experiences	Visitor Benefits
		<ul style="list-style-type: none"> <li>• Reduced negative human impacts such as litter and unplanned trails</li> <li>• Increased ecologically friendly tourism operations</li> </ul> <p><b>Economic Benefits:</b></p> <ul style="list-style-type: none"> <li>• More positive contributions to local-regional economy</li> <li>• Increased desirability as a place to live or retire</li> <li>• Maintenance of community's distinctive recreation-tourism market niche or setting character</li> </ul>

## Supporting Management Actions and Allowable Use Decisions

Proposed Recreation Setting Characteristics Designation: Middle Country

Management Actions and Allowable Use Restrictions:

Camping Restrictions:

- Open to overnight use

Special Recreation Permits:

- Allow SRPs within RMA boundaries

Trails and Travel Management:

- Open to all non-motorized trail uses (hike/bike/equestrian)
- Designate area as *limited to existing* for OHV

Firearm Use Restriction:

- Open to shooting
- There may be opportunities here to develop and manage a designated shooting area

Lands and Realty
<ul style="list-style-type: none"> <li>• ROW Avoidance area</li> <li>• Allow land use authorizations through leases, permits, and easements (such as FLPMA ROW grants, MLA ROW grants, and Recreation Public Purposes Leases) if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li> </ul>

Forest Management
<ul style="list-style-type: none"> <li>• Allow timber harvest if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li> <li>• Allow firewood cutting and special forest product harvest if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li> <li>• Allow sale of hazard trees if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li> <li>• Allow fuel treatments or other vegetation modifications if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li> </ul>

Mineral Management
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<b>Mineral Management</b>
<ul style="list-style-type: none"><li>• Leasable: Open NSO</li><li>• Salable: Open limit to existing quarries</li><li>• Locatable: Low potential, recommend for withdrawal not necessary</li></ul>

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## Rogue Timber Extensive Recreation Management Area

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### Status:

Existing – Development Needed.

- Proposed for Development-Dispersed Use Occurring.
- Develop Recreation facilities and features: motorized trail development/improvements, potential trailhead development
- Develop Implementation level Recreation Area Management Plan
- Develop implementation level Travel Management Plan (including completing route designations for motorized access and non-motorized use) during district-wide TMP

### RMA Description

Rogue Timber ERMA is 7,905 acres and is located in the Ashland Resource Area. The ERMA provides users with mechanized and motorized riding opportunities in diverse settings.

### Important Recreation Values

The Rogue Timber ERMA has the potential to provide technical mechanized and motorized trail opportunities.

### Type of Visitors

The Rogue Timber ERMA has potential to draw local and regional OHV and mountain biking enthusiasts.

### Outcome Objectives

Participants in visitor assessments report an average 4.0 realization of the targeted experience and benefit outcomes listed below. (4.0 on a probability scale where: 1 = Not at all realized to 5 = Fully realized).

Visitor Activities	Visitor Experiences	Visitor Benefits
<ul style="list-style-type: none"><li>• Mountain biking</li><li>• Camping</li><li>• OHV</li></ul>	<ul style="list-style-type: none"><li>• Enjoying getting some needed physical exercise</li><li>• Enjoying strenuous physical exercise</li><li>• Enjoying having access to outdoor amenities close to home</li><li>• Enjoying being able to frequently participate in desired activities in the settings I like</li><li>• Enjoying teaching others about the outdoors</li><li>• Enjoying risk-taking adventure</li><li>• Enjoying in participating in group outdoor events</li><li>• Enjoying having access to</li></ul>	<p><b>Personal Benefits:</b></p> <ul style="list-style-type: none"><li>• Improved skills for outdoor enjoyment</li><li>• Stronger ties with my family and friends</li><li>• Greater sense of adventure</li><li>• Improved capacity for outdoor physical exercise</li><li>• Improved physical capacity to do my favorite outdoor recreation activity</li></ul> <p><b>Community/Social Benefits:</b></p> <ul style="list-style-type: none"><li>• Greater community involvement in recreation and other land use decisions</li><li>• More informed citizenry about where to go for different kinds of recreation experiences and benefits</li><li>• Enlarged sense of community dependency on public lands</li></ul> <p><b>Environmental Benefits:</b></p>

Visitor Activities	Visitor Experiences	Visitor Benefits
	natural landscapes	<ul style="list-style-type: none"> <li>• Improved maintenance of physical facilities</li> <li>• Greater community ownership and stewardship of park, recreation, and natural resources</li> <li>• Reduced negative human impacts such as litter and unplanned trails</li> <li>• Improved respect for privately owned lands</li> </ul> <p><b>Economic Benefits:</b></p> <ul style="list-style-type: none"> <li>• More positive contributions to local-regional economy</li> <li>• Increased desirability as a place to live or retire</li> <li>• Maintenance of community's distinctive recreation-tourism market niche or setting character</li> <li>• Enhanced ability for visitors to find areas providing wanted recreation experiences and benefits</li> </ul>

## Supporting Management Actions and Allowable Use Decisions

Proposed Recreation Setting Characteristics Designation: Front Country

Management Actions and Allowable Use Restrictions:

Camping Restrictions:

- Open to overnight use

Special Recreation Permits:

- Allow SRPs within RMA boundaries

Trails and Travel Management:

- Open to biking
- Designate area as *limited to existing* for OHV
- OHV: Seasonal route restrictions for aquatic resource management

Firearm Use Restriction:

- Open to shooting
- Buffer trail corridors to provide for public safety

Lands and Realty
<ul style="list-style-type: none"> <li>• ROW avoidance area.</li> <li>• Allow land use authorizations through leases, permits, and easements (such as FLPMA ROW grants, MLA ROW grants, and Recreation Public Purposes Leases) if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li> </ul>
Forest Management
<ul style="list-style-type: none"> <li>• Allow timber harvest to address catastrophic events.</li> <li>• Allow timber harvest if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li> <li>• Allow firewood cutting and special forest product harvest if compatible with meeting recreation</li> </ul>

<b>Forest Management</b>
objectives, not interfering with recreation opportunities, and maintaining setting characteristics. <ul style="list-style-type: none"><li>• Allow sale of hazard trees if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li><li>• Allow fuel treatments or other vegetation modifications if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li><li>• Establish a no harvest buffer of 50 feet (off of centerline) for all linear trails. Allow timber harvest activity within buffer to protect/maintain recreation-setting characteristics and/or to achieve recreation objectives.</li><li>• Establish timber harvest Best Management Practices (BMPs).</li><li>• Require directional falling to protect trail-based resources.</li></ul>



<b>Mineral Management</b>
<ul style="list-style-type: none"><li>• Leasable: Open NSO</li><li>• Salable: Open to existing quarries</li><li>• Locatable: Low potential; Recommend for withdrawal not necessary</li></ul>

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## Left Right Center Foots Extensive Recreation Management Area

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### Status:

Existing – Development Needed.

- Proposed for Development-Dispersed Use Occurring.
- Develop Recreation facilities and features: non-motorized trail development (greenway), potential trailhead development
- Develop Implementation level Recreation Area Management Plan
- Develop implementation level Travel Management Plan (including completing route designations for motorized access and non-motorized use) during district-wide TMP

### RMA Description

Left Right Center Foots ERMA is 7,656 acres and is located in the Ashland Resource Area. The ERMA offers expansion opportunities for nearby trails, and offers access to the local greenway.

### Important Recreation Values

The Left Right Center Foots ERMA provides non-motorized trail opportunities close to urban population centers and provides paved road connectivity to the Mountain of the Rogue Trail system and the Rogue River Greenway.

### Type of Visitors

The Left Right Center Foots ERMA has potential to draw local and regional visitors seeking non-motorized trail opportunities.

### Outcome Objectives

Participants in visitor assessments report an average 4.0 realization of the targeted experience and benefit outcomes listed below. (4.0 on a probability scale where: 1 = Not at all realized to 5 = Fully realized).

Visitor Activities	Visitor Experiences	Visitor Benefits
<ul style="list-style-type: none"><li>• Mountain biking</li><li>• Hiking</li><li>• Equestrian</li><li>• Camping</li></ul>	<ul style="list-style-type: none"><li>• Enjoying getting some needed physical exercise</li><li>• Enjoying strenuous physical exercise</li><li>• Enjoying having access to outdoor amenities close to home</li><li>• Enjoying being able to frequently participate in desired activities in the settings I like</li><li>• Enjoying teaching others about the outdoors</li><li>• Developing your skills and abilities</li></ul>	<p><b>Personal Benefits:</b></p> <ul style="list-style-type: none"><li>• Improved skills for outdoor enjoyment</li><li>• Better sense of my place within my community</li><li>• Improved physical fitness and health maintenance</li><li>• Improved capacity for outdoor physical exercise</li></ul> <p><b>Community/Social Benefits:</b></p> <ul style="list-style-type: none"><li>• Lifestyle improvement or maintenance</li><li>• Greater community involvement in recreation and other land use decisions</li><li>• More informed citizenry about where to go for different kinds of recreation experiences and benefits</li><li>• Enlarged sense of community dependency on public lands</li></ul> <p><b>Environmental Benefits:</b></p>

Visitor Activities	Visitor Experiences	Visitor Benefits
		<ul style="list-style-type: none"> <li>• Greater community ownership and stewardship of park, recreation, and natural resources</li> <li>• Reduced negative human impacts such as litter and unplanned trails</li> <li>• Improved respect for privately owned lands</li> <li>• Increased ecologically friendly tourism operations</li> </ul> <p><b>Economic Benefits:</b></p> <ul style="list-style-type: none"> <li>• More positive contributions to local-regional economy</li> <li>• Increased desirability as a place to live or retire</li> <li>• Reduced health maintenance costs</li> <li>• Enhanced ability for visitors to find areas providing wanted recreation experiences and benefits</li> </ul>

## Supporting Management Actions and Allowable Use Decisions

Proposed Recreation Setting Characteristics Designation: Front Country

Management Actions and Allowable Use Restrictions:

Camping Restrictions:

- Open to overnight use

Special Recreation Permits:

- Allow SRPs within RMA boundaries

Trails and Travel Management:

- Open to all non-motorized trail uses (hike/bike/equestrian)
- Designate area as *limited to existing* for OHV

Firearm Use Restriction:

- Open to shooting
- Buffer trail corridors and trailheads to provide for public safety.

Lands and Realty
<ul style="list-style-type: none"> <li>• ROW avoidance area.</li> <li>• Allow land use authorizations through leases, permits, and easements (such as FLPMA ROW grants, MLA ROW grants, and Recreation Public Purposes Leases) if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li> </ul>
Forest Management
<ul style="list-style-type: none"> <li>• Allow timber harvest to address catastrophic events.</li> <li>• Allow timber harvest if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li> <li>• Allow firewood cutting and special forest product harvest if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li> <li>• Allow sale of hazard trees if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li> </ul>

Forest Management
<ul style="list-style-type: none"><li>• Allow fuel treatments or other vegetation modifications if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.</li><li>• Establish timber harvest Best Management Practices (BMPs).</li><li>• Require directional falling to protect trail-based resources.</li></ul>
Mineral Management
<ul style="list-style-type: none"><li>• Leasable: Open NSO</li><li>• Salable: Open to existing quarry</li><li>• Locatable: Low potential; recommend for withdrawal not necessary</li></ul>

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