



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Grants Pass Resource Area

2164 N.E. Spalding

Grants Pass, Oregon 97526

IN REPLY REFER TO:

1792 (ORM070)

DOI-BLM-OR-M070-2009-011-EA

MAR 19 2012

Dear Interested Party:

The Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) (DOI-BLM-OR-M070-2009-011-EA) for the East West Junction Project is available for comment and review starting March 19, 2012. This EA discloses the predicted environmental effects of the action alternatives (Alternatives 2 and 3) and the no action alternative (Alternative 1).

The East West Junction Project is designed to meet BLM's obligation to implement the Medford District Resource Management Plan (RMP) and to address the primary needs identified for lands in the Planning Area. The project's primary objective is to implement forest management activities that would contribute to continuous timber production while restoring dry and moist forest characteristics and reducing wildfire danger. The RMP directs the BLM to implement the Oregon and California Railroad Revested Lands (O&C Act) which requires the Secretary of the Interior to manage O&C lands for permanent forest production.

To meet this objective the Proposed Action (Alternative 2) for the project is:

- 235 acres by Variable Density Thinning in 18 units
- 32 acres by Variable Retention Harvest in 1 unit
- 262 acres by Pre-Commercial Thin in 18 units
- 325 acres by Density Management/Hazardous Fuel Reduction in 19 units
- 642 acres by Hazardous Fuel Reduction in 22 units

Proposed road work to facilitate the transport of logs includes the following:

- 22.3 miles of road maintenance work on existing roads
- 0.4 miles of temporary route construction
- 0.5 miles of temporary route re-construction
- 0.9 miles of temporary routes to be decommissioned after harvest and fuel treatments are complete

The East West Junction Project Planning Area is east and south of the town of Cave Junction. The legal description of the PA is T39S-R7W-Sections 7-11, 15-21, 29, 30; T39S-R8W-Sections 12-14, 19-35; T39S-R9W-Sections 25, 35, 36; T40S-R8W-Sections 2-11, 14-18, 20-23, 26-28; and T40S-R9W-Sections 1-4, 9-16, 21-23 in Josephine County, Willamette Meridian.

The EA and FONSI may be accessed from (1) the Grants Pass Interagency Office, 2164 NE Spalding Avenue, 97526. Office hours are Monday through Friday, 8:00 A.M. to 4:30 P.M., closed on holidays;

(2) the Medford District's internet site at <http://www.blm.gov/or/districts/medford/plans/index.php>; or
(3) if you do not have internet access, or would prefer a paper copy of this document, please contact Michelle Calvert, Planning and Environmental Coordinator, at (541) 471-6505.

Written comments concerning the significance, as defined in 40 CFR 1508.27, of the environmental effects predicted for this action are requested to be submitted in writing to the Grants Pass Field Manager, and received on or before April 17, 2012 at the address previously stated. Comments received will be considered in making the final decision.

Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored by the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection on their entirety.

Thank you for your interest in public land management in the Grants Pass Resource Area.

Sincerely,



For

Karen M. Schank
Field Manager
Grants Pass Resource Area

ENVIRONMENTAL ASSESSMENT
for the
EAST WEST JUNCTION
VEGETATION MANAGEMENT PROJECT
DOI-BLM-OR-M070-2009-011-EA

U.S. DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT
GRANTS PASS RESOURCE AREA

March 2012

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FINDING OF NO SIGNIFICANT IMPACT

Based upon review of the EA (DOI-BLM-M070-2009-011-EA) and supporting project record, I have determined that the action alternatives (Alternative 2 and Alternative 3) are not major federal actions and would not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, an environmental impact statement is not needed. This finding is based on the following discussion:

Context. The action alternatives are site-specific actions directly involving 1,234 acres of BLM (Bureau of Land Management) administered land that by itself does not have international, national, region-wide, or state-wide importance. The action alternatives are located within the Matrix and Riparian Reserve land use allocations under the Medford District's 1995 Resource Management Plan (RMP), and Timber Management Area and Riparian Management Area land use allocations under the 2008 Medford RMP. The East West Junction Project Planning Area are within the boundaries of the 6th field Hydrologic Unit Condition (HUC 6) boundaries of the Lower West Fork Illinois, Rough and Ready Creek, Lower East Illinois, and Lower Sucker Creek sub-watersheds. There is Deferred Timber Management Areas (DTMA) land use allocation (2008 Medford RMP) in the East West Junction Project Planning Area, but no timber extraction would occur in these areas under this project. There are some Hazardous Fuel Reduction units proposed in DTMA, which is an approved activity under the 2008 RMP. The action alternatives do not occur in revised Critical Habitat (2008; [Federal Register \(73\): 47326-47522](#)), as designated by the U.S. Fish and Wildlife Service nor do proposed activities occur in the 1992 Northern Spotted Owl Critical Habitat (CHU).

The discussion of the significance criteria that follows applies to the intended actions and is within the context of local importance. Chapter 3 of the EA details the effects of the Alternatives. None of the effects identified, including direct, indirect and cumulative effects, are considered to be significant and do not exceed those effects described in the *Medford District Proposed Resource Management Plan/Environmental Impact Statement (1994 PRMP/EIS)*.

Intensity. The following discussion is organized around the Ten Significance Criteria described in 40 CFR 1508.27.

1. Impacts may be both beneficial and adverse. The predicted environmental effects of the action alternatives (Alternative 2 and 3), most noteworthy, include:

- a) Social and economic benefits by providing a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability;
- b) Following forest management activities and prior to slash disposal, fire behavior potential would increase from the current potential fire behavior due to increased surface

fuels. After slash disposal treatments, fuel levels would be reduced. There would likely be a short term increase in fire hazard because the landing piles have the potential to produce flame lengths that exceed the fire behavior threshold to the extent of increased spotting distance. The proposed fuels treatments would reduce fire behavior such as flame length, rate of spread, and fire duration.

c) Compacted/displaced soils over new and existing footprints would be 29.7 acres under Alternative 2 and 3. Under Best Management Practices (BMPs) in the 1995 RMP (p. 166) up to 12% skid trail compaction is allowed to remain within a unit until final entry. Total compaction/displacement associated with tractor skid trails and cable yarding corridors would account for an average of 5.34% per unit. Alternative 2 and 3 would result in a 1.7% soil productivity loss within the proposed harvest units. Therefore, each proposed East West Junction Project unit would be below 12% compaction and 5% productivity loss for either action alternative as analyzed in the 1994 Medford District FEIS RMP.

d) Sediment from the East West Junction Project would not result in more than a 10% increase in stream turbidity, and would not measurably increase these conditions for more than 25 feet from haul roads. Logically it can be concluded that negligible increases in sediment from these activities would contribute to the overall amount of sediment entering streams from past, present, and future impacts within these sub-watersheds, but sediment from this action would not be distinguishable above baseline levels or have any effect on aquatic organisms. Actions within this watershed would be consistent with the Clean Water Act, State of Oregon water quality standards, and Northwest Forest Plan (NWFP) Aquatic Conservation Strategy (ACS) objectives (Appendix 5).

e) The effects of the East West Junction Project on atmospheric greenhouse gas levels, when placed in the appropriate context, are negligible. As described in the EA, atmospheric greenhouse gas levels are related to global climate change. Because existing science is unable to identify a specific source of greenhouse gas emissions or sequestration, and designate it as the cause of specific climate impacts at a specific location, the appropriate context for greenhouse gas impacts is the global, regional, and continental scale. Current global carbon dioxide emissions (total 25 billion metric tonnes of carbon dioxide (IPCC 2007, p. 513), and current U.S. emissions of carbon dioxide total 6 billion tonnes (EPA 2007, p 2-3).

Appendix 2 states the East West Junction Project would reduce carbon stores temporarily but would result in net increases over time, by comparing similar treatments in other recent BLM project analysis. Stand re-growth after Variable Density Thinning, Commercial Thinning, and Pre-Commercial Thin would result in carbon storage that exceeds direct and indirect carbon emissions, resulting in a net storage of carbon compared to pretreatment conditions in 5 years. Stand re-growth after Density Management/Hazardous Fuel Reduction is expected to result in a net storage of carbon compared to pretreatment conditions within 10 years and within 20 years for unit 9-12 (Variable Retention Harvest). In addition, the treatments in the East West Junction

Project would reduce the burning intensity of future fires which in the long-term would maintain higher carbon stores on the landscape.

The effects would be so small that it would not merit reporting under the EPA rule on mandatory reporting of greenhouse gases, which presents a reporting threshold of 25,000 metric tons of carbon dioxide equivalent for several industrial and agricultural sectors (40 CFR 98.2). While science related to carbon storage, greenhouse gases, and climate change continues to evolve and address the existing uncertainties, the impacts of this project are so small that even despite these uncertainties, there is not enough impact to suggest the project's impacts are significant enough to warrant an environmental impact statement.

f) See effects to ESA threatened and endangered species in criteria # 9 below.

2. The degree to which the selected alternative will affect public health or safety.

Public health and safety would not be affected. The action alternatives are comparable to other projects which have occurred within the Grants Pass Resource Area with no unusual health or safety concerns. The Planning Area is not located within a Class I designated airshed or non-attainment area. Prescribed burning operations would follow all requirements of the Oregon Smoke Management Plan and the Department of Environmental Quality Air Quality and Visibility Protection Program, ensuring that smoke related impacts to public health and safety are mitigated. The impact of smoke on air quality is expected to be localized and of short duration. Particulate matter would not be of a magnitude to harm human health, affect the environment, or result in property damage.

Dust created from vehicle traffic on gravel or natural-surfaced roads and logging operations would be localized and of short duration. As such, the action alternatives are consistent with the provisions of the Federal Clean Air Act.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farm lands, wetlands, wild and scenic rivers, or ecologically critical areas. There are no prime farm lands, wetlands, or wildernesses located within the Planning Area.

The East West Junction Project Planning Area has an eligible Wild and Scenic River segment of the West Fork Illinois River, under the 2008 Medford District RMP. This river segment is eligible for inclusion into the National Wild & Scenic River System for the Outstandingly Remarkable Value of scenery. One proposed treatment unit (5-9) and small portions of four other treatment units (29-4, 29-8, 29-17, and 29-18) are located in this eligible Wild & Scenic corridor. The East West Junction Project would provide interim protection for the Outstandingly Remarkable Value of scenery on this eligible river segment through the design of this project.

There are three Area of Critical Environmental Concerns (ACECs) and one Research Natural Area (RNA) in the East West Junction Project Planning Area: Rough and Ready

ACEC, French Flat ACEC, and Waldo Takilma ACEC, and Woodcock Bog RNA. There are no proposed units located in the RNA or any of the ACECs. The project would not affect the values for which the RNA or ACECs were designated due to distance of some proposed activities to the RNA or ACECs, or the type of proposed activities.

Under the 2008 RMP, the developed BLM recreation sites on public lands in the project Planning Area are the Rough and Ready Botanical Area, the Illinois River Forks State Park (previously managed under a Recreation and Public Purposes Lease), and the Illinois Valley Horse Trails. The botanical area is managed by the State and BLM. The Illinois Valley Horse Trails exist in the Planning Area but are not a designated trail system under the 2008 RMP, rather they are listed as Potential Recreation Trails. The public also uses existing BLM roads, and trails and user created trails on BLM lands in Section 29 and throughout the East West Junction Project Planning Area.

Under 1995 RMP proposed recreation sites in the East West Junction Project Planning Area are the Illinois River State Park Extension, Logan Cut Equestrian Park, Logan Cut, and Rockydale (1995 RMP, Map 8).

There is two designated recreation sites on Oregon State lands in the project Planning Area: the Illinois Valley Visitor Center and the trail head for the Illinois River Forks State Park. There is one city park for Cave Junction in the project Planning Area. There are several RV and camping parks in the project Planning Area that are privately owned.

Recreation users in the Planning Area may experience increased logging truck traffic during the operational months; however, this type of activity is typical for the area because of harvesting on private and other government owned lands. The trail head for the Illinois River Forks State Park would notify potential users of trail closure on the BLM portion during timber operations. The proposed project activities are limited to BLM managed land and there are no proposed activities in *designated* BLM recreation sites or trails.

See Criteria #8 on cultural resources.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial. The effects of the action alternatives on the quality of the human environment are adequately understood by the interdisciplinary team to provide analysis for the decision. Substantive public comments were analyzed by the East West Junction Project interdisciplinary team and the BLM responded to those comments in Appendix 3 of the East West Junction Project EA. While comments, such as other scientific research, were mentioned by the public, the actions of the East West Junction Project is within those identified in the 1995 Medford District RMP and the 2008 RMP and the predicted effects are contained in Chapter 3 of the EA. None of the comments were considered controversial in respect to their context and intensity in determining significance.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks. The action alternatives are not unique or unusual. The BLM has experience implementing similar actions in similar areas and have found effects to be reasonably predictable. The environmental effects to the human environment are fully analyzed in Chapter 3 of the EA. There are no predicted effects on the human environment which are considered to be highly uncertain or involve unique or unknown risks. Public scoping included a scoping letter released for public review on December 5, 2008. The BLM received approximately 15 public responses from either letters or emails during this scoping. The East West Junction Project was revised to contribute toward continuous timber production while restoring dry and moist forest characteristics and reducing wildfire danger. As such a subsequent scoping report was released to reflect the revised project on May 12, 2011. The scoping documents were mailed to a standard mailing list of individuals and organizations expressing interest in Grants Pass Resource Area projects and land owners within a ¼ mile of the East West Junction Project proposed units. The BLM received ten comment responses during the revised project scoping.

All substantive comments were responded to in Appendix 3 of the East West Junction Project EA. Comments were considered in the development of the project. No unique or unknown risks were identified in public comments.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. The action alternatives do not set a precedent for future actions that might have significant effects nor does it represent a decision in principle about future consideration. The action alternatives would occur within the Matrix and Riparian Reserve land use allocations under the Medford District's 1995 RMP, and occur within the Timber Management Area and Riparian Management Area land use allocations under the 2008 RMP. There is Deferred Timber Management Areas (DTMA) land use allocation (2008 Medford RMP) within the East West Junction Project Planning Area, but no timber extraction is proposed in DTMA. There are some Hazardous Fuel Reduction units proposed in DTMA, which is an approved activity under the 2008 RMP. Chapter 1 of the East West Junction Project EA identifies how the Proposed Action would be consistent with the Purpose and Need and for compliance with higher level EIS documents. Chapter 3 evaluates the effects of the alternatives and the findings are that all proposed projects would be compliant with the effects anticipated under the 1995 Medford RMP. Any future projects, not identified in the East West Junction Project EA would be evaluated through the National Environmental Policy Act (NEPA) process and would stand on their own as to environmental effects.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. The interdisciplinary team evaluated the action alternatives in context of past, present and reasonably foreseeable actions. Significant cumulative effects outside those already disclosed in the 1995 ROD/RMP and 2008 ROD/RMP are not predicted. Cumulative effects regarding carbon storage would not be

outside those already disclosed in the 2008 Western Oregon Plan Revision FEIS. A complete disclosure of the effects of the action alternatives is in Appendix 2 of the EA.

The BLM anticipates that most projects' impacts on greenhouse gas levels and carbon storage would be negligible when placed in the appropriate context for analysis of global, regional, and continental scale.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources. The action alternatives would not adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor would the action alternatives cause loss or destruction of significant scientific, cultural, or historical resources. Cultural surveys were completed for the East West Junction Project Planning Area. Nine historic sites and ten isolates were previously recorded in the Planning Area with past surveys. One additional isolate was recorded during the East West Junction cultural survey in 2009.

The Planning Area is part of the Illinois and Waldo Mining Districts. The town of Waldo, east of the Planning Area, developed as a result of the large influx of miners after the gold discovery on Josephine Creek in 1851. For the proposed East West Junction Project, one historic mining site is located on the edge of a proposed treatment unit and would be avoided through Project Design Features (PDFs).

If cultural resources are located during the implementation of an action, the project would be redesigned to protect the resource values present, or evaluation or mitigation procedures would be implemented based on recommendations from the Resource Area Archaeologist with concurrence from the Field Manager and appropriate regulatory agencies.

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

Southern Oregon/Northern California Coasts coho salmon (ESA-Threatened) and coho critical habitat: Harvesting, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road renovation/improvement, road maintenance hauling, and fuel treatments would have no effect on Southern Oregon/Northern California Coasts (SONCC) coho salmon (ESA-Threatened) and coho critical habitat (CCH). There are two haul road segments where BLM-maintained roads cross over coho bearing streams; one via a culvert, and one through an armored dry ford. Sediment would not be expected to enter CCH as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into CCH.

Northern Spotted Owl Habitat (ESA Threatened): Alternative 2 would remove 62 acres, downgrade 112 acres, and treat but maintain 320 acres of nesting, roosting, and foraging (NRF) habitat. Alternative 2 would remove 32 acres, and treat but maintain 685 acres of dispersal habitat. Alternative 3 would treat but maintain 494 acres of NRF habitat, and treat but maintain 717 acres of dispersal habitat. The U.S. Fish and Wildlife Service's (USFWS) Biological Opinion (Summer 2010 BO, Tails #13420-2010-F-0107) stated proposed harvest treatments that remove or downgrade spotted owl habitat "may affect and are likely to adversely affect northern spotted owls". In the conclusion of the BO, the USFWS also stated "[based on] the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the District's proposed action, *is not likely to jeopardize* the continued existence of the spotted owl. The Service reached this conclusion because the action area is expected to continue to fulfill its role in the survival and recovery of the spotted owl because implementation of the proposed action will retain 99 percent of currently occupied or un-surveyed suitable spotted owl NRF and dispersal habitats in the action area." The U.S. Fish and Wildlife Service's Letter of Concurrence (July 2010 LOC, Tails # 13420-2010-I-0178) stated proposed treatments that treat and maintain spotted owl habitat "may affect but are not likely to adversely affect northern spotted owls". Additionally, no nesting and roosting removal is proposed in this EA, which further reduces the impacts to spotted owls. Season restrictions listed as Project Design Features would prevent disturbance to nesting spotted owls within the Project Area.

Decadent woody material would be retained as either snags or down wood.

No East West Junction Project units or new temporary route construction or reconstruction would occur within any known 70 acre nest patches (USDA/USDI 2008).

Temporary route construction would unlikely affect nesting spotted owls due to the ridge line locations of this road work. Spotted owls generally nest on the mid-slopes, which would be away from direct construction effects. Edge effects from this construction would not be expected because all construction would occur within units proposed for vegetation treatments. These unit level treatments would affect canopy cover and interior forest at the stand level greater than the effects to the road clearing alone. Seasonal restrictions listed as PDFs (see Section 2.3.4.7) would avoid disturbance effects to adjacent nesting spotted owls during route construction. Temporary route re-construction would not affect spotted owls because these areas are already disturbed areas and do not function as suitable spotted owl habitat.

Lomatium Cookii and its Critical Habitat (ESA Endangered): Three acres of *Lomatium cookii* Critical Habitat Unit (CHU) IV-9 are located in proposed Units 5-9, 12 acres of CHU IV-11 are located in Unit 7S-3, 4 acres of CHU IV-11 are located in Unit 7S-6, 7 acres of CHU IV-11 are located in Unit 7S-6a, and 8 acres of CHU 12 are located in Unit 9-9. Proposed pre-commercial thinning for Unit 5-9 would have no effect on critical habitat for the following reasons: because it would not occur in suitable dispersal and germination habitat for *Lomatium cookii*, would not disturb the soils or hydrology, and would not increase the risk of noxious weed infestation or spread because of PDFs that minimize the risk of spread and introduction. The action alternatives would not

remove the function of the critical habitat or the primary constituent elements of the habitat.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment. The action alternatives do not violate any known federal, state, or local law or requirement imposed for the protection of the environment. Furthermore, the action alternatives are consistent with applicable land management plans, policies, and programs (see section 1.5 of the EA).

Chapter 1.0 - Purpose and Need for the Proposed Actions

1.1 Introduction

This environmental assessment (EA) will analyze the impacts of proposed forest management activities on the human environment in the East West Junction Project Planning Area (PA). The EA will provide the decision maker, the Grants Pass Field Manager, with current information to aid in the decision making process. It will also determine if there are significant impacts not already analyzed in the Environmental Impact Statement for the Medford District's Resource Management Plans (1995 and 2008) and whether a supplement to that Environmental Impact Statement is needed. Chapter 1 discloses to the reader:

- what the BLM proposes to do (Proposed Action),
- the location and description of the Planning Area,
- why the BLM is proposing these forest management activities (Purpose and Need),
- what factors the decision maker will use for choosing the alternative (Chapter 2) that will best meet the purpose and need for this proposal,
- how the public has been involved in this project,
- the method for developing alternatives,
- what the decision maker will decide upon

The analysis utilizes field data, ground verification by resource specialists and Geographical Information System (GIS) technology to estimate acres, road miles and produce reference maps. Estimates are intended to aid the reader in understanding the proposed actions. The reader should be aware that electronic technology can produce information that appears precise but is still dependent on further field work. During implementation, unit boundaries are posted and surveyed and unforeseen features, such as water sources, are appropriately buffered. It has been the experience for past Grants Pass Resource Area environmental assessments that estimates of treatment acres in the EA have been generally more than the actual acres treated on the ground.

1.2 Proposed Action

The following is a summary of BLM's proposal for the East West Junction Project. A more detailed description of alternatives is included in Chapter 2. The Proposed Action includes forest management activities on approximately 1,234 acres of forest land. Of these acres the following is proposed 235 acres of Variable Density Thinning, 32 acres of Variable Retention Harvest, 325 acres of Density Management/Hazardous Fuel Reduction, 262 acres of Pre-Commercial Thin, and 642 acres of Hazardous Fuel Reduction (see Chapter 2 below for definitions of these treatments). Cut trees would be removed by the use of tractor or skyline cable. Trees to be removed for harvest would be whole-tree yarded or yarded with attached tops where appropriate, to minimize impacts.

Slash would be treated using one or more of the following actions: lop & scatter, pile & burn, chipping, or biomass utilization.

The majority of the proposed treatment units are within lands governed by the Oregon and California Railroad and Coos Bay Wagon Road Grant Lands Act (O&C Act). Seventeen units are located in Public Domain Lands, totaling 262 acres. Harvesting and associated forest management activities are planned to start in 2012. BLM planning decisions and harvest activities would apply only to BLM-administered O&C and Public Domain lands.

1.3 Project Location

The Planning Area (PA) is east and south of the town of Cave Junction. Table 1-1 lists the watersheds and sub-watersheds in the East West Junction Project Planning Area.

Table 1-1. East West Junction Project Planning Area Watersheds

Sub-watersheds (HUC 6s)	Watershed (HUC 5s)
Lower West Fork Illinois	West Fork Illinois
Rough and Ready Creek	
Lower East Fork Illinois	East Fork Illinois
Lower Sucker Creek	Sucker Creek

The legal description of the PA is T39S-R7W-Sections 7-11, 15-21, 29, 30; T39S-R8W-Sections 12-14, 19-35; T39S-R9W-Sections 25, 35, 36; T40S-R8W-Sections 2-11, 14-18, 20-23, 26-28; and T40S-R9W-Sections 1-4, 9-16, 21-23 in Josephine County, Willamette Meridian.

The East West Junction Project Planning Area totals 35,186 acres and the BLM manages approximately 7,446 acres of the Planning Area, which is a checkerboard pattern of public and private ownerships. Approximately 5,536 acres of the PA is managed by the U.S. Forest Service of the Rogue River-Siskiyou National Forest, approximately 21,547 acres is privately owned, and approximately 657 acres is managed by the Oregon Department of Forestry.

The Planning Area is east and south of the town of Cave Junction in Josephine County (See attached Maps 1-5 at the end of the EA).

1.4 Purpose and Need for the Proposal

The East West Junction Project is designed to meet BLM’s obligation to implement the RMP and to address the primary needs identified for lands in the Planning Area. The project’s primary objective is to implement forest management activities that would contribute to continuous timber production while restoring dry and moist forest characteristics and reducing wildfire danger. The RMP directs the BLM to implement

the Oregon and California Railroad Revested Lands (O&C Act) which requires the Secretary of the Interior to manage O&C lands for permanent forest production.

The objectives of the Proposed Action and consideration of any action alternative would meet the following in the Planning Area:

- Utilize ecological forestry principles and plant communities to restore characteristic structure and composition, ecological conditions, and ecosystem functions.
- Reduce stand density to increase long term tree growth, quality, and vigor of the remaining trees and increase resistance of the landscape to fire, drought, and insects.
- Create diversified stand structure (height, age, and diameter classes) to enhance structural complexity and composition which is the result of variability.
- Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability.
- Reduce both natural and activity based fuel hazards through various methods.
- Ensure project activities are consistent with existing right-of-way agreements.

1.5 Plan Consistency

The Medford District initiated planning and design for this project to conform and be consistent with the Medford District's 1995 Resource Management Plan (RMP). Following the March 31, 2011 decision by the United States District Court for the District of Columbia in *Douglas Timber Operators et al. v. Salazar*, which vacated and remanded the administrative withdrawal of the Medford District's 2008 Record of Decision (ROD) and RMP, we evaluated this project for consistency with both the 1995 RMP and the 2008 ROD and RMP. Based upon this review, the action alternatives contain some design features not mentioned specifically in the 2008 ROD and RMP. The 2008 ROD and RMP did not preclude use of these design features, and the use of these design features is clearly consistent with the goals and objectives in the 2008 ROD and RMP. Accordingly, this project is consistent with the Medford District's 1995 RMP and the 2008 ROD/RMP.

The East West Junction Project is consistent with court orders relating to the 2011 Settlement Agreement in Litigation over the Survey and Manage Mitigation Measure in *Conservation Northwest et al. v. Sherman et al.*, Case No. 08-1067-JCC (W.D. Wash.) that went into effect on July 21, 2011.

Red Tree Vole (RTV) protocol surveys (BLM 2000b, BLM 2003a) were conducted in suitable habitat in the Project Area to meet the management recommendations of the 2001 Survey and Manage ROD. Based on active and associated inactive RTV nests located during surveys, approximately 161 acres within the East West Junction Vegetation Management Project units were deferred from harvest and managed as RTV buffers per Management Recommendations (BLM 2000c) and to provide for persistence of the species (USDA/USDI 2001, p.3, 4, & 23). These RTV buffered areas would not

be harvested, but may receive Hazardous Fuel Reduction treatments without understory burning.

There are no other 2001 Survey and Manage ROD wildlife species affected by the East West Junction Vegetation Management Project. Surveys were conducted for Great Gray owls, but none were observed. This project is not anticipated to affect any Survey and Manage mollusk species because the proposed treatments do not occur within suitable habitat for *Helminthoglypta hertleini* and the Planning Area is outside the range of *Monadenia chaceana*.

Vascular and nonvascular plant surveys were conducted for 2001 Survey and Manage ROD species. Surveys revealed the following new sites for the following species: *Cyperipedium fasciculatum* and *Cyperipedium montanum*. However, these species would not be affected by the action alternatives as these sites would receive protection buffers and conditional restrictions (Section 2.3.4.5).

In June 2011, the USFWS (U.S. Fish and Wildlife Service) finalized the *Revised Recovery Plan for the Northern Spotted Owl*, which contains 33 Recovery Actions. Recovery Actions are recommendations to guide activities needed to accomplish the recovery objectives and ultimately lead to delisting of the species. Specifically, Recovery Action 32 (RA 32) in the Recovery Plan recommends maintaining and restoring the older and more structurally complex multilayered conifer forests” (U.S. Fish and Wildlife Service 2011, III-67). The intent of RA 32 is to maintain substantially all of the older and more structurally complex multi-layered conifer forests on federal lands in order not to further exacerbate the competitive interactions between spotted owls and barred owls. The East West Junction Project defers proposed treatment in RA 32 stands identified by interagency survey guidance (USDA/USDI 2010) and is consistent with consultation completed with the U.S. Fish and Wildlife Service (USFWS), (Summer 2010 BO, Tails #13420-2010-F-0107 and July 2010 LOC, Tails # 13420-2010-I-0178).

The action alternatives conform to the *Medford District Integrated Weed Management Plan Environmental Assessment (1998)* and tiered to the *Northwest Area Noxious Weed Control Program (EIS, 1985)*.

The *East Fork Illinois Watershed Analysis (2000)*, the *West Fork Illinois Watershed Analysis (2003)*, and the *Sucker Creek Watershed Analysis (2007)* are incorporated by reference. Watershed analysis is an analytical process and not a decision-making process as provided in the ROD for the NWFP (p. B-20).

The Aquatic Conservation Strategy (ACS) consistency analysis (see Appendix 5) evaluated the action alternatives and found the project would not retard or prevent the attainment of the nine objectives or the four components of the ACS. Therefore, this project is consistent with the ACS of the NWFP ROD (1994).

1.6 Permits and Approvals Required

The following permits and approvals are required prior to project implementation:

- license agreements and/or other authorization with adjacent landowners to have a third party haul timber and use of landings;
- in compliance with the Oregon Smoke Management Plan, prescribed burning activities on the Medford District require pre-burn registration of all prescribed burn locations with the Oregon State Forester.

1.7 Public Scoping

Public scoping included two scoping letters for the East West Junction Project and two open house public meetings. One scoping letter was released in December 2008, and a revised scoping report was released in May 2011.

In 2011, the East West Junction Project was revised to contribute toward continuous timber production while restoring dry and moist forest characteristics and reducing wildfire danger.

These scoping letters were mailed to the list of individuals and organizations expressing interest in Grants Pass Resource Area projects and landowners within ¼ mile of East West Junction Project proposed units. Public comments were requested within 30 days for each of these letters so comments received could be considered for further development of the project prior to environmental analysis. The BLM received approximately 15 public responses from letters, emails, and phone calls during scoping in 2008 and ten responses during the scoping in 2011.

An open house public meeting was held in April 2009 at the Illinois Valley High School with over 23 attendees, after the initial public scoping. An opportunity to discuss and visit the proposed project was offered to those that responded to the 2011 Revised Scoping Report. As a result, two field trips were held in the fall of 2011 (November 18th and 29th). There were eight public attendees between the two field trips composed of adjacent landowners and representatives of local organizations.

All substantive comments are responded to in Appendix 3 of this EA. Comments were considered in the development of the project.

The Grants Pass Resource Area also accepts public comment of proposed forest management activities through the quarterly BLM Medford Messenger publication. A brief description of proposed projects, such as the East West Junction Project, a legal location and general vicinity map are provided along with a comment sheet for public responses. The East West Junction Project was included in these quarterly publications beginning in the fall of 2008.

Conflicts identified during scoping with the Proposed Action were considered to determine if an alternative action would be developed. Appendix 1 summarizes this

alternative consideration and explains why some alternatives were considered but not analyzed in detail and eliminated from further study.

1.8 Decisions to be Made

The Field Manager of the Grants Pass Resource Area is the official responsible for deciding whether or not to prepare an Environmental Impact Statement (EIS), and whether to approve the treatments as proposed, not at all, or to some other extent.

1.9 Alternative Decision Factors

In choosing the alternative that best meets the purpose and need, the Grants Pass Resource Area Field Manager would evaluate alternatives on:

- silvicultural systems that are sustainable, economically practical, and capable of maintaining the long-term health and productivity of the forest ecosystem;
- providing timber resources and revenue to the government from the sale of those resources;
- providing for the establishment and growth of conifer species while retaining structural and habitat components, such as legacy trees, snags, and coarse woody debris;
- reducing natural and activity based fuel hazards;
- comply with existing right-of-way agreements.

Chapter 2.0 - Alternative Ways of Accomplishing the Objectives

2.1 Introduction

This chapter presents the alternative ways of meeting the project objectives identified in Chapter 1, by describing and comparing Alternative 1 (No Action Alternative), Alternative 2 (Proposed Action), and Alternative 3 as specified in 40 CFR (Code of Federal Regulations) § 1502.14. Descriptions summarize potential environmental consequences and focus on potential actions and outputs. Best Management Practices (BMPs) and Project Design Features (PDFs) are included to ensure project compliance with the Federal Clean Water Act and higher-level National Environmental Policy Act (NEPA) documents, laws and BLM guidelines. For this document BMPs are incorporated into the PDFs (see Section 2.3.4). BMPs are specifically required by the Federal Clean Water Act to reduce nonpoint source pollution. The BMPs are methods, measures, or practices selected from the 1995 ROD/ RMP and 2008 RMP/ROD to ensure that water quality will be maintained. PDFs are specific measures included in the site specific design of the action alternatives to eliminate or minimize adverse impacts on the human environment. These PDFs were developed by the East West Junction Project interdisciplinary team with guidance of the 1995 ROD/RMP, 2008 ROD/RMP, and resource protection measures specific to the Planning Area.

The project team developed two action alternatives to meet the purpose and need identified in Chapter 1. These alternatives were developed based on existing environmental conditions and also reflect public participation in the planning process. Through the scoping process, the public provided comments that were considered by the interdisciplinary team and incorporated into alternative development. Those alternatives and comments considered but eliminated from further analysis are found in Appendix 1. In addition, a No Action alternative is presented to represent current conditions and trends, and establish a baseline for analysis of project effects. In designing the two action alternatives, other options or alternatives were considered during the planning phase of this project.

2.2 Proposed Treatments for the East West Junction Project

2.2.1 Description of Forest Management Treatments

Variable Density Thinning (VDT) – Treatment goals are based on ecological forestry principles to reduce ladder fuels and the risk of the loss of older trees from wildfire and competition while favoring retention of more fire and drought tolerant tree species (ponderosa pine, sugar pine, incense cedar). Removes mostly small and medium sized trees, but can include removal of some larger young trees. Older trees are defined as those at least 150 years of age.

Prescriptions are designed to increase ground cover suitable to the site and growing conditions that provide for the establishment of early seral tree species. Treatments

would include the utilization of the natural stand features to retain untreated areas of various sizes ($\pm 15\%$ of the stand). Prescriptions would vary between the three plant series present in the East West Junction Project Area: Douglas-fir Series, Tanoak Series, and Ponderosa Pine Series.

Douglas-fir Series

Dry Douglas-fir stands are typically found on west, southwest, east, and southeast aspects in the Douglas-fir series. Douglas fir is the predominant conifer species and ponderosa pine and incense cedar is often present.

Generally, average stand basal area would range between 80 and 120 ft²/acre (some sites may require slightly lower or higher retention based on productivity e.g., 60 or 140 sq. ft.). Trees greater than 150 years of age would not be cut and hardwoods, ponderosa and sugar pines, and incense cedars would be favored for retention. Competing vegetation and fuels would be removed within twice the drip line length around retention trees. Portions ($\pm 15\%$) of stands would remain untreated to protect and/or provide ecologically key features, habitat, hiding cover, and structure where such natural stand features exist. Gaps ranging from $\frac{1}{4}$ to 1 acre would be created ($\pm 15\%$ of stand, limiting 1 acre openings to every 6 or 7 acres) to stimulate establishment of fire and drought tolerant tree species (retain structure within gaps such as large conifers and hardwoods). Old-growth pines would be favored to leave in the center of gaps. Where suitable pine seed trees are prone to wind damage on ridge-tops, the gap size would be decreased to $\frac{1}{4}$ acre and 100 ft² basal/acre would be present around the opening, if available. The position of pine seed trees would be varied in gaps to provide shade for future tree development. Around gaps, an 80 ft² basal/acre would be present and the width of this area would be the average tree height of the stand. Gap edges would be separated by at least 150 ft. On dry ridges and lower productive sites, especially where manzanita is found, no more than 80 ft² basal/acre would be left, favoring sugar pine, ponderosa pine, incense cedar, and Douglas-fir, respectively.

Tanoak Series

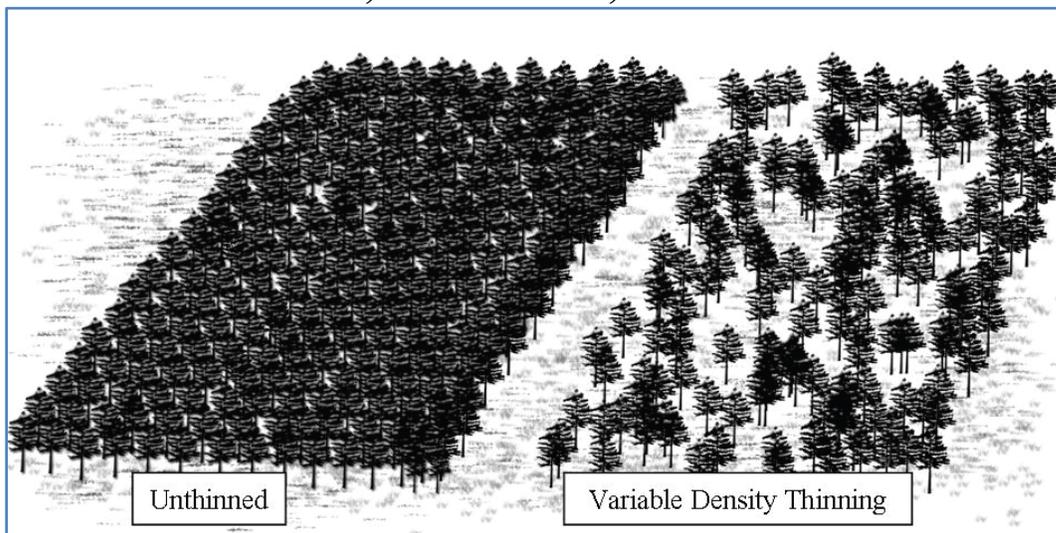
Tanoak sites are generally located in moist forests. These sites can also sustain large diameter trees for longer periods of time than stands in the Douglas-fir Series. They are noted for having stand replacement disturbances that occur at long intervals and are associated with even-aged forests.

Generally, average stand basal area would range between 120 and 160 ft²/acre. Trees greater than 150 years of age would not be cut, and hardwoods, ponderosa and sugar pines, and incense cedars would be favored for retention. Competing vegetation and fuels would be removed within twice the drip line length around retention trees. Portions ($\pm 15\%$) of stands would remain untreated to protect and/or provide ecologically key features, habitat, hiding cover, and structure where such natural stand features exist. Gaps ranging from $\frac{1}{4}$ to 1 acre would be created ($\pm 15\%$ of stand, limiting 1 acre

openings to every 6 or 7 acres) to stimulate establishment of fire and drought tolerant tree species (retain structure within gaps such as large conifers and hardwoods).

Variable Retention Harvest (VRH) – Treatment goals are to substantially reduce the stand density to establish an understory conifer component. The oldest trees and 20-30% of stand would be retained. Stand retention involves untreated portions of various sizes (20% of area). Ten percent of the stand would be retained as individual trees of strong dominants and trees generally older than 150 years including legacy trees amounting to 16-25 live green conifers per acre ≥ 20 inches dbh. Natural opportunities that the stand offers would be utilized for leave patches (e.g. seeps, rock outcrops, hardwood groves, hiding cover, etc.). One stand in the Tanoak Series is identified for this prescription. Activity fuels would be treated. Low levels of tree planting (150-225 trees per acre) to the natural character of the plant community (namely, Douglas-fir, sugar pine, and ponderosa pine) would follow.

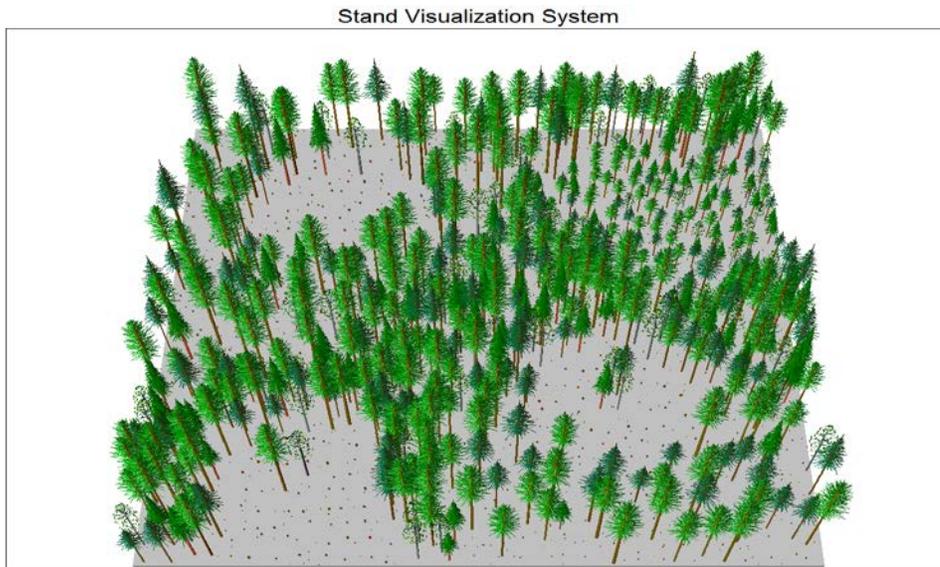
***Visual Representations for Variable Density Thinning:
Current conditions, Post-treatment, and Desired Conditions***



Variable Density Thinning. The illustration above represents a planted stand before thinning (at left) and after variable density thinning (at right). **Source:** Franklin et al. (GTR NRS-19, 2007)

The stand at left is experiencing competition for resources (such as light, nutrients, water, space). If no thinning were to occur, these stands would remain in stand exclusion (loss of a developed understory and midstory, spindly trees exhibiting growth suppression and susceptible to disease, mortality, and windthrow).

Visual Representations for Variable Density Thinning and Variable Retention Harvest: Post-treatment and Desired Conditions



Variable Density Thinning and Variable Retention Harvest. The illustration is created from a forest growth and yield modeling program to represent Variable Density Thinning. In this case the treatment creates ¼ to 1 acre gap openings so that $\pm 15\%$ of the stand has structural heterogeneity to stimulate the establishment of fire and drought tolerant early seral species, and to enhance the development of legacy structures such as this ponderosa pine. This visual representation would also be similar to the Variable Retention Harvest proposed for unit 9-12. Under Variable Retention Harvest, the denser portions of the stand depicted above would have slightly less tree retention. For unit 9-12, large living trees, snags, logs, and 20% of the original stand would be retained for future old-growth characteristics. **Sources:** Sources: Rolf Gersonde and Franklin et al. (GTR NRS-19, 2007).

Commercial Thin (CT) – Treatment goals are to contribute toward continuous timber production while utilizing ecological forestry principles of dry and moist forests to restore more characteristic and sustainable ecological conditions and functions. Proposed Commercial Thinning for the East West Junction Project would retain the key habitat features for northern spotted owl habitat so that its function would be maintained. Commercial thinning would remove trees that function as ladder fuels, reduce risks to older trees from wildfire and competition, favor more fire and drought tolerant tree species, control stand density, increase stand vigor and place or maintain stands on developmental paths so that desired stand characteristics of dry and moist forests result in the future and primary elements for northern spotted owl habitat are maintained. Over time, crowns of remaining trees would become fuller. Dry and moist forest restoration principles as well as growth and yield considerations would be applied to commercial thinning treatments. Thinning to improve growth of residual trees, restoring spatial heterogeneity in a non-uniform distribution of forest structural elements of dry and moist forests would be incorporated such that homogenous conditions are avoided and key

habitat features that support spotted owl habitat are maintained. Treatment would not change the conditions that would classify the stand as nesting, roosting, and foraging (NRF) or dispersal post-treatment. The NRF stand would retain at least 60 percent canopy cover, large trees, multistoried canopy, standing and down dead wood, diverse understory adequate to support prey, and may have some mistletoe or other decay. Dispersal habitat would retain at least 40 percent canopy, flying space, and trees 11 inches diameter at breast height (dbh) or greater, on average. The habitat classification of the stand following treatment would be the same as the pretreatment habitat classification.

Pre-Commercial Thin (PCT) - The objective of pre-commercial treatments would be similar to commercial thinning treatments, that is to reduce stand densities and reallocate growth to desirable vegetation. Stand densities would be reduced to increase the availability of light, water, nutrients and growing space for selected trees to be retained. A thinning treatment would promote increased tree size and vigor as well as the development of larger crowns on retained trees. Riparian PCT would be permitted up to 50 ft of the stream bankfull width.

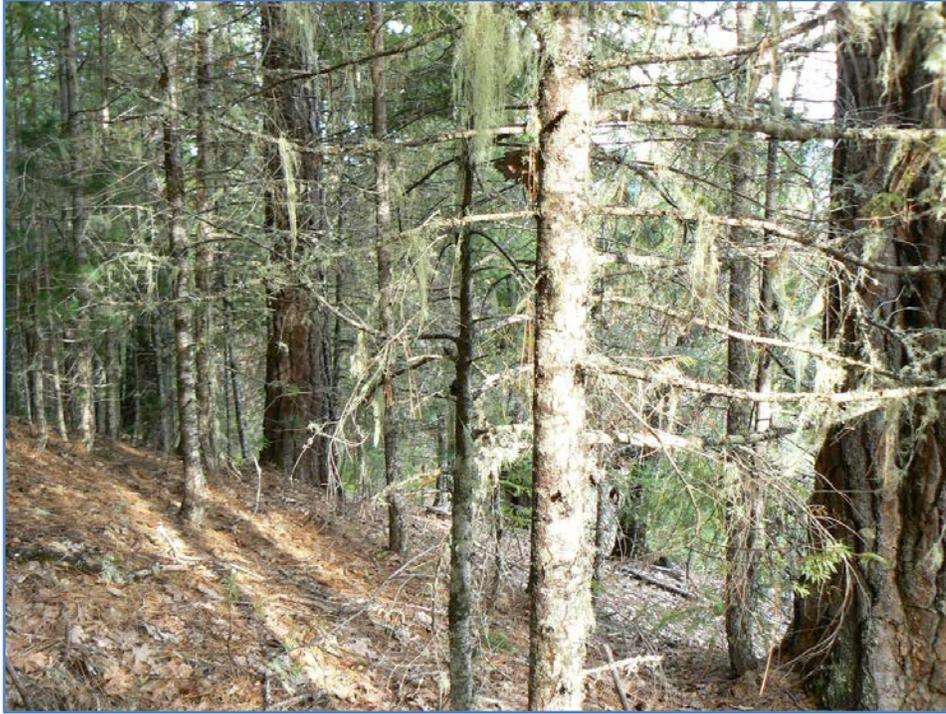
The understory in the East West Junction Project is defined as conifer and hardwood tree species less than 8 inches dbh. Stands in need of PCT are overstocked. Understory trees are experiencing early competition by hardwoods and neighboring conifers. Understory reduction would consist of thinning conifers and hardwoods up to 8 inch dbh.

Treatments would not remove commercial size trees (≥ 8 inches dbh) from the site. Young stands respond well to early release treatments and growth would be reallocated to the larger understory trees and to desirable conifer species while maintaining a significant hardwood component. These stands would have hardwoods at a wider spacing than the conifers. The largest hardwoods would be left at 27 TPA (40 ft x 40 ft spacing) to allow conifers to occupy the available growing space and reestablish species dominance and improved growth rates.

For this project, PCT would occur in the understory of some of the units proposed for either Variable Density Thin or Commercial Thinning.

Density Management (DM) – Treatment goals are to reduce stocking levels throughout the stand and promote growth and structural development of residual trees. Pre-commercial thinning and Pre-commercial/Hardwood Control are generally used with this treatment, which may be completed in conjunction with Hazardous Fuel Reduction. Hazardous Fuel Reduction slash would be treated using one or more of the following actions: lop & scatter, pile & burn, chipping, or biomass utilization. Maintenance underburning is generally performed within 7 years following initial treatments and would be driven by the condition of the stand and re-growth of slashed vegetation.

***Visual Representations for Density Management:
Current conditions***



Density Management. This treatment would reduce the risk of high severity crown fire by thinning from below, targeting ladder fuels, and creating space between the crowns of overstory trees such as the three large ponderosa pines pictured here. In dry forests, stand variability is the result of low and mixed severity disturbance regimes. The goal of restoring spatial heterogeneity requires actions that create a non-uniform distribution of forest structural elements.

Riparian Thinning. *The objective of riparian thinning treatments is to accelerate the development of late-successional stand conditions, such as older forest stand characteristics, increasing conifer growth rates and larger remnant conifers and hardwoods.*

Many riparian areas are currently dominated by smaller diameter Douglas-fir and some hardwoods. Most are lacking large wood debris, downed logs, and large tree structure. Like treatment in the uplands, treatment of these areas would reduce competition on the retained trees for light, nutrients, water and growing space. These trees would develop larger canopies, display better vigor and put on diameter growth faster than if left untreated. Production of wood volume would be a by-product of this treatment, not a primary objective.

Riparian thinning would benefit perennial and intermittent fish and other aquatic species habitat. Riparian Reserves proposed for treatment would be selected based on field stream survey information and silvicultural review. Stands with conditions such as high conifer density and few canopy layers, stands with low species diversity and stands of low conifer and hardwood vigor would be high priorities for treatment. Treatments

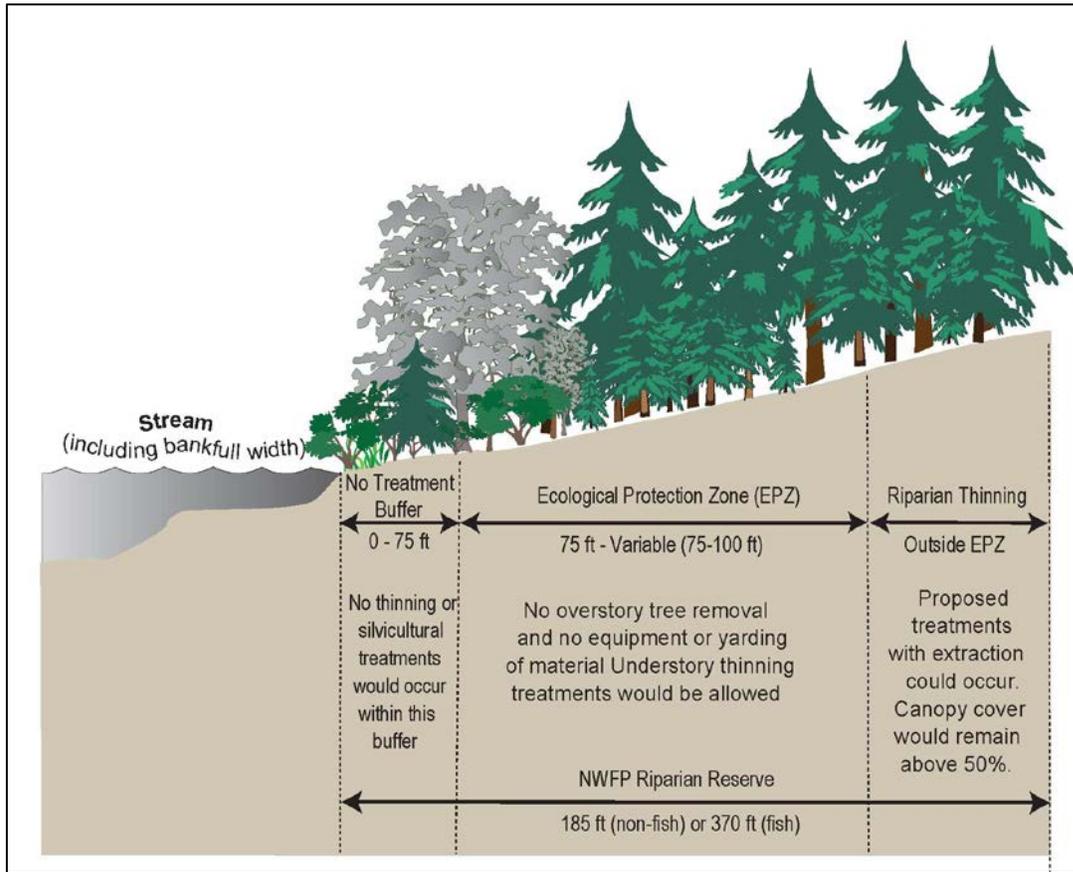
would occur in accordance with the following prescriptions to ensure protection of streams.

For all units, an Ecological Protection Zone (EPZ) ranging from 75-100 ft from the stream bankfull width (by slope distance) would be applied along streams to protect stream channel structure and water quality (Best Management Practice, RMP p.154). For the East West Junction Project the EPZ is a no treatment buffer. The specific EPZ distance per stream was developed using stated protection criteria¹ for individual elements of the Riparian Reserve including: bankfull and flood stage streambank stability; shade and temperature; surface erosion of streamside slopes; fluvial erosion of the stream channel; soil productivity; habitat for riparian-dependent species; the ability of streams to transmit damage downstream; the role of streams in the distribution of large wood to downstream fish bearing waters; and riparian microclimate. The Ecological Protection Width Needs chart is based on slope and rock type, and takes into account protection of streams from “surface erosion of streamside slopes, fluvial erosion of the stream channel, soil productivity, habitat for riparian-dependent species, the ability of streams to transmit damage downstream, and the role of streams in the distribution of large wood to downstream fish bearing waters”.

Treatments within the Riparian Reserve that are outside the variable width ecological protection zone would be done to promote forest health as discussed above. Canopy cover would remain above 50%, and species diversity would be maintained. Activities in this area would be designed to ensure that habitat conditions for the wildlife and plant species that use this zone are not degraded.

¹ Ecological Protection Width Needs chart (Northwest Forest Plan Record of Decision, p. B-15); Forest Ecosystem Management Assessment Team (FEMAT) 1993; and the Northwest Forest Plan Temperature Total Maximum Daily Load (TMDL) Implementation Strategies, U.S. Forest Service and BLM, 2005).

Riparian Thinning and Riparian Management Adjacent to Streams within the East West Junction Project, Illustrated



Hazardous fuel reduction. Designed to reduce the existing fire hazard by thinning the understory of a stand to reduce the amount of surface and ladder fuels present. The desired future condition for fuels would be a reduction in ladder fuels that pose a risk of crown fire initiation, discontinuous fuel concentrations, and a minimized presence of fine fuels. Treatments include slashing, piling, pile-burning, chipping, biomass removal, and/or underburning. Slashed material would be up to 8 inches in diameter and conifer spacing would be approximately 18 x 18 ft, and hardwood spacing would be up to 40 x 40 ft or narrower depending on hardwood size class. Riparian fuel reduction would be permitted up to 50 ft of the stream bankfull width. Maintenance underburning is generally performed within 7 years following initial treatments and would be driven by the condition of the stand and re-growth of slashed vegetation.

Activity fuel treatments. Trees to be removed for harvest would be whole-tree yarded or yarded with tops attached. Slash would be treated using one or more of the following actions: lop & scatter, pile & burn, chipping, or biomass utilization. Slash generated from whole-tree yarding would be brought to the landing where it would be piled and burned, chipped, or otherwise removed from the site.

Temporary Route Construction. Short-term overland roads, primitive roads or trails authorized or acquired for the development, construction or staging of a project or event that has a finite lifespan. Temporary routes are not intended to be part of the permanent or designated transportation network system. Temporary routes would be decommissioned after harvesting and activity fuels are treated for this project.

Temporary Route Reconstruction. Restores an existing road to its original or modified condition. Reconstructed routes would be decommissioned after harvesting and activity fuels are treated for this project.

Road Renovation/Improvement. Restore or improve a road to a desired standard. Typical road renovation/improvement would include, but is not limited to: raising or sloping the road subgrade; reconstructing culvert catch basins; adding necessary drainage facilities and armoring; replacing undersized culverts and repairing damaged culverts and downspouts; adding culvert outlet features as needed such as downspouts and energy dissipaters; restoring inslope or crown of road.

Road Maintenance. Activities on an existing road to keep a road at its original design standard. Typical maintenance would include, but is not limited to: 1/ blading and shaping; 2/ cleaning of ditches, catch basins and culverts; 3/ brush cutting and vegetation removal from roadway; 4/ surface patching and pot hole repair; 5/ surface replacement; 6/ culvert replacement; and 7/ slide removal.

2.3 Description of the Alternatives

2.3.1 Alternative 1 (No Action)

The No Action Alternative provides a baseline for the comparison of the alternatives and describes the existing condition and the continuing trends within the Planning Area. Under the RMP, the majority of harvest and silvicultural activities are scheduled to occur within the Matrix land use allocation under the Medford District's 1995 RMP, and Timber Management Area land use allocation under the 2008 Medford RMP. Selection of this alternative would not meet the purpose and need of the project (described in Chapter 1) of harvesting timber and implementing the Medford RMP at this time. Consideration of this alternative provides the answer to the question of what it would mean for the objectives not to be achieved. Selection of this alternative would not constitute a decision to reallocate these lands to non-commodity uses.

Future harvesting in this area would not be precluded and could be analyzed under a subsequent environmental analysis. Road maintenance would be dependent on funding and reciprocal right-of-way agreements.

2.3.2 Alternative 2 (Proposed Action)

The East West Junction Project is designed to meet BLM's obligation to implement the RMP and to address the primary needs identified for lands in the Planning Area. The project's primary objective is to implement forest management activities that would contribute to continuous timber production while restoring dry and moist forest characteristics and reducing wildfire danger. The RMP directs the BLM to implement the Oregon and California Railroad Revested Lands (O&C Act) which requires the Secretary of the Interior to manage O&C lands for permanent forest production.

The Proposed Action would implement forest management activities that would contribute to continuous timber production while restoring dry and moist forest characteristics and reducing wildfire danger. Structurally complex stands identified through RA32 protocol surveys on Matrix lands (Medford District's 1995 RMP), and Timber Management Area lands (2008 Medford RMP), are deferred from proposed treatment under the East West Junction Project (Recovery Action 32 from the 2011 Final Northern Spotted Owl Recovery Plan). Red Tree Vole (RTV) habitat areas (BLM 2000c) found through protocol surveys (BLM 2000b, BLM 2003a) are also excluded from the East West Junction Project harvest units, per Management Recommendations (BLM 2000c).

2.3.2.1 Forest Management (Alternative 2)

The Proposed Action would treat 235 acres by Variable Density Thinning in 18 units, 32 acres by Variable Retention Harvest in 1 unit, 262 acres by Pre-Commercial Thin in 18 units, 325 acres by Density Management/Hazardous Fuel Reduction in 19 units, and 642 acres by Hazardous Fuel Reduction in 22 units. See Table 2-1 for further details. Units proposed for variable density or commercial harvest that may not be economical at the time of the Field Manager's decision would be treated by density management/hazardous fuel reduction treatments. The decision issued by the Field Manager will clarify if any units convert from commercial harvest to density management/hazardous fuel reduction. Some of the vegetation treatments may produce woody biomass and special forest products that could be removed under stewardship and/or service contracts.

2.3.2.2 Timber Yarding (Alternative 2)

Harvest yarding systems for the Proposed Action are the use of skyline cable and tractor yarding. Trees to be removed for harvest would be whole-tree yarded or yarded with the tops attached to minimize impacts. See Table 2-1, Alternative 2 for individual unit harvesting methods proposed.

2.3.2.3 Road Work (Alternative 2)

Proposed road work associated with timber harvesting for the Proposed Action includes 0.4 miles of temporary route construction, 0.5 miles of temporary route re-construction, and 0.8 miles of road renovation/improvement to access proposed timber treatment units

consistent with existing right-of-way agreements. All existing and proposed permanent roads used for hauling timber would be maintained. See Table 2-2 for further details on proposed road work.

2.3.2.4 Activity Fuels Treatments (Alternative 2)

Trees to be removed for harvest would generally be whole-tree yarded or yarded with tops attached to minimize activity slash remaining within the harvest units. It is anticipated the majority of the activity slash would be extracted from each thinning unit by this process and piled at the landing sites. In areas utilizing ground based logging equipment, processing of tops in skid trails and the resulting slash being driven over may occur. Merchantable sawlogs would be removed from yarded material, and any remaining debris at the landing sites would be machine and/or hand piled and burned at approved locations, chipped, or removed for biomass utilization.

Activity slash within units may be machine or handpile/burned, chipped, or lopped and scattered based on a post-logging assessment of fuel loading.

The purpose of a lop-and-scatter treatment is to break up jackpots of material so that the slash does not increase the fire hazard. The lop portion of “lop-and-scatter” would cut slash so it would not exceed 18 inches in height from the ground and material less than 6 inches in diameter would be cut into pieces so it would not exceed 8 ft in length. Scattering would arrange slash in a discontinuous pattern across the forest floor. If the amount of slash remaining in units is too high a fuel load because there are no open spaces to scatter the slash, chipping or machine/handpile then burn may be recommended for treatment. This determination would be made by the Authorized Officer as recommended by the Fuels Specialists.

2.3.2.5 Hazardous Fuel Reduction (Alternative 2)

Hazardous Fuel Reduction would be implemented on approximately 642 additional acres in 22 units where existing vegetation and fuel loading pose a wildfire hazard. Private residences within 1.5 miles of federal land may be classified as being within the WUI area as described by the National Fire Plan. These lands serve to increase the risk of a fire occurring from human causes if left untreated. Unit boundaries may be altered during the layout process to facilitate logistically practical implementation; however, boundary adjustments would not exceed surveyed areas. Hazardous Fuel Reduction would not occur within 50 ft from the stream bankfull width (by slope distance) to protect stream channel structure and water quality as recommended by the West Fork Illinois River Watershed (2007) and the Lower East Fork Illinois Watershed Water Quality Restoration Plans (2006). Treatment implementation is subject to prioritization at the Medford District and Grants Pass Resource Area levels and may be affected by funding availability.

2.3.3 Alternative 3

Alternative 3 would implement forest management activities that would contribute to continuous timber production while restoring dry and moist forest characteristics, reducing wildfire danger, and maintain northern spotted owl habitat. Structurally complex stands identified through RA32 protocol surveys on Matrix lands (Medford District's 1995 RMP), and Timber Management Area lands (2008 Medford RMP), are deferred from proposed treatment for Alternative 3 under the East West Junction Project (Recovery Action 32 from the 2011 Final Northern Spotted Owl Recovery Plan). Red Tree Vole (RTV) habitat areas (2000 RTV Management Recommendations) found through protocol surveys (BLM 2000b, BLM 2003a) are also excluded from the East West Junction Project harvest units, per Management Recommendations (BLM 2000c).

2.3.3.1 Forest Management (Alternative 3)

Alternative 3 would treat 222 acres by Commercial Thinning in 14 units, 201 acres by Pre-Commercial Thin in 12 units, 366 acres by Density Management/Hazardous Fuel Reduction in 23 units, and 646 acres by Hazardous Fuel Reduction in 23 units. See Table 2-1 for further details. Units proposed for commercial harvest that may not be economical at the time of the Field Manager's decision may be treated by Density Management/ Hazardous Fuel Reduction. The decision issued by the Field Manager will clarify if any units convert from commercial harvest to density management/hazardous fuel reduction. Some of the vegetation treatments may produce woody biomass and special forest products that could be removed under stewardship and/or service contracts.

2.3.3.2 Timber Yarding (Alternative 3)

Harvest yarding systems for Alternative 3 would use skyline cable and tractor yarding. Trees to be removed for harvest would be whole-tree yarded or yarded with the tops attached to minimize impacts. See Table 2-1, Alternative 3 for individual unit harvesting methods proposed.

2.3.3.3 Road Work (Alternative 3)

Proposed road work associated with timber harvesting for Alternative 3 includes 0.4 miles of temporary route construction, 0.5 miles of temporary route re-construction, and 0.8 miles of road renovation/improvement to access proposed timber treatment units consistent with existing right-of-way agreements. All existing and proposed permanent roads used for hauling timber would be maintained. See Table 2-2 for further details on proposed road work.

2.3.3.4 Activity Fuels Treatments (Alternative 3)

This activity would be the same as describe for Alternative 2 (Section 2.3.2.4).

2.3.3.5 Hazardous Fuel Treatments (Alternative 3)

This activity would be the same as describe for Alternative 2 (Section 2.3.2.5).

Table 2-1. East West Junction Project Forest Management Units

Township Range Section	Unit #	Acres	Proposed Action – Alternative 2 Treatment	Alternative 3 Treatment	Harvest System Alternative 2 & 3	Ecological Protection Zone slope distance (ft) (applies to Alt 2 & 3)
39-7-7	7N-1	36	HFR	HFR	-----	no Riparian Thinning proposed for these units
	7N-2	19	DM/HFR	DM/HFR	tractor/cable	
	7N-3	14	DM/HFR	DM/HFR retain ≥60% canopy closure	tractor/cable	
	7N-4	12	DM/HFR	DM/HFR	tractor/cable	
	7N-8	1	HFR	HFR	-----	
	7N-9	7	DM/HFR	DM/HFR	tractor/cable	
	7N-10	6	DM/HFR	DM/HFR retain ≥60% canopy closure	tractor	
39-7-8	8-2	42	VDT/PCT (D-fir)	CT /PCT retain ≥60% canopy closure	tractor/cable	100 ft
	8-3	31	HFR	HFR	-----	no Riparian Thinning proposed for these units
39-7-17	17-1	29	HFR	HFR	-----	
	17-1D	50	HFR	HFR	-----	
	17-2	9	HFR	HFR	-----	
	17-4	5	HFR	HFR	-----	

Township Range Section	Unit #	Acres	Proposed Action – Alternative 2 Treatment	Alternative 3 Treatment	Harvest System Alternative 2 & 3	Ecological Protection Zone slope distance (ft) (applies to Alt 2 & 3)
39-7-17	17-4A	2	DM/HFR	DM/HFR retain ≥60% canopy closure	tractor/cable	no Riparian Thinning proposed for these units
	17-10	51	DM/HFR	DM/HFR retain ≥60% canopy closure	tractor/cable	
39-7-18	18-1	31	HFR	HFR	-----	
	18-4	19	HFR	HFR	-----	
39-7-19	19-1	92	HFR	HFR	-----	
	19-3	23	DM/HFR	DM/HFR	tractor/cable	
39-7-20	20-1	16	VDT/PCT (D-fir)	CT retain ≥60% canopy closure	tractor/cable	75 ft
	20-1A	4	VDT/PCT (D-fir)	HFR	tractor/cable	75 ft for Alternative 2
	20-2	10	HFR	HFR	-----	no Riparian Thinning proposed for these units
	20-3	7	VDT (D-fir)	CT retain ≥60% canopy closure	tractor/cable	
	20-4	2	VDT (D-fir)	CT retain ≥60% canopy closure	tractor/cable	

Township Range Section	Unit #	Acres	Proposed Action – Alternative 2 Treatment	Alternative 3 Treatment	Harvest System Alternative 2 & 3	Ecological Protection Zone slope distance (ft) (applies to Alt 2 & 3)
39-7-21	21-6	13	VDT/PCT (D-fir)	CT/PCT retain ≥60% canopy closure	tractor/cable	no Riparian Thinning proposed for these units
39-8-13	13-3A	136	HFR	HFR	-----	
	13-3B	3	HFR	HFR	-----	
	13-6B	14	HFR	HFR	-----	
	13-14	41	DM/HFR	DM/HFR	tractor/cable	
	13-16A	9	DM/HFR	DM/HFR retain ≥60% canopy closure	tractor/cable	
	13-16B	38	DM/HFR	DM/HFR	tractor/cable	
39-8-29	29-1	15	VDT/PCT (D-fir)	DM/HFR retain ≥60% canopy closure	tractor	
	29-2	15	VDT/PCT (D-fir)	DM/HFR retain ≥60% canopy closure	cable	
	29-3	19	HFR	HFR	-----	
	29-4	14	VDT/PCT (D-fir)	CT/PCT retain ≥60% canopy closure	tractor/cable	
	29-8	16	VDT/PCT (D-fir)	CT/PCT retain ≥60% canopy closure	tractor	

Township Range Section	Unit #	Acres	Proposed Action – Alternative 2 Treatment	Alternative 3 Treatment	Harvest System Alternative 2 & 3	Ecological Protection Zone slope distance (ft) (applies to Alt 2 & 3)
39-8-29	29-9	21	DM/HFR	DM/HFR	Tractor	no Riparian Thinning proposed for these units
	29-11	4	VDT/PCT (D-fir)	CT/PCT retain \geq 60% canopy closure	tractor	
	29-12A	8	DM/HFR	DM/HFR	tractor/cable	
	29-12B	1	VDT/PCT (D-fir)	DM/HFR	cable	
	29-13	10	VDT/PCT (D-fir)	DM/HFR retain \geq 60% canopy closure	tractor/cable	
	29-15	5	VDT (D-fir)	CT retain \geq 40% canopy closure	tractor	
	29-16	6	VDT/PCT (D-fir)	CT/PCT retain \geq 40% canopy closure	cable	
	29-17	11	VDT/PCT (D-fir)	CT/PCT retain \geq 40% canopy closure	cable	
	29-18	6	DM/HFR	DM/HFR	tractor	
39-8-33	33-5	41	DM/HFR	DM/HFR	tractor	
39-8-34	34-1	13	DM/HFR	DM/HFR	Tractor	

Township Range Section	Unit #	Acres	Proposed Action – Alternative 2 Treatment	Alternative 3 Treatment	Harvest System Alternative 2 & 3	Ecological Protection Zone slope distance (ft) (applies to Alt 2 & 3)
39-8-34	34-2	28	VDT/PCT (D-fir)	CT/PCT retain 40-60% canopy closure	tractor	no Riparian Thinning proposed for these units
40-8-3	3-3	11	VDT/PCT (tanoak)	CT/PCT retain \geq 60% canopy closure	tractor	
	3-4	69	HFR	HFR	-----	
40-8-5	5-1	6	DM/HFR	DM/HFR	tractor	
	5-9	20	VDT/PCT (tanoak)	CT/PCT retain \geq 60% canopy closure	tractor	
40-8-7	7S-2	27	HFR	HFR	-----	
	7S-3	15	HFR	HFR	-----	
	7S-6	7	HFR	HFR	-----	
	7S-6A	7	HFR	HFR	-----	
	7S-8	4	VDT/PCT (D-fir)	CT/PCT retain \geq 40% canopy closure	tractor	
40-8-9	9-8	19	HFR	HFR	-----	
	9-9	11	HFR	HFR	tractor	
	9-12	32	VRH/PCT	CT/PCT retain \geq 40% canopy closure	tractor	

Legend

VDT = Variable Density Thin
 VRH = Variable Retention Harvest
 CT = Commercial Thin
 D-fir = Douglas-fir

HFR = Hazardous Fuel Reduction
 DM = Density Management
 PCT = Pre-commercial Thin

Table 2-2. Road Work for Alternative 2 & 3: Temporary Route Construction and Reconstruction (including associated Decommissioning), Road Renovation/Improvement, and Maintenance

Road Work Activities	Road Number	Miles	Control	Surfacing
Road renovation/improvement	into Units 3-3 and 3-4	0.43	BLM	NAT
	into Unit 5-1	0.22	BLM	NAT
	into Units 7S-8	0.13	BLM	NAT
temporary route construction (decommission after use: block, rip, waterbar, and mulch after use)	into Units 8-2	0.08	BLM	NAT
	into Units 29-15 and 29-16	0.20	BLM	NAT
	into Unit 34-2	0.02	BLM	NAT
	into Unit 20-1	0.12	BLM	NAT
temporary route reconstruction (decommission after use: block, rip, waterbar, and mulch after use)	into Unit 34-2	0.13	BLM	NAT
	into Units 7N-3 and 7N-4	0.16	BLM	NAT
	into Unit 29-2	0.06	BLM	NAT
	into Unit 29-4	0.09	BLM	NAT
	into Unit 8-2	0.05	BLM	NAT
maintenance & haul	39-7-7	0.09	BLM	NAT
	39-7-8.00A	0.07	PVT	NAT
	39-7-8.00B	0.14	BLM	NAT

Road Work Activities	Road Number	Miles	Control	Surfacing
Road Work Activities	Road Number	Miles	Control	Surfacing
maintenance & haul	39-7-8.00C	0.69	PVT	NAT
	39-7-8.00D	0.75	PVT	NAT
	39-7-8.00E	0.35	BLM	NAT
	39-7-8.02A	0.13	PVT	NAT
	39-7-8.02B	0.13	BLM	NAT
	39-7-17A	0.19	BLM	ASC
	39-7-17B	0.83	BLM	NAT
	39-7-17.01	0.09	BLM	NAT
	39-7-17.02	0.74	BLM	ASC
	39-7-17.03	0.38	BLM	ASC
	39-7-18.02	0.24	BLM	ASC
	39-7-18.03	1.32	BLM	ASC
	39-7-18.04	0.48	BLM	ASC
	39-7-19A	2.82	BLM	ASC
	39-7-19.02	0.37	BLM	ASC
	39-8-13.01	0.33	BLM	ASC
	39-8-13.02	0.22	BLM	ASC
	39-8-13.03	0.45	BLM	ASC
	39-8-13.04	0.19	BLM	ASC
	39-8-13.05	0.32	BLM	ASC

Road Work Activities	Road Number	Miles	Control	Surfacing
maintenance & haul	39-7-21.01	3.43	BLM	ASC
	39-8-29	1.41	BLM	NAT
	39-8-29.01	0.12	BLM	NAT
	39-8-29.03	0.41	BLM	NAT
	39-8-29.04	0.20	BLM	NAT
	39-8-29.05	0.09	BLM	NAT
	39-8-33	0.98	BLM	NAT
	39-8-34.00	0.14	BLM	ASC
	39-8-34.01	0.10	BLM	NAT
	39-8-34.02	0.05	BLM	NAT
	40-8-3	0.28	BLM	PRR
	40-8-4A	1.23	BLM	GRR
	40-8-5.00A	0.05	BLM	NAT
	40-8-5.00B	0.70	BLM	NAT
	39-7-7	0.09	BLM	NAT

Legend

ASC = Aggregate Surface Course
 NAT = Natural or Native
 PVT = Private

GRR = Grit Run Rock
 PRR = Pit-Run Rock

All haul routes for the East West Junction Project would be limited to dry condition haul. Meaning, hauling would not occur during wet road conditions, which are considered to result in continuous mud splash or tire slide, fines being pumped through road surfacing from the subgrade, road drainage causing a visible increase in stream turbidities, surface rutting, or any condition that would result in being chronically routed into tire tracks or away from designed road drainage during precipitation events. BST roads could be used for all seasons as the surface of these roads are sealed, however; access to these roads requires travel on roads limited to dry condition haul.

Table 2-3. Action Alternatives Summary

	Proposed Action – Alt. 2	Alt. 3
Number of units	60	60
Acres of VDT (Douglas-fir series)	200	0
Acres of VDT (Tanoak series)	31	0
Acres of VRH	32	0
Acres of CT	0	222
Acres of PCT (these acres are incorporated with VDT or CT treatments)	262	201
Acres of DM/HFR	325	366
Acres of HFR	642	646
Total treatment acres	1,234	1,234
Roads (Miles)		
• temporary route construction	0.4	0.4
• temporary route re-construction	0.5	0.5
• road renovation/improvement	0.8	0.8
• road maintenance and haul	22.3	22.3

2.3.4 Project Design Features

Project Design Features (PDFs) are specific measures included in the site specific design of the action alternatives (Alternative 2 and 3) to eliminate or minimize adverse impacts on the human environment. These PDFs were developed by the East West Junction Project interdisciplinary team from management guidance of the 1995 Medford ROD/RMP (Appendix D), 2008 Medford ROD/RMP (Appendix C), BLM Information Memorandum (IM OR-2011-074), and other regulatory laws for resource protection measures specific to the Planning Area.

2.3.4.1 Soil Productivity, Residual Trees, and Coarse Woody Debris

A minimum 20 ft area on the ground would be cleared of slash and other vegetation, litter, and debris, around each landing pile to prevent escaped fire. Each slash pile would be covered with a large enough piece of 4 mm black plastic to ensure a dry ignition spot (up to 10 ft x 10 ft for landing piles or 80% coverage of hand piles).

To minimize scorch and mortality, piles would not be placed adjacent to or within 15 ft of leave trees for landing piles and 10 feet of hand piles. To facilitate desired consumption, landing piles would be as free of dirt as reasonably possible.

Slash piles would not be allowed on roadways, turnouts, shoulders, or on the cut bank.

Lateral yarding would be required on all units to protect residual leave trees and existing conifer regeneration. Yarding carriages would be required to maintain a fixed position during lateral yarding to reduce damage to the residual stand.

All non-hazardous snags would be retained in all harvest units. If it is necessary to fall snags for safety reasons, they would remain on site as down wood. All existing naturally occurring dead and down woody debris would remain on site.

2.3.4.2 Air Quality / Smoke Management

Prescribed burning would occur under atmospheric conditions that allow for the mixing of air to lessen the impact on air quality. Burning would be conducted in compliance with the Medford District RMP, the Oregon State Implementation Plan, and the Smoke Management Plan as administered by the Oregon Department of Forestry.

Burning of slash piles would occur after a sufficient period of curing (generally over a year) to ensure desired consumption of material and after a period of adequate seasonal moisture to minimize risk of fire escape. Smoke clearance(s) would be obtained prior to ignition to minimize impacts on air quality.

Local residents would be advised of prescribed burning on the Grants Pass Resource Area prior to seasonal burning through news releases.

Use water or approved surface stabilizers/dust palliatives to reduce surfacing material loss and buildup of fine sediment that may wash off into water bodies, floodplains, or wetlands.

2.3.4.3 Sedimentation and Soil Compaction

Non-emergency road maintenance work shall occur during the dry season (generally between May 15 and October 15). Certain activities (blading of aggregate roads, rocking, brushing, cross drain installation) would be permitted during the wet season (generally Oct 15 -May 15) when conditions are dry. If these activities would occur within 200 feet of streams, sediment control devices would be placed and maintained as necessary to prevent action related stream sedimentation. When dry conditions are experienced outside seasonal restrictions, coordination with area specialists for agreement on the activity needs to occur. No ditch maintenance shall occur during the wet season unless for safety or resource protection. Work shall be suspended during precipitation events or when observations indicate that saturated soils exist to the extent that there is visible runoff or a potential for causing elevated stream turbidity and sedimentation. Emergency road work may be permitted during the wet season.

Maintain road surface by applying appropriate gradation of aggregate and suitable particle hardness to protect road surfaces from rutting and erosion for wet weather haul where runoff drains to wetlands, riparian management areas, floodplains and waters of

the state. If appropriate gradation of aggregate and suitable particle hardness to protect road surfaces cannot be achieved to protect water quality, limit haul to the dry season and/or install and maintain sediment control devices.

Blade and shape roads to conserve existing aggregate surface material, retain or restore the original cross section, remove berms and other irregularities that impede effective runoff or cause erosion, and ensure that during road improvement activities surface runoff is directed into vegetated, stable areas to the extent practical.

Inspect and maintain culvert inlets and outlets, drainage structures and ditches before and during the wet season to diminish the likelihood of plugged culverts and the possibility of washouts.

Seed and mulch cut and fill slopes, ditchlines, and excavation waste disposal upon construction completion for new landings and temporary route spurs. Where straw mulch is used, require certified weed free. Mulch shall be applied at no less than 200 lbs/acre.

Ditchline blading would occur to restore proper drainage and road surface blading would occur to maintain the running surface or restore proper drainage. Blading of ditch lines would not occur within 50 ft of streams unless the lack of blading would compromise the integrity of the road prism. If blading within 200 ft of streams is required, sediment control measures in the ditch are required.

Retain low-growing vegetation on cut-and-fill slopes (i.e. Grasses, ferns).

Avoid undercutting of cut-slopes when cleaning ditchlines. Seed and mulch bare soils including cleaned ditchlines that are hydrologically connected to stream channels. Avoid routine machine cleaning of ditches and blading during the wet season, generally November through May of the next calendar year.

Prior to October 15 of the same operating season, winterize and/or rehabilitate temporary routes, landings, corridors, skid trails and other areas of exposed soils by properly installing and/or using water bars, berms, sediment basins, gravel pads, hay bales, small dense woody debris, seeding and/or mulching, to reduce sediment runoff as directed by the Authorized Officer.

Ground based logging would not occur when soil moisture at a depth of 4-6 inches is wet enough to maintain form when compressed, or when soil moisture at the surface would readily displace, causing ribbons and ruts along equipment tracks. These conditions are generally found when soil moisture at a depth of 4-10 inches is between 15-25% depending on soil type.

Haul would not occur on hydrologically connected roads when water is flowing in the ditchlines or during any conditions that would result in any of the following; surface displacement such as rutting or ribbons; continuous mud splash or tire slide; fines being pumped through road surfacing from the subgrade and resulting in a layer of surface sludge; road drainage causing a visible increase in stream turbidities, or any condition that would result in water being chronically routed into tire tracks or away from designed

road drainage during precipitation events. Hauling on natural surface or rocked roads would not resume for a minimum of 48 hours following any storm event that results in ½ inch or more precipitation within a 24 hour period, and until road surface is sufficiently dry to prevent any of the above conditions from reoccurring, and as approved by the Authorized Officer.

Off designated skid trails, mechanized harvest equipment would operate on ground less than 35% slope, have an arm capable of reaching at least 20 ft, and minimize turning. If equipment exceeds 6 pounds/square-inch (PSI) ground pressure, the harvest equipment must walk on existing or created slash. This slash mat would be a minimum of 8 inches in depth prior to the equipment moving onto the slash mat. Additional slash would be required on the slash mat, if more than an out-and-back trip is done by the equipment.

Existing skid trails would be utilized whenever practical. New skid trails would be placed at least 150 ft apart, where topography allows, to reduce the amount of compaction within tractor yarded units. New skid trails would be located outside the Riparian Reserve whenever possible and would be pre-designated and approved by the Authorized Officer.

Tractors would not exceed nine feet in width and would be equipped with an integral arch to minimize soils disturbance and compaction. Skid trails including turning points would be 12 ft width on average.

The use of blades while tractor yarding would not be permitted, to minimize soil disturbance and to keep soil organics on site. Equipment would walk over as much ground litter as possible to reduce compaction.

Whole tree yarding with tops attached to the last log would be permitted as long as contractor can operate without causing unacceptable damage from bark slippage, girdling, broken tops, or damage to live crowns. If it is determined by the Authorized Officer that unacceptable amounts of damage is occurring, trees would be required to be bucked and limbed as directed by the Authorized Officer. Delivered log length not to exceed 41 feet.

At a minimum, partial suspension would be required on all units to minimize soil disturbance. Where feasible, require full suspension over flowing streams, non-flowing streams with erodible bed and bank, and jurisdictional wetlands. Yard with full suspension or one-end suspension where slopes exceed 60 percent along stream channels, using seasonal restrictions.

The number of yarding corridors would be minimized to reduce soil compaction and displacement from cable yarding. Corridors would be located approximately 150 ft apart at the tail end.

Prior to winter rains, cable yarding corridors that are above or nearly perpendicular (approximately 60-90 degrees) to stream channels or hydrologically connected to

streams via ditchlines, would be waterbarred and have slash placed over them to protect water quality.

Timber haul on BLM road #39-8-29 would be limited to the dry season (generally May 15 through Oct 15 of the same calendar year) to reduce the mobilization of sediment. Timber haul on BLM road #39-8-29 would include fording a seasonally flowing creek at a stable low water crossing.

Temporary route construction and reconstruction (including associated decommissioning) would not occur when soil moisture, at a depth of 4-6 inches, is wet enough to maintain form when compressed; or when soil moisture at the surface would readily displace, causing ribbons and ruts along equipment tracks. These conditions are generally found when soil moisture at a depth of 4-10 inches is between 15-25% depending on soil type.

All temporary routes and new landings would be rehabilitated (also referred to as decommissioned).

Existing skid trails used for harvest outside Riparian Reserves, would be rehabilitated as needed to reduce the compacted area per unit to less than 12%. All existing skid trails used for harvest in Riparian Reserves would be rehabilitated.

New skid trails would be scarified and stabilized, and intermittently rehabilitated in areas where the roots of leave trees would not be substantially affected. All rehabilitation would occur within 24 months of harvest, and during the dry season when soils at 4-6 inches no longer maintain form when compressed, and soils on the surface do not readily displace under pressure to form ribbons or ruts. Rehabilitated areas would be discontinuously sub-soiled, seeded, mulched, have slash placed over, water-barred, and blocked. For all sub-soiling, a winged ripping device would be used to sub-soil the full width of the skid trail, rips would be no more than 36 inches apart, and would be to a depth of 18 inches or to bedrock, whichever is shallower. All rehabilitation activities that utilize heavy equipment would be required to take place at same time as sub-soiling to prevent machinery from driving back over sub-soiled ground. Waterbar spacing and drainage angles would be based on the NWFP Standards and Guidelines erosion control measures for timber harvest, which considers slope and soil series (RMP, p. 167).

Upon completion of harvest, all existing skid trails utilized during this harvest activity within Riparian Reserves would be discontinuously sub-soiled, seeded, water-barred, mulched and blocked (as per described above for upland skid trails).

Locate landings on stable locations that minimize sediment delivery potential to streams (e.g. ridge tops, stable benches or flats, and gentle-to-moderate side-slopes), in areas with low risk for landslides, and outside jurisdictional wetlands. To the extent workable, avoid unstable headwalls, and steep channel-adjacent side slopes. There would be no new or expanded landings within one site potential tree of perennial streams and springs.

To the greatest, extent practicable, avoid locating new landings in areas that can contribute eroded fines to dry draws and swales. If location cannot be avoided, ensure properly installed sediment control measures are placed and maintained, as needed, to keep eroded material on site.

When utilizing existing landings that have the potential to release eroded fines into a stream or wet area, directly or via draws or ditchlines, ensure that silt fencing or other sediment control measures are properly placed and maintained during use and periods of non-use, to keep eroded material onsite.

Divert road and landing runoff water away from headwalls, unstable areas, or stream channels.

Landing piles would be burned, chipped, or otherwise removed from these sites within 18 months of unit harvest completion.

Landings used during dry conditions within the wet season (generally October through May) that have the potential to release sedimentation into a stream or wet area via ditchlines or other means, would have silt fencing or other sediment control measures in place during periods of non-use if they are hydrologically connected² to streams.

Natural surface and rocked haul routes and related ditchlines that could deliver sediment into Southern Oregon/Northern California Coasts critical habitat would have sediment barriers (e.g. hay bales, silt fence, settling ponds) installed to prevent sediment from reaching these streams. Specifically these sediment barriers would be applied to BLM rd #39-7-19 and #39-8-29. Sediment barriers would be placed by the purchaser according to specifications and locations outlined by the BLM fish biologist, engineer, and contract administrator. These barriers would be maintained and monitored (Oregon DEQ Erosion and Sediment Control Manual 2005) by the purchaser and contract administrator during haul route usage.

Fragile Soils

Units 7-N-2, 7N-3, 7N-4, 7N-9 would have the following restrictions due to low soil nutrient levels or soil nutrient imbalance (Fragile Suitable Restricted Nutrient) and to minimize loss of soil nutrients:

² Hydrologically Connected = where drainage features are connected to stream channels via surface water flow routes, including headwater springs. This determination is made with project specific field verified stream surveys to identify where sediment has the potential to be carried to streams; where precipitation and subsurface flows on impermeable road surfaces may be intercepted, concentrated, and carried to stream channels; and where ditchlines are increasing the stream network (for more information see the East West Junction Project Record stream surveys and Hydrologically-Connected Roads: An Indicator of the Influence of Roads on Chronic Sedimentation, Surface Water Hydrology, and Exposure to Toxic Chemicals by M. Furniss et al. (USDI, Forest Service Stream Systems Technology Center website at http://stream.fs.fed.us/news/streamnt/jul00/jul00_2.htm).

- Minimize underburning on slopes greater than 70 percent and southerly slopes.
- Minimize whole tree yarding and biomass removal to account for nutrient retention needs.
- Tractor yarding (including mechanized) would not occur. Timber extraction would be limited to cable yarding systems.
- Scarification, subsoiling, and tractor slash piling would not occur. Winterization and/or rehabilitation work would be limited to installing and/or using water bars, berms, sediment basins, gravel pads, hay bales, small dense woody debris, seeding and/or mulching, to reduce sediment runoff as directed by the Authorized Officer.

2.3.4.4 Streams and Riparian Zones

Prevent diversion of water from streams into road ditches or upon road surfaces.

Cleaning culvert inlets in stream channels should occur during the low flow period (generally June 15 to September 15) in accordance with Oregon Department of Fish and Wildlife (ODFW) in-stream work period guidelines.

Slumps, intermittent seeps, and other unstable areas would be buffered (no treatment) by leaving one row of overstory trees or a 25 ft diameter (whichever is greatest), from the outer edge of instability, around these areas for soil stabilization.

Material removed during excavation would only be placed in locations where it cannot enter streams or other water bodies. If side slopes generally exceed 60 percent or where side-cast material may enter waterbodies, wetlands, or floodplains, end-haul excavated material to minimize side-casting of waste material.

Unless unsafe, trees within Riparian Reserve boundaries (one or two site potential trees) would be directionally felled away from the stream, and upslope trees would not be felled into Riparian Reserves.

Trees in no-harvest portions of Riparian Reserves that are accidentally knocked over during falling and yarding would be retained on site for fish /wildlife habitat.

Upon completion of harvest, all existing skid trails utilized during this harvest activity within Riparian Reserves would be rehabilitated (as per described above for upland skid trails).

Where new skid trail construction is necessary within the Riparian Reserve, new skid trails would either be 1) constructed and used during dry conditions and fully rehabilitated (as described above for upland skid trails); or 2) construction would be restricted to the driest time of the year (generally Aug 1st -Oct 15th, as determined by the Authorized Officer), would be required to walk on slash and as necessary to prevent off-site erosion, skid trails would be scarified, seeded, mulched, slash cover placed, and waterbarred prior to October 15th of the harvest year.

Under-burning operations would be allowed to back into EPZs, but no ignition would take place in the EPZ or no-treatment areas.

Contractors must prepare a Spill Prevention, Control, and Countermeasure Plan for all hazardous substances to be used in the contract area, as directed by the Authorized Officer. Such plan shall include identification of Purchaser’s representatives responsible for supervising initial containment action for releases and subsequent cleanup. Such plans must comply with the State of Oregon DEQ OAR 340-142, Oil and Hazardous Materials Emergency Response Requirements.

Hydraulic fluid and fuel lines on heavy mechanized equipment would be in proper working condition in order to minimize potential for leakage into streams. Absorbent materials would be required to be onsite to allow for immediate containment of any accidental spills.

Refueling of chainsaws and heavy equipment would be done no closer than 150 ft of any stream or wet area.

Fire suppression foam would not be used within 150 ft of streams and wetlands.

Handpile burning operations within the EPZ would not occur concurrently with the implementation of adjacent upslope cable and ground based yarding activities. Underburning would occur one season after handpile burning operations to ensure that ground vegetation capable of trapping erosion from yarding activities is onsite.

2.3.4.5 Special Status and Survey and Manage Plant Species

Bureau Sensitive and Survey and Manage botanical species would be protected by the no treatment buffers in Table 2-4. The minimum buffer size is determined by habitat requirements and existing habitat conditions on a case-by-case basis.

Table 2-4. No Treatment Buffers for Botanical Species

Species Name	Management Status	Unit Number	Buffer Distance around Botany Sites
<i>Carex serratodens</i> (saw-tooth sedge)	Bureau Sensitive	13-16B	25 feet
<i>Cypripedium fasciculatum</i> (clustered lady’s slipper)	Bureau Sensitive S&M Category C	17-1D	100 feet
<i>Cypripedium montanum</i> (mountain lady slipper)	S&M Category C	17-1D	100 feet
<i>Erythronium howellii</i> (Howell’s fawn-lily)	Bureau Sensitive	7S-3, 9-9, and 19-1	25 feet
<i>Microseris howellii</i> (Howell’s microseris)	Bureau Sensitive	7S-6 and 7S-6A	25 feet

Trees would be directionally felled away from all no disturbance buffers.

Prescribed burns would occur during cool, moist weather conditions in units that contain Special Status Species (See Table 2-4 for specific units).

The following restriction for tree harvest activities in Unit 5-9 would be implemented to retain the function of the critical habitat primary constituent elements for *Lomatium cookii*, specifically the hydrology of the area and prevention of introduction of noxious weeds:

Yarding activities would be limited to dry condition in critical habitat, meaning yarding would not occur when soil moisture at a depth of 4-6 inches is wet enough to maintain form when compressed, or when soil moisture at the surface would readily displace, causing ripples and ruts along equipment tracks. These conditions are generally found when soil moisture at a depth of 4-10 inches is between 15-25% depending on soil type.

Single end suspension yarding for ground yarding systems in critical habitat.

Based on soil type, slope and amount of compaction, BLM hydrologist would recommend means such as subsoiling, water barring, and slash placement on skid trails to reduce impacts to surface and subsurface water flow due to compaction from yarding.

Skid trails in critical habitat or within 100 feet of critical habitat would be seeded with an appropriate native seed upon completion of the tree harvest.

The following restrictions for Hazardous Fuel Reduction activities in Units 5-9, 7S-3, 7S-6, 7S-6a, and 9-9 would be implemented to retain the function of the critical habitat primary constituent elements for *Lomatium cookii*, specifically the habitat, hydrology, and prevention of introduction of noxious weeds:

Use chainsaws or other hand tools to cut vegetation in critical habitat.

Piles constructed would be no larger than 8 ft x 8 ft in size and would cover no more than 5% of the treatment area in critical habitat.

No mechanized equipment would be used to build fire line in critical habitat. Firelines constructed in suitable dispersal and germination critical habitat would be pulled back and seeded with an appropriate native seed.

Burn piles constructed in critical habitat that are in 50 ft of established weed populations or along weed infested roads would be seeded with an appropriate native grass.

The following restrictions for road maintenance activities in Units 5-9, 7S3, 7S-6, 7S6a, 9-9, and the 38-8-9 road would be implemented to retain the function of critical habitat primary constituent elements for *Lomatium cookii*, specifically the hydrology and prevention of introduction of noxious weeds.

For new or replacement crossdrains avoid concentrated discharge into fill slopes. If water must be discharged onto fill slopes install energy dissipaters.

Rock and fill for road maintenance would come from a weed free source. If a weed free source is not available the site where the material was used would be monitored for noxious weeds for three consecutive years following the completion of the project. All noxious weeds observed during the monitoring would be treated with methods consistent with existing weed treatment protocol on Medford District.

2.3.4.6 Noxious Weeds

All heavy equipment, including brushing machinery, would be pressure washed to remove dirt, grease, plant parts, and material that may carry noxious weed seeds into BLM lands. Pressure washing would include thorough cleaning of the undercarriage in a designated cleaning area or in an equipment yard after loading. Equipment would be visually inspected by the Authorized Officer to verify that the equipment has been reasonably cleaned.

Wash equipment at sites with no potential for runoff into waterbodies, floodplains, or wetlands.

Only equipment inspected by the BLM would be allowed to operate within the Analysis Area. All subsequent move-ins of equipment as described above shall be treated the same as the initial move-in.

Prior to initial move-in of any equipment, and all subsequent move-ins, the operator shall make the equipment available for BLM inspection at an agreed upon location off Federal lands.

Roadside noxious weed populations would be treated prior to project activity with subsequent treatments as necessary and as funding is available.

2.3.4.7 Wildlife

Northern Spotted Owl (Threatened)

Medford BLM submitted a Biological Assessment (GPRA FY 10-11 formal) to the U.S. Fish and Wildlife Service and received a Biological Opinion (Tails #13420-2010-F-0082) stating proposed treatments “May Affect, Likely to Adversely Affect” the spotted owl.

Project Design Criteria included in the U.S. Fish and Wildlife Service’s Biological Opinion (cite) to the Medford District BLM’s Biological Assessment determination that the District’s proposed forest management activities for fiscal year 2010-2011 may affect, but are not likely to adversely affect, the threatened northern spotted owl (*Strix occidentalis caurina*) (spotted owl) and its designated critical habitat; would be applied to the East West Junction Project (see below).

- Any of the following measures may be waived in a particular year if nesting or reproductive success surveys conducted according to the U.S. Fish and Wildlife Service (USFWS) - endorsed survey guidelines reveal that spotted owls are non-nesting or that no young are present that year. Waivers are valid only until March 1 of the following year. Previously known well established sites/activity centers are assumed occupied unless protocol surveys indicate otherwise.

Work activities (such as tree felling, yarding, temporary route construction and reconstruction (including associated decommissioning), hauling on roads not generally used by the public, and prescribed fire)) would not be permitted within specified distances (see Table 2-5 below), of any nest site or activity center of known pairs and resident singles between March 1 and June 30 (or until two weeks after the fledging period) – unless protocol surveys have determined the activity center to be not occupied, non-nesting, or failed in their nesting attempt. March 1 – June 30 is considered the critical early nesting period; the restricted season may be extended during the year of harvest, based on site-specific knowledge (such as a late or recycle nesting attempt). If any new owls are discovered during harvest, activities would stop until mitigation options can be determined. Pile burning, underburning, and site preparation would not occur between March 1 and June 30 within ¼ mile of known spotted owl sites. The boundary of the prescribed area may be modified by the action agency biologist using topographic features or other site-specific information. The restricted area is calculated as a radius from the assumed nest site (point).

Table 2-5. Harassment Distances from Various Activities for Spotted Owls

Activity	Buffer Distance around Owl Sites
Heavy Equipment (including non-blasting quarry operations)	105 feet
Chain saws	195 feet
Prescribed fire	0.25 miles

Red Tree Vole

Table 2-6. No Treatment Buffers for Red Tree Voles in Harvest Units

Unit #s	No Treatment Buffer
9-12	Approx. 11 acres
7N-10	Approx. 7 acres
17-10	North Buffer approx. 11 acres South Buffer approx.. 11 acres

RTV Management Recommendations, Version 2.0, 2000

Table 2-7. Fuel Treatment Restrictions for Red Tree Voles

Unit #s	Application Location per unit	Restrictions apply all to each unit at left
3-4	RTV Habitat Areas only	<ul style="list-style-type: none"> No removal or modifying of nest trees or canopy structure of the stand. No removal of dominant, co-dominant, or intermediate crowns. Hand piling and burning can occur, but piles would not be placed below active, inactive, or unknown nest trees. No underburning
9-8		
17-4		
18-4		
3-4	Entire Unit	<ul style="list-style-type: none"> Hand piling and burning can occur, but piles would not be placed below active, inactive, or unknown nest trees. No underburning
13-16a		
13-16b		
17-1		
17-1D		
17-2		
29-3		

RTV Management Recommendations, Version 2.0, 2000 and RTV Management Recommendations for Hazardous Fuel Treatments around At-Risk Communities, 2003

Raptors

Protect additional raptor species if located and apply the appropriate buffers and seasonal restrictions (distance and season varies by species from ¼ - ½ mile).

Additional Wildlife Habitat

Unit 7S-2, would have a 100ft no commercial harvest buffer (non-commercial thinning, hand piling, and burning would be allowed) to protect meadows.

Habitat patches for the benefit of spotted owl prey, songbirds, and other species would be retained. These patches would maintain habitat diversity, a variety of vegetative structure, and utilize unique landscape features in the Planning Area. Where present, landscape features, such as wildlife and botany buffers, hardwood areas, chinquapin patches, rocky outcrops, wet areas, and areas with large woodrat nests, would contribute to or serve as these leave areas. Approximately 10% or more of the planning area would be untreated. Untreated areas would be a minimum of ¼ to ½ acre in size.

2.3.4.8 Cultural sites

Cultural resource surveys in Planning Area were conducted and site specific protection measures would be implemented to preserve the integrity of significant cultural resources, referred to as Historic Properties in cultural resource protection laws and regulations. If cultural resources are found during project implementation, the project would be redesigned to protect the cultural resource values present, or evaluation or mitigation procedures would be implemented based on recommendations from the

Resource Area archaeologist with concurrence from the Field Manager and State Historic Preservation Office.

The cutting or removal of trees for commercial treatments would not be permitted within 25 ft of the edge of the mining ditch channel. Trees adjacent would be directionally felled away from the edge of the mining ditch channel. No mechanized equipment or vehicles would be permitted to cross the mining channel.

Cutting of material for non-commercial purposes such as Hazardous Fuel Reduction would be permitted through the mining ditch; however, piles for burning would be placed 25 ft away from the edge of the mining ditch channel.

2.3.4.9 Recreation

At the trail head for the Illinois River Forks State Park, signs would inform users of the trail that the trail on BLM land is temporarily closed during timber operations to prevent users and timber operators from encountering potential dangers from equipment and operations.

Chapter 3.0 - Affected Environment and Environmental Consequences

3.1 Introduction

In accordance with law, regulation, executive order, policy and direction an interdisciplinary team reviewed the elements of the human environment to determine if they would be affected by the alternatives described in Chapter 2.0. Those elements of the human environment that were determined to be affected define the scope of environmental concern (see **Environmental Elements in Appendix 2 for full list of elements considered**). The Affected Environment portion of this chapter describes the current conditions in the East West Junction Project Planning Area. The relevant resources that could be potentially impacted are: fire hazard; soil compaction and productivity; vegetative resources; water resources and erosion; the northern spotted owl and its habitat; fisher and its habitat; and lomatium cookii and its critical habitat.

The Environmental Effects portion of this chapter provides the analytical basis for the comparisons of the alternatives (40 CFR § 1502.16) and the reasonably foreseeable environmental consequences to the human environment that each alternative would have on the relevant resources. Impacts can be beneficial, neutral or detrimental. This analysis considers the direct impacts (effects caused by the action and occurring at the same place and time), indirect impacts (effects caused by the action but occurring later in time and farther removed in distance but are reasonably foreseeable) and cumulative impacts (effects caused by the action when added to other past, present and reasonably foreseeable future actions on all land ownerships). The temporal and spatial scales used in this analysis may vary depending on the resource being affected.

Under 43 CFR § 46.115 it states that when considering cumulative effects analysis, it must analyze the effects in accordance with relevant guidance issued by the Council on Environmental Quality (CEQ). As the CEQ, in guidance issued on June 24, 2005, points out, the “environmental analysis required under NEPA is forward-looking,” and review of past actions is required only “to the extent that this review informs agency decision-making regarding the proposed action.” Use of information on the effects on past action may be useful in two ways according to the CEQ guidance. One is for consideration of the action alternatives’ cumulative effects, and secondly as a basis for identifying the action alternatives’ direct and indirect effects.

The CEQ stated in this guidance that “[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.” This is because a description of the current state of the environment inherently includes the effects of past actions. The CEQ guidance specifies that the “CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions.” Our information on the current environmental condition is more comprehensive and more accurate for establishing a useful starting point for a cumulative effects analysis, than attempting to establish such a starting point by adding up the

described effects of individual past actions to some environmental baseline condition in the past that, unlike current conditions, can no longer be verified by direct examination. The second area in which the CEQ guidance states that information on past actions may be useful is in “illuminating or predicting the direct and indirect effects of a proposed action.” The usefulness of such information is limited by the fact that it is anecdotal only, and extrapolation of data from such singular experiences is not generally accepted as a reliable predictor of effects.

Scoping for this project did not identify any need to exhaustively list individual past actions or analyze, compare, or describe the environmental effects of individual past actions in order to complete an analysis which would be useful for illuminating or predicting the effects of the action alternatives.

When encountering a gap in information, the question implicit in the Council on Environmental Quality regulations on incomplete and unavailable information was posed: is this information “essential to a reasoned choice among the alternatives?” (40 CFR §1502.22[a]). While additional information would often add precision to estimates or better specify a relationship, the basic data and central relationships are sufficiently well established that any new information would not likely reverse or nullify understood relationships. Although new information would be welcome, no missing information was determined as essential for the decision maker to make a reasoned choice among the alternatives.

3.2 Fire Hazard

3.2.1 Background Information on Fire Hazard

Fire is the primary natural disturbance agent in the Klamath Siskiyou province forests, influencing vegetation structure, species composition, soil properties, nutrient cycling, hydrology and other ecosystem processes (Agee 1993). Forests with high stem density and fuel loading combined with extreme fire weather conditions has led to severe and large wildfires that have put a number of important values at risk. Homes in the path of a wildfire are perhaps the most immediately recognized value; however these wildfires also put numerous other human and ecological values at risk such as power grids, drinking water supplies, firefighter safety, critical habitat, soil productivity, and air quality (Graham et al. 2004, p.43).

3.2.2 Affected Environment for Fire Hazard

The East West Junction Planning Area is located in three fifth field watersheds. The East West Junction Planning Area boundary is defined by ridgelines, creeks, and road systems which serve as strategic locations for holding wildland fires. In the event of a wildfire, these strategic locations may be utilized to contain a fire within the Planning Area, or conversely, to prevent a fire from entering it. As such, the East West Junction Planning Area boundary lends itself to a logical scale to conduct direct, indirect, and cumulative fire hazard effects analysis. The stands in the Planning Area are overstocked and have

high densities. Overstocked stands have a greater potential for severe, stand-replacing wildfires. The proposed treatment stands represent timber litter and timber-understory fuels types. As fuel loadings increase in these fuel types, resultant fire behavior also increases.

Fire Regimes

Fire regimes refer to the combination of fire frequency, predictability, intensity, seasonality, and extent of characteristic of fire in an ecosystem. A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995). Coarse scale definitions for natural (historical) fire regimes have been developed by Hardy et al. (2001) and Schmidt et al. (2002) and interpreted for fire and fuels management by Hann and Bunnell (2001). As scale of application becomes finer these five classes may be defined with more detail, or any one class may be split into finer classes, but the hierarchy to the coarse scale definitions should be retained. According to LANDFIRE data the East West Junction Project Area includes 86 percent in Fire Regime 1, 12 percent in Fire Regime 3, and 2 percent is a mixture of Fire Regimes 2, 4, barren land, and water.

Table 3-1. Fire Regime, Fire Return Interval, Fire Severity within the East West Junction Project

Fire Regime	Fire Return Interval	Fire Severity	Vegetative Examples
I	0-35 years	Low	Ponderosa pine, other long needle pine species, and dry site Douglas-fir
II	0-35 years	Stand Replacement	Drier grassland types, tall grass prairie, and some Pacific chaparral & southern rough ecosystems
III	35-100 years	Mixed	Interior dry site shrub communities such as sagebrush and chaparral ecosystems
IV	35-100 years	Stand Replacement	Lodge pole pine and jack pine
V	Over 200 years	Stand Replacement	Temperate rain forest, boreal forest, and high elevation conifer species

USDA/USDI al. 2003

Fire Regime Condition Class

Fire Regime Condition Class (FRCC) has become a measure of ecological departure used by the BLM, as well as other federal agencies, to describe resource conditions. This measure involves two pieces of information: (1) historic fire regime, and (2) the Condition Class. Condition Classes classify the amount of departure from the natural regime (Hann and Bunnell 2001). Coarse-scale FRCC classes have been defined and mapped by Hardy et al. (2001) and Schmidt et al. (2001) (FRCC). They include three condition classes for each fire regime. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime.

Condition Class 1 – (38% of the East West Junction Planning Area):

Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.

Condition Class 2 – (30% of the East West Junction Planning Area):

Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.

Condition Class 3 – (32% of the East West Junction Planning Area):

High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.

Fire Hazard

Fire hazard is a fuel complex, defined by volume, type condition, arrangement, and location, that determines the degree of ease of ignition and of resistance to control. This fuel complex determines the ability of fire spread once ignition has occurred. Fire behavior dictates which fire suppression strategy may be effectively employed, and therefore the extent to which a fire may grow and the subsequent damage it may cause. Because fire behavior is critical in fire suppression strategy selection, it serves as the threshold used for this analysis. The unit of measure for determining the threshold is considered in terms of flame length. Typically flame lengths less than four feet can generally be managed by fire suppression personnel using direct attack on the fire edge. Flame lengths greater than four feet generally require firefighting equipment and utilize an indirect attack strategy, where personnel back off to a defensible position away from the fire edge.

Fire hazard ratings were developed for the East West Junction Planning Area utilizing data from the Josephine County Risk Assessment. An estimated 58% of the project unit acres rate as high hazard, 38% rate as a moderate hazard, and 4% low hazard. The high and moderate hazard acres account for 96% of the Planning Area acres.

The entire East West Junction Planning Area lies within the Wildland-Urban Interface (WUI) surrounding the community of Cave Junction. WUI is the area where houses meet or intermingle with undeveloped wildland vegetation. Homes in close proximity to the BLM landholdings may become threatened by wildfire due to heavier fuel loading that may lead to uncharacteristic fire behavior (high intensity and severity).

Fuel Models

Fire behavior fuel models are grouped by fire-carrying fuel type. Fuel models are used to predict the potential behavior and effects of wildland fire. The majority of the Project Area can be identified within the timber understory (TU) and the timber litter (TL) fuel models. Table 3-2 shows the typical flame lengths associated with each of these fuel models during fire season weather conditions given a 5 mph wind.

Table 3-2. Fire Behavior Fuel Models with Flame Lengths

Fire Behavior Fuel Model	Fuel Model Group	Flame Length (in feet)
GS2	Grass Shrub	4-6
TL3	Timber Litter	1-2
TL6	Timber Litter	2-4
TU2	Timber Understory	3-5
TU5	Timber Understory	7-9
SB1	Slash/Blowdown	2-4
SB2	Slash/Blowdown	5-8

(Scott, Joe and Robert Burgan 2005. USDA, GTR-153)

3.2.3 Environmental Effects on Fire Hazard

3.2.3.1 Alternative 1 (No Action) - Direct and Indirect Effects on Fire Hazard

The existing surface, ladder, and canopy fuels would not be treated under this project. Fuels would continue to accumulate on the forest floor. Stands would remain in their current fuel type and fuel loading and fire behavior potential would continue to increase. The FRCC departure would continue to trend toward condition classes 2 and 3. In the short-term (1-2 years), there would be no increase in fire hazard as no landing or machine piles or hand piles would be constructed of activity slash or natural fuels, because no vegetation would be cut under this alternative.

Fire suppression activities would continue on Federal and non-Federal lands. The BLM has a master cooperative fire protection agreement with Oregon Department of Forestry (ODF). This agreement gives ODF the responsibility for fire protection on all lands within the Planning Area. The agreement directs ODF to take immediate action to control and suppress all fires. Their primary objective is to minimize total acres burned while providing for firefighter safety. The agreement requires ODF to control 94% of all fires before they exceed 10 acres.

Treatments on private property, around structures and along driveways would likely continue. As a result of the defensible space treatments around structures, driveways, and along possible escape routes the risk of both structural and human losses from wildfires would decrease.

In the long-term, the fuel hazard would increase as vegetation continues to develop. Surface fuels would increase due to tree mortality in dense stands as higher levels of insect and disease mortality are expected. The Planning Area would remain in moderate to high fire hazard, resulting in a higher potential of increased fire behavior if a wildfire occurs. The potential for increased fire behavior would create a greater risk for private land, homes, and resources in the East West Junction Planning Area. The departure from the historical fire regime would continue to trend toward condition classes 2 and 3.

3.2.3.2 Alternative 2 (Proposed Action) - Direct and Indirect Effects on Fire Hazard

The proposed forest management actions for Alternative 2 are Variable Density Thinning, Variable Retention Harvest, Pre-Commercial Thinning, Density Management, and Hazardous Fuel Reduction. Proposed fuels treatments for slash under this alternative include understory thinning, lop and scatter, pile and burn, chipping, prescribed underburn, and/or biomass removal.

Slash proposed for burning would occur under conditions that maximize consumption while minimizing potential escaped prescribed fire. The piles would need to cure (dry out) to burn thoroughly enough to achieve these conditions. This curing process generally takes over a year, during which time there would likely be a short term increase in fire hazard because the piles have the potential to produce flame lengths that exceed the fire behavior threshold and increase spotting distance. Lopping and scattering would reduce the vertical height and horizontal continuity of the fuel bed, but would put the treated area into a slash fuel model temporarily, resulting in higher expected flame lengths, fire duration, and intensity. There would be an increase in fire behavior for 5 to 10 years post treatment until fire behavior would be overcome by the effects of decomposition and new vegetation growth.

The majority of the East West Junction Project units are identified in the Southwest Oregon Fire Management Plan as Fire Regime 1, with low to mixed severity fires historically occurring roughly every 0-35 years. This fire regime has been interrupted due to past fire and forest management practices, resulting in a current condition of Condition Class 2 and 3 with moderate to high departure in natural vegetation characteristics and fuel loading.

In summary, the FRCC in the proposed Variable Density Thin and Variable Retention Harvest units would remain unchanged following harvest with moderate to high departure in natural vegetation characteristics and fuel loading. Density Management and Hazardous Fuel Reduction Treatments that include thinning of small diameter trees and removal of slash would maintain or shift towards FRCC2. Follow up prescribed fire underburns would gradually move the stands toward FRCC1.

Variable Density Thinning would aim to reduce stand basal area to remove mostly small and medium sized trees. Treatments would reduce ladder fuels and the risk to older trees from wildfire and competition, while favoring more fire and drought tolerant tree species. Thinning treatments would reduce torching and crowning potential by increasing canopy base heights. There would be a short term increase in fire hazard from slash piled within units and at landing sites. These units could have a reduction in potential fire behavior following activity slash treatments, which would move units from a slash fuel model into a timber litter model.

Variable Retention Harvest would aim to lower stand density to reinitiate an understory conifer component. The treatment involves protection of the oldest trees and retaining 20-30% of the stand. Following harvest, tree planting would occur to establish a new

conifer stand suitable to the natural character of the plant community. These treatments would increase fire hazard in the unit for 5 to 20 years due to a change of the fuel model to grass-shrub. If a higher percent canopy closure is retained and Pre-commercial Thinning slash is treated, the fire hazard in the unit would increase for 5-10 years, rather than up to 20 years.

Pre-commercial Thinning could occur in units identified in Table 2-1. This prescription typically occurs within 5 years of harvest activities and would produce slash material up to 8 inches in diameter. The majority of the cut vegetation would be treated by lop and scatter, and/or hand pile and burn treatments, resulting in a short term increase in fire behavior.

The majority of slash generated by Density Management treatments would be treated by biomass removal, chipping, lop and scatter, and/or pile and burn treatments. The majority of slash generated by Hazardous Fuel Reduction treatments would be treated by biomass removal or hand pile and burn treatments. Once the cut vegetation is removed and/or treated, subsequent underburning may take place in these units to prevent future increased in fuel loading. Underburning would typically occur within 5-7 years of fuels treatments. The proposed fuels treatments would reduce fire behavior such as flame length, rate of spread, and fire duration. Empirical evidence from other wildfires also supports the concept that forests treated with fire-hazard reduction objectives burn with less severity than adjacent untreated areas (Omi, and Martinson, 2002; Pollet and Omi, 2002).

The majority of cut vegetation would be extracted from the Variable Density Thin, Variable Retention Harvest, and Density Management units. The remaining slash in units may cause a shift from a timber type fuel model to a slash/blowdown fuel model, until the fuels are treated in 1-2 years. Following forest management activities and prior to slash disposal, fire behavior potential would increase from the current potential fire behavior due to increased surface fuels. The cut vegetation may be recommended for lop & scattered in units to prevent concentrations of slash and to arrange the material in a discontinuous pattern. In cases where post-harvest field review indicates a shift of the fuel model and an increase in flame length, the recommended treatment may be to pile and burn and/or chip the slash to decrease the fire hazard, and may be followed up with subsequent maintenance underburns.

Cut vegetation extracted from each unit would be piled at landing sites. If biomass is not extracted from these piles, they would be burned. There are no long term effects to fire hazard for the East West Junction Project since the short term increase would be negated once the landing, machine, and hand piles are burned and/or removed.

3.2.3.3 Alternative 3 - Direct and Indirect Effects on Fire Hazard

The proposed forest management actions for Alternative 3 are Commercial Thinning, Pre-Commercial Thinning, Density Management, and Hazardous Fuel Reduction treatment.

Proposed treatments for slash would be the same as those under consideration for Alternative 2: understory thinning, lop and scatter, pile and burn, chipping, prescribed underburn, and/or biomass removal.

Commercial Thinning would reduce torching and crowning potential by increasing canopy base heights. These units could have a reduction in potential fire behavior following activity slash treatments.

Effects to the fire hazard from Pre-commercial Thinning, Density Management, and Hazardous Fuel Reduction treatments would be the same as described in Alternative 2 (Section 3.2.3.3).

3.2.3.4 Alternative 2 and 3 - Cumulative Effects on Fire Hazard

There are four foreseeable federal projects in the East West Junction Project cumulative effects analysis area: the East Fork Illinois Landscape Management Project (LMP), the West Fork Illinois LMP, the Althouse Sucker LMP, and the Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA. Ongoing hazardous fuel reduction projects are being implemented on private land with assistance provided by the Illinois Fire Department, ODF, private contractors, and private landowners in the East West Junction Project Planning Area.

There are no East Fork Illinois Landscape Management Project (LMP) units that overlap proposed East West Junction Project units. The East Fork Illinois LMP involves Commercial Thinning, Density Management, and Restoration Thinning. A long term beneficial effect on fire hazard in the Planning Area from this project would be that the treated units could be utilized as a strategic holding point for fire suppression personnel. Fire hazard would be reduced in thinning, density management, and hazardous fuel reduction where fuels are treated.

The West Fork Illinois River LMP involves Commercial Thinning, Modified Group Selection, and Fuels Treatments. The fire hazard would also be reduced for this project where fuels are treated.

The Althouse-Sucker LMP involves Structural Retention, Commercial Thinning, Group Selection, and Density Management. The fire hazard would be reduced for this project where fuels are treated.

The Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA includes thinning, slashing, biomass removal, handpiling, handpile burning, and underburning depending on site specific conditions. These treatments would occur on strategic roadsides, ridgelines, and BLM managed parcels encompassing natural fuels in the wildland urban interface. Both natural and activity fuels would be treated. These treatments would result in a reduction in fire behavior such as flame length, rate of spread, and fire duration in the treated area.

The Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA would in many cases be adjacent to hazardous fuel reduction work that has been ongoing in the Illinois Valley. The Illinois Fire Department, ODF, private contractors, and private landowners have been working on treatments in the vicinity of the East West Junction Project Planning Area on private lands. These treatments would decrease fire behavior and increase the tactical fire suppression opportunities in the area.

The cumulative impact of the alternative on FRCC within the Planning Area would be minimal. Treatment acres would remain in FRCC 2 and 3. FRCC departure from the historical fire regime would continue to trend toward condition classes 2 and 3, except in prescribed underburn units.

The cumulative fire hazard for Alternative 2 of the East West Junction Project would be reduced in Variable Density Thinning, Density Management, and Hazardous Fuel Reduction treatment units. The one Variable Retention Harvest unit (9-12) would experience an increased fire hazard. The fuel reduction on private and federally managed public lands would result in reduced fire hazard.

The cumulative fire hazard for Alternative 3 of the East West Junction Project would be reduced within Commercial Thinning, Density Management, and Hazardous Fuel Reduction units. The fuel reduction on private and federally managed public lands would result in reduced fire hazard.

While dispersed mining is occurring on the U.S. Forest Service portion of the East West Junction Project Planning Area; there are no U.S. Forest Service projects being implemented or proposed in this Planning Area.

3.3 Soil Compaction and Productivity

3.3.1 Affected Environment for Soil Compaction and Productivity

3.3.1.1 Soil Productivity

Physical, chemical, and biological properties of soils determine the level of productivity of a soil. These properties also determine how different soils respond to natural and anthropogenic disturbances. To be productive for timber management, soils must be able to acquire, maintain, and release water and nutrients needed by trees during the growing season. Soils must also be able to support the microorganisms necessary to maintain proper nutrient cycling and plant nutrition. Forest management activities can affect these soil properties by displacing and compacting soils and removing topsoil organics.

Soil quality is central to sustainable forest management because it defines the current and future productivity of the land and promotes the health of its plant and animal communities (Doran and Parkin 1994). Forest soil maintenance is a key factor for

sustaining productive forests (Curran et al. 2005). Timber harvest activities cause forest soil disturbance that have implications for site productivity (Bockheim et al. 1975, Grigal 2000, Curran et al. 2007). Physical, chemical, and biological soil properties are affected by these types of disturbances (Binkley 1991).

Soils in the Project Area are generally moderately to highly productive (based on Douglas Fir Site Index). The Project Area for the East West Junction Project is composed of where there are proposed units for this project. Some soils have high erosion hazard under bare mineral soil conditions where slopes are steep and very steep (greater than 35% slope). Most soils in the Project Area, however, are not located on steep and very steep sites.

Soil and Soil Complexes

The Project Area is comprised of two geologic formations leading to two distinct soil types in the East and West Forks of the Illinois River and Sucker Creek fifth field watersheds. These are separated by a northeast trending fault which divides the watershed into the western and eastern areas; one group formed from serpentine and ultramafic rock and the other from sedimentary and igneous rock. The western area of the watershed is dominated by serpentine soils Dubakella and Pearsoll, which contain high levels of magnesium, iron, nickel, chromium, and cobalt. Due to the high ratio of magnesium to calcium, soil productivity is low and vegetation sparse. Serpentine soils are typically shallow; water holding capacity is low. In contrast, the eastern area comprised of Pollard-Abegg and Josephine-Pollard soils are deep and well drained. The soils are also susceptible to slumping when roads are constructed on steep slopes. There are no timber extraction units in serpentine soils. Derived from sedimentary and igneous rock, the Josephine and Speaker soils are deep and well drained, well suited for mixed conifer forests and are productive. The Cornutt series is formed from sedimentary and igneous rock but contains ultramafic material which reduces productivity.

The major management limitations and soil characteristics identified by Natural Resources Conservation Service for the soils and soil complexes found within the Project Area were used in the selection of proper Best Management Practices (BMPs) and Project Design Features (PDFs) that have been incorporated into the East West Junction Project (see Section 2.3.4).

Timber Production Capacity Classification (TPCC)

Portions of the East West Junction Project Area are classified as having fragile soils under the Timber Production Capability Classification (TPCC) Handbook (BLM 1986). Information is compiled broadly and is not based on site specific field review. As such, these areas are cautiously assessed during site specific field review. The field data collected ultimately determines the specific areas where timber management is suitable. Four proposed units in the East West Junction Project are in a Fragile Suitable Restricted Nutrient (FNR) classification area: Units 7N-2, 7N-3, 7N-4, and 7N-9. These soils are inherently low in nutrients or have a nutrient imbalance that inhibits tree growth. Management activities would not reduce site productivity below the threshold of

commercial forestland (20 ft³/ac/yr). The selection of proper Best Management Practices (BMPs) and Project Design Features (PDFs) that have been incorporated into the action alternatives are based on these characteristics and management limitations.

All of the remaining East West Junction Project units are in a reforestation suitable restricted classification area; one unit 13-3B in a reforestation non-suitable classification for temperature. The classifications for this project are Reforestation-Temperature-Suitable (RTR), Reforestation-Temperature-Non-Suitable (RTW), and Reforestation-Moisture-Suitable (RMR). These sites have environmental factors with the potential to reduce seedling survival. Sites that are suitable for commercial harvest, but that are classified as having temperature related reforestation problems generally have high solar radiation loads combined with low available soil moisture. Sites classified as having moisture related reforestation difficulties have low soil moisture combined with competing vegetation and/or a short growing season.

The dominant TPCC classification in the project units is in the Reforestation Classification: Reforestation Temperature-Suitable (RTR) (Table 3-3). In addition, there are a few units classified as Reforestation Temperature-Non-suitable (RTW) and Reforestation Moisture-Suitable (RMR). TPCC classifications for RTR, RTW and RMR sites have reforestation difficulties rather than impacts to the physical structure and stability of the soils. RT sites are where high solar radiation loads in combination with low available soil moisture due to low precipitation and/or competing vegetation limits conifer seedling survival. RTR sites are suitable commercial forest lands and would meet or exceed minimum stocking levels of commercial species using operational practices within 5 years of harvest for Category I lands and within 6-15 years for Category II lands. RTW sites are non-suitable commercial forest lands and would not meet or exceed minimum stocking levels of commercial species using operational practices. RM sites have low available soil moisture due to low precipitation and/or competing vegetation that reduces conifer seedling survival. RMR sites are suitable commercial forest lands and would meet or exceed minimum stocking levels of commercial species using operational practices within 5 years of harvest for Category I lands and within 6-15 years for Category II lands. See Map 3-1 for a visual display of the TPCC reforestation classifications in proposed units of the East West Junction Project.

Table 3-3. TPCC Reforestation Classifications in Timber Extraction Units for the East West Junction Project

Unit #	TPCC Classification
7N-4	Reforestation Temperature-Suitable (RTR)
7N-10	RTR
8-2	RTR
17-4A	RTR
17-10	RTR
19-3	RTR
20-1	RTR/RMR

Unit #	TPCC Classification
20-1A	RTR/RMR
20-3	RTR
20-4	Reforestation Moisture-Suitable (RMR)
21-6	RMR
13-16 A,B	RTR
29-1	RTR
29-2	RTR
29-4	RTR
29-8	RTR
29-9	RTR
29-11	RTR
29-12A	RTR
29-12B	RTR
29-13	RMR/RTR
29-15	RMR/RTR
29-16	RTR
29-17	RTR
29-18	RTR
33-5	RTR
34-1	RTR
34-2	RTR
3-3	RTR
5-1	RTR
5-9	RTR
7S-8	RTR
9-12	RTR

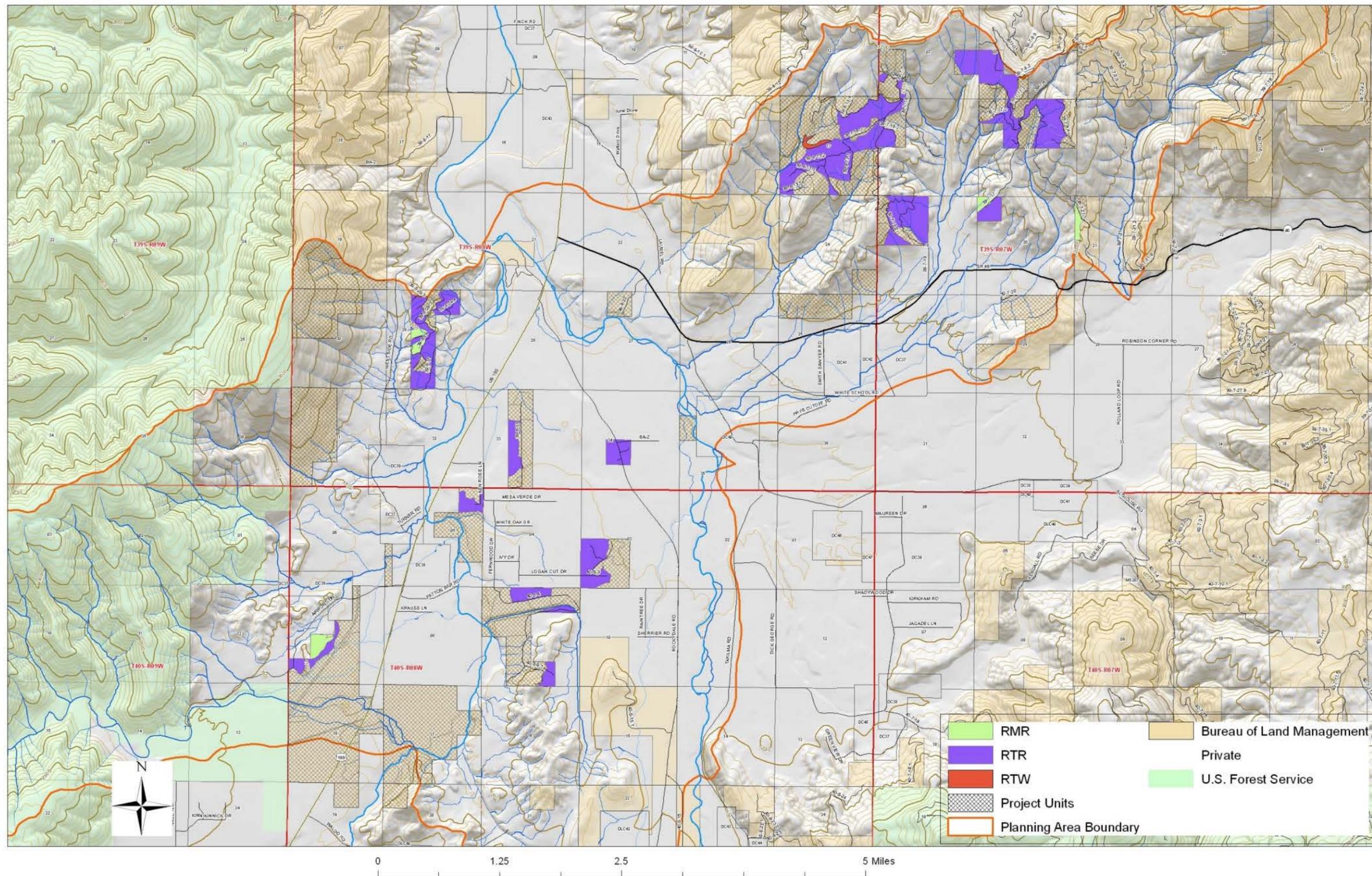
Fragile Soils

Fragile Nutrient Restricted-Suitable (FNR) is the only class of fragile soils in the proposed units (Table 3-4). FNR exhibits low nutrient levels or have a nutrient imbalance, which would limit/slow down tree regrowth compared to soils with more available nutrients. While soil nutrients can be naturally replaced after 80 to 100 years, the highest demand for plant nutrients occurs during the first 15 to 20 years. Therefore, nutrients in deficient soils would not be available in sufficient quantities during the period of maximum need by the young stand of trees. Management activities would not reduce site productivity below the threshold of commercial forestland (20 ft³/ac/yr). The proposed activities that overlap FNR soils are Density Management/ Hazardous Fuel Reduction. A small portion of the proposed temporary route construction into unit 7N-4 borders the FNR soil designation. Prior to issuing a decision on this project, this area would be field reviewed to determine the specific areas where timber management and route construction are suitable. See Map 3-2 for a visual display of the fragile soils in proposed units of the East West Junction Project.

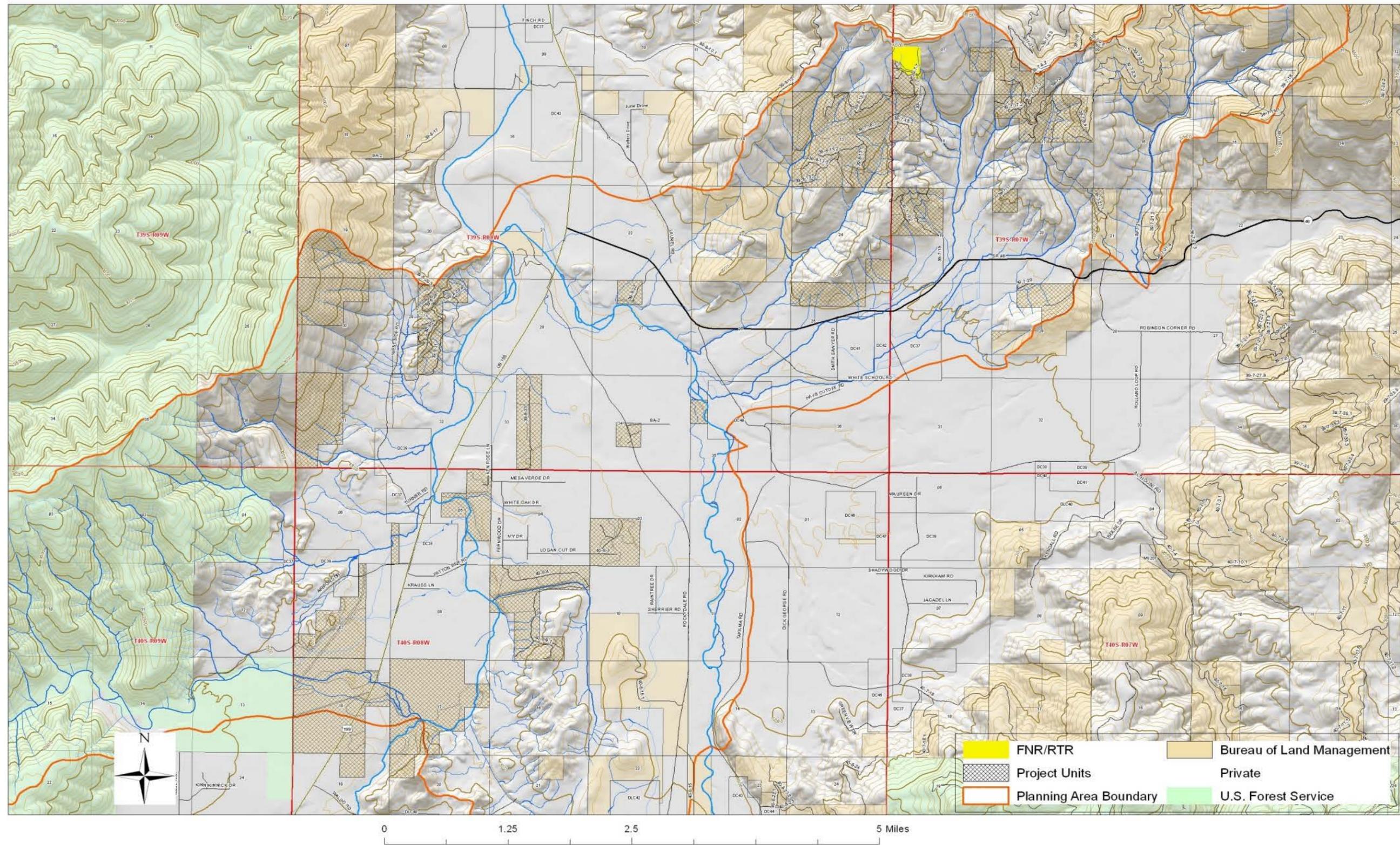
Table 3-4. TPCC Fragile Categories in the East West Junction Project Units

Unit #	TPCC Classification	Action Needed (applies to all units at left)
7N-2	Fragile Nutrient Restricted-Suitable (FNR/RTR)	<ul style="list-style-type: none"> • Minimize underburning on slopes greater than 70 percent and southernly slopes. • Minimize whole tree yarding and biomass removal to account for nutrient retention needs. • Tractor yarding (including mechanized) would not occur. Timber extraction would be limited to cable yarding systems. • Scarification, subsoiling, and tractor slash piling would not occur. Winterization and/or rehabilitation work would be limited to installing and/or using water bars, berms, sediment basins, gravel pads, hay bales, small dense woody debris, seeding and/or mulching, to reduce sediment runoff as directed by the Authorized Officer.
7N-3		
7N-4		
7N-9		

Map 3-1. TPCC Reforestation Classifications in East West Junction Project Units (see Table 3-3 for the classification code)



Map 3-2. Fragile Soils (TPCC) in East West Junction Project Units (see Table 3-4 above for the classification code)



3.3.1.2 Soil Compaction

Soil compaction is defined as the packing together of soil particles by physical pressure at the soil surface that results in an increase in soil density and a decrease in pore space. A decrease in soil pore space results in restricted movement of water, nutrients, air, and plant roots, and as such generally decreases site productivity in most soil types.

Soil productivity, in a forested setting, is primarily the soil's capacity to support plant growth over time as reflected by some index of biomass accumulation. Losing a soil's plant growth capacity also means losing the site's ability to sustain a level of timber production as well as important ecological values. Soil productivity is affected by soil bulk compaction, soil displacement, and by changes in soil nutrients. Litter, humus, soil wood, and certain key properties of the surface mineral layers of forest soils are most easily and commonly disturbed by yarding activities, yet they are crucial to forest productivity. Minimizing the amount of soil displacement, compaction, and topsoil loss will generally maintain stand development. The most common types of disturbances effecting soils and associated long term soil productivity are displacement and compaction. Soil compaction and displacement, which effects growth, is a combined effect which cannot be separated (1994 Medford District EIS, Vol. 1, p. 4-13).

Harvest activities that compact soils limit the effective rooting depth of plants by restricting access to water and nutrients and reducing gaseous exchange (Gomez et al. 2002). Harvest activities that compact soils and increase soil strength can also impede root growth by reducing pore size (Greacen and Sands 1980) and reducing the number, size, and/or strength of structural aggregates. The depth of these effects (typically 4 to 10 inches) is a function of the ground pressure and total load, soil characteristics (e.g., texture, structure), and moisture conditions at the time of operation. Ground pressure is greatest at the soil surface and decreases with depth. Soil compaction increases soil resistance to root growth and penetration and therefore, reduces plant growth rates. Tractor and cable yarding are two tree harvest methods proposed for use in this project. Of the two, generally, tractor yarding causes the most compaction. Using modern BLM methods, tractor yarding typically causes 12% compaction of logged areas, while cable yarding causes 7% compaction of logged areas. These percentages are based on research by Adams and Froehlich, 1981, Dryness, 1967, and Clayton, 1981.

Harvest operations limited to periods of reduced soil moisture can reduce soil susceptibility to compaction and reduce the time required for a return to native bulk density levels (Miller et al. 2004). Soils are most susceptible to compaction when moisture levels are near field capacity. Soil moisture at field capacity lubricates soil particles and facilitates close packing of soil particles (Miller et al. 2004). Harvest impacts to soils can be minimized by restricting harvest equipment to designated trails spaced as far apart as operationally possible (Johnson et al. 2007). Soils recover from compaction at varying rates. Compaction of coarse textured soils may recover in as little as one year (Mace 1971). Alternatively, compaction may persist for decades and become exacerbated by repeated harvest entries on fine textured soils (Froehlich et al. 1981, Froehlich et al. 1985).

The amount of soil compaction and productivity loss is based on percentages per unit. The scale of analysis is per harvest unit, as it is the affected area for soils to support tree establishment and growth on BLM managed land. Where activities are proposed for the East West Junction Project is collectively referred to as the Project Area. Specifically, soil productivity calculations are based on acres of compaction/displacement representing a 35% growth/productivity loss per acre (Productivity losses of 30 and 40% for displaced and compacted acres respectively, are based on the Medford District PRMP vol.3 calculations, p.18-20). These two productivity loss factors were averaged at 35% for this analysis, based on estimated percentages of compaction and displacement within each cable yarding corridor and tractor skid trail being in roughly equal proportions. The acres of compaction/ displacement were then multiplied by the projected loss of 35% growth divided by the unit area to determine the reduction in productivity. The calculations take into account compaction/displacement associated with temporary routes, landings, skid trails, and cable yarding corridors.

3.3.2 Environmental Effects on Soil Compaction and Productivity

3.3.2.1 Alternative 1 (No Action) - Direct and Indirect Effects on Soil Compaction and Productivity

Soils would remain at approximately the same productivity range as currently. Compaction may increase if the rate of logging and development on private lands increases. However, in the next 20 years compaction levels should remain moderate (<12% of compacted area). Fine roots of current vegetation would continue to loosen compacted soil. Leaf fall and other litter from the vegetation would continue to add organic material to the soil. The effects of freeze and thaw and plant growth would continue to reduce compaction in undisturbed areas. However, depending on site conditions, this may take decades instead of years. There would be no increase of compaction in undisturbed areas. However, in areas that would remain roaded and see regular activity, compaction would not be reduced. Soil productivity in areas not affected by past disturbance would continue along existing productivity patterns.

3.3.2.2 Alternative 2 and 3 - Direct and Indirect Effects on Soil Compaction and Productivity

Alternative 2 proposes 592 acres of possible commercial extraction activities while Alternative 3 proposed 588 acres of commercial extraction. Both action alternatives propose 0.4 miles of temporary route construction. Collectively each action alternative that would result in an estimated 29.7 acres of soil compaction and displacement over new and existing footprints and would reduce soil productivity by an estimated 1.7% in the Project Area. Best Management Practices in the 1995 RMP (p. 166) describe the use of designated skid roads within stands to limit soil compaction to less than 12% of the harvest area. For Alternative 2, the analysis of skid trail compaction/displacement that was projected in GIS averaged approximately 2.2% compaction per unit. Total compaction/displacement associated with new and existing temporary routes, tractor skid trails, landings and cable yarding corridors would account for an average of

approximately 5.34% per unit. Each proposed East West Junction Project harvest unit would be below 12% compaction and 5% productivity loss as analyzed in the 1994 Medford District FEIS RMP. Units 7N-1, 7N-8, 8-3, 17-1, 17-1D, 17-2, 17-4, 18-1, 18-4, 19-1, 13-3A, 13-3B, 13-6B, 20-2, 29-3, 3-4, 7S-2, 7S-3, 7S-6, 7S-6A, 9-8, and 9-14 are proposed for Hazardous Fuel Reduction would not contribute to soil compaction or productivity loss, since no extraction is proposed for these units.

With the implementation of either action alternative, soils would return to the same productivity range within 3-5 years following BMP guidelines. Rehabilitation of skid trails would improve productivity. The specific actions of the action alternatives that would affect the physical, chemical, or biological properties of soils in proposed harvest units are described below.

Soil Compaction/displacement

- Roads

For Alternative 2, a total of 0.5 miles of temporary route reconstruction would occur within units 34-2, 7N-3, 7N-4, 29-2, 29-4, and 8-2. These roads utilize existing road footprints that are currently compacted as a result of past harvest activities. These existing roads that would be re-opened for the East West Junction Project amount to approximately 0.8 acres. Following use, these reconstructed roads would be ripped, stabilized, water barred and barricaded. While some displacement of surface organic material that had fallen onto the old road surface since past harvest would occur, compaction would be reduced by the ripping. Overall, soil productivity on these acres would improve.

For Alternative 2 and 3, a total of 0.5 miles of temporary route construction are anticipated to occur during implementation of the East West Junction Project, resulting in 0.85 acres of soil compaction. These routes would allow harvest operations to occur within parts of units 8-2, 29-2, 29-15, 29-16, and 34-2 units. Following use, these temporary routes would be ripped, stabilized, water barred and barricaded. There would be some short-term loss of soil productivity where the temporary route was constructed due to displacement of soil organics. There would be an increase in soil productivity within the unit along these temporary routes in areas where the organics were deposited (e.g. fill-slopes). Ripping of these temporary routes would mitigate compaction.

- Landings, Skid trails, and Cable Yarding Corridors

Soil compaction from landings, skid trails, and cable yarding corridors would occur on approximately 85 acres from the East West Junction Project. These landings, skid trails, and yarding corridors would be utilized during the extraction of commercial size timber.

Landings, skid trails, and cable yarding corridors would be winterize and rehabilitated by properly installing and/or using water bars, berms, sediment basins, gravel pads, hay bales, small dense woody debris, seeding and/or mulching, to reduce sediment runoff as described in Chapter 2 (Section 2.3

Project Design Features). Tractor landings in Riparian Reserves and all natural surface landings would be ripped after use to mitigate compaction.

Operators working within previously harvested units would be required to utilize existing skid trails and cable yarding corridors to the greatest extent possible before consideration of new trails and corridors. New skid trails, would be pre-designated and approved by the BLM Authorized Officer.

- Off Designated Skid Trails, Use of Mechanized Harvest Equipment
Mechanized harvest equipment (if used) would operate from slash mats that would be a minimum 8 inches in depth. Slash mats would disperse downward pressure across the soil surface.

Soil Productivity

The proposed silvicultural treatments would increase the long term (after 3-5 years) productivity of residual trees by effectively increasing water and nutrient availability. Thinning would improve/maintain stand vigor and current growth rates. Many of these stands are currently showing reduced growth rates as a result of overstocked conditions that are causing competition for soil nutrients and water. The action alternatives would reduce competition among the retained trees for light, nutrients, water and growing space.

Units with a reforestation suitable restricted classification that are proposed for timber extraction are under the Variable Density Thinning (VDT) or the Variable Retention Harvest prescriptions in the East West Junction Project. Since VDT is a thinning action, leave trees and natural reforestation would meet the minimum restocking guidelines under the NWFP, and aggressive tree planting on these sites would not be needed, although some gaps may be interplanted to supplement tree species diversity. “These sites will meet or exceed minimum stocking levels of commercial species within 5 years of harvest using operational practices,” (BLM 1986). The Variable Retention Harvest prescription (Unit 9-12) in the East West Junction Project would not require an aggressive reforestation effort. Low levels of tree planting may occur (150-225 trees per acre) although the understory is currently stocked with conifers at 80 trees per acre. Unit 13-3B is proposed for Hazardous Fuel Reduction so no timber extraction would occur in this unit for the East West Junction Project. As such, the proposed treatments on the reforestation suitable restricted classification would not have effects to productivity beyond those as described in Section 3.3.2.2.

Units with a Fragile Nutrient Restricted-Suitable classification would not reduce site productivity below the threshold of commercial forestland (20 ft³/ac/yr). The proposed activities that overlap FNR soils are Density Management/ Hazardous Fuel Reduction. Further field review will determine where timber management and route construction are suitable. The proposed treatments on the Fragile Nutrient Restricted-Suitable classification would not have effects to productivity beyond those as described in Section 3.3.2.2.

3.3.2.3 Alternative 2 and 3 - Cumulative Effects on Soil Compaction and Productivity

Effects of the action alternatives are analyzed on a per harvest unit basis. Design of the project to meet established standards for soil productivity loss, as done for other projects, maintains desired soil productivity on BLM managed lands across the landscape.

3.4 Vegetative Resources

3.4.1 Affected Environment for Vegetative Resources

The scale of analysis for vegetative resources is per proposed unit, as it is the affected area of vegetation from the East West Junction Project to support tree establishment and growth on BLM managed land. Where activities are proposed for the East West Junction Project is collectively referred to as the Project Area.

Disturbance Pattern/Stand Development

The current landscape pattern of the vegetation in the East West Junction Project Area is a result of geologic conditions, climatic conditions, pre-settlement periodic disturbance and post-settlement human influence (particularly mining) (USDI 2003, USDI/USDA 2000). The vegetation condition classes within stands and between stands are generally patterned by soils, aspect, past disturbance, and fire suppression.

Fire appears to have been the most dominant, frequent disturbance in the watershed and a major determinant of biological diversity (USDI/USDA 2000). The pre-settlement fire regime (pre-1850) was one of generally frequent, low to moderate severity fires. Fires were generally low intensity surface fires with occasional higher intensity, stand replacement patches. The result was a patchy landscape where higher severity burned patches were interspersed within a larger area of low intensity, under-burned areas. Large-scale stand replacement patches of hundreds to thousands of acres were infrequent for the watershed's landscape (USDI/USDA 2000).

Fire not only altered stand development by returning vegetation to earlier successional stages, it often served to maintain plant communities at later successional stages with frequent low intensity underburns. These frequent fires influenced the structural characteristics, species composition, and density of stands. Surface fuels were kept at low levels, under-stories were relatively clear of trees/vegetation that could serve as ladder fuels, and stands were generally more open than today. Frequent fires would have prevented fuel from accumulating and would have prepared a seedbed favorable for perpetuating pine species (Waring & Schlesinger 1985). Furthermore, frequent fires would have inhibited tanoak dominance by limiting its survival and ability to compete. High severity fire regimes on the other hand, exhibit infrequent, intense, large, stand-replacing events that denude entire forests. High severity fires occur when weather and topography align with excessive stand densities aggregating to create conflagration

events. Surface and ladder fuels build up to a level where fire resiliency is compromised and the entire stand is threatened by intensified burning conditions and can become completely denuded. Throughout southwestern Oregon and most of the western United States, fire is no longer a natural agent of ecosystem stability as it now creates major shifts in forest structure and function.

Wildfire exclusion has resulted in significant increases in both stand densities and the proportion of shade-tolerant and fire sensitive species. These changes have increased forest susceptibility to large, severe fires, epidemic attack by insects and disease, and have affected the quality of the habitat for rare plant species present in the watershed (USDI 2003). Increased forest densities and recent drought conditions have increased the water stress on older overstory trees. The absence of fire due to suppression efforts has changed the forest composition from a fire dependent ecosystem to a densely forested fire intolerant condition. Low stand densities often improved or maintained the growth of larger, older trees and maintained early seral species as a minor to major part of most stands (USDI/USDA 2000). The more mesic sites generally experienced longer fire return intervals.

Wildfire disturbance events were recorded in the Project Area boundary from the years 1959 to 2004. A total of 6 fire events were recorded comprising 1,151 acres and ranging in size from 1 to 565 acres. Most burned areas in the Project Area have regenerated. Most of the forest stands became established within 10 years after a fire, although some sites may have taken 30 to 40 years to become forested.

Minor disturbances from natural mortality have also created very small openings (0.10-0.25 acre) in the canopy layer. Natural mortality is primarily a result of openings in the forest canopy caused by branch abrasion, windthrow, and competition induced mortality. The understory of these stands consists of dense pockets of conifer regeneration and shrubs. Productive sites support large amounts of tanoak reproduction in the understory. Regeneration ranges from seedling to small pole size trees. These stands would benefit from density reduction treatments.

Table 3-5 displays the Vegetation Condition Class on BLM land in the East West Junction Project Area. The absence of fire has converted open savannahs and grasslands to hardwood woodlands and a mix of hardwood/conifer woodlands as evident during field observations and surveys. Hardwood/woodlands are being converted to pure Douglas-fir stands (Figure 3-1).

Table 3-5. Current BLM Vegetation Condition Classes for the East West Junction Project Planning Area³

Vegetation Condition Class	Acres	Percentage
Grasslands/Shrubs/Non-forest Land	31	< 0.5
Hardwood/Woodland	804	12
Early (0-5 years) and Seedlings/Saplings (0-4.9 inches dbh)	1,150	17
Poles (5-11 inches dbh)	930	14
Mid (11-21 inches dbh)	2,116	31
Mature (21+ inches dbh)	1,765	26
Total Acres	6,796	
Total Forest Land Acres	5,961	

The greatest percentage of cover on BLM land in the Planning Area occurs in the mid and mature vegetation condition classes at a combined majority percentage of 65% of forested acres and 57% total BLM Planning Area acres. There are few early seral stage classes on the landscape. The ones that do exist, including meadows, are being encroached upon by opportunistic proliferators such as Douglas-fir and tanoak, so much that the size of meadows are shrinking and their numbers are dwindling. This is evident by the scarce number of grasslands on BLM land in the Planning Area as observed by Swanson (2007).

The oldest trees sampled in the East West Junction Project Area were 208 years old and 155 years old Douglas-firs. Overall, commercial stand age for the Project Area averaged 111 years old. Individual sample trees greater than 150 years old made up 3.5 percent of the total 57 tree sample. Older stands or patches of older trees are in the understory reinitiation stage of forest development and vertical stand structure is predominantly two-storied.

Although there is more vertical structure (multi-storied) at the forest stand level, at the landscape level there is less diversity, stands are more homogenous, and canopy closures have increased (USDI/USDA 2000). Higher tree densities and increased ground fuels in stands have escalated the threat of stand replacing crown fires which were historically rare (USDI 2003). Because non-stand replacing fires are important to the maintenance of many plant communities, its exclusion has contributed to a reduction in the quantity and quality of habitats including oak woodlands, meadows, conifer forests and chaparral (USDI 2003).

Oliver and Larson (1996) describe forest stages of development. Following disturbance, a stand will see new plants emerge for several years; this is described as the Stand Initiation stage. As growing space becomes occupied and growth factors become less available to individual trees, new plants no longer emerge and some of the original plants begin to die in the Stem Exclusion stage. Trees with a competitive advantage for the site

³ Acreage in this table includes proposed units and areas not proposed for treatment under the East West Junction Project

then begin to establish dominance. This stage is then followed by the Understory Reinitiation stage where openings created by the death of existing trees during the previous stage become occupied by new plants and continue to survive. The stand develops much later into the Old Growth stage. Here overstory trees die and some lower class trees grow into the overstory. Of the total acreage from each plant series, excluding plantations, all of the Ponderosa Pine Series is in the stem exclusion stage of forest development, whereas all of the Tanoak Series is the understory reinitiation stage.

Species Composition

In dry forests subtle changes in species composition and stand structure are occurring over the landscape. Many trees with old-growth characteristics are dying as a result of increased competition for limited resources with second growth trees. Douglas-fir is replacing ponderosa pine, sugar pine, and incense cedar because of its more shade-tolerant nature (Figure 3-1). Douglas-fir is also encroaching upon the edges of meadows and oak woodlands. Their subsequent mortality along the edges is also evidence of their non-suitability to the site. Because of their relative shade tolerance, Douglas-fir, over the last century has retained the competitive advantage over pine and oak species on undisturbed sites. By sheer numbers, Douglas-fir stems can out-compete single more shade tolerant tree species such as oaks and ponderosa pine. Suppressed shrubs and hardwood trees beneath dominant undisturbed tree canopy layers are dying. California black oak has dropped out of some conifer stands almost altogether where light and water have become limiting as a result of competition (Figure 3-1). Shaded forest floors precondition a site for the rapid proliferation and site occupancy of Douglas-fir. However, their competitive advantage also proves to be their downfall as they occupy so much of the site that they begin to outcompete not just other species, but also each other. Douglas-fir now exhibit poor vigor and their individual tree growth rates are declining (Figure 3-x).

Pine, madrone and black oak are being replaced by more shade tolerant species such as tanoak and Douglas-fir. Fire exclusion has resulted in encroachment of meadows by species such as incense cedar and Douglas-fir. Fire is the principal inhibitor of tanoak dominance (Tappeiner et al. 1990, Atzet et al. 1996). Due to the success of fire suppression over the last 70 years, overall cover of ponderosa pine has decreased while overall cover of tanoak and tanoak sites has increased, subsequently enhancing tanoak's competitive status increasing its absolute cover and relative density (USDI 2003, Atzet and Wheeler 1982, Atzet et al. 1996). Tanoak sites are considered productive, occurring where both soil and atmospheric moisture are plentiful and most frequently on cooler aspects with fine textured soils (USDI 2003, Atzet and Wheeler 1984). Douglas-fir is the most common tree species in the Project Area and in southwestern Oregon. This species is self-pruning, often sheds its needles and tends to increase the rate of fuel buildup and fuel drying (Atzet and Wheeler 1982).

As hardwoods encroach into open savannahs and grasslands, over time, shade tolerant conifers begin proliferating through the understory converting the site to a mixed hardwood/conifer woodland condition, then eventually to a nearly pure conifer site

devoid of any hardwoods (Figure 3-1). However, these sites generally do not support long-term shade tolerant conifers in terms of density, soil composition, moisture, and aspect. Douglas-fir and white fir, therefore, do not grow to maximum size, form, and vigor. Conversions from pine to fir are also evident and occur in similar sequence as the conversion from hardwoods to conifers (Figure 3-1). The conversion from pine to fir has weakened stand vigor as resources become increasingly scarce among competing trees and other vegetation. Douglas-fir growing on dry sites that are more conducive to early seral species do not attain full size, remain poor in vigor, and show poor form. Non-vigorous conifers then become susceptible to insect and disease mortality or prematurely die off from competition.



Figure 3-1. East West Junction Project Area Units 29-17 and 29-1.

(A) Left: Unit #29-17 – Widespread California black oak mortality. Dry Douglas-fir Site excluding California black oak from the stand. Following a century of fire suppression, this site now exhibits a radical change in species composition where Ponderosa Pine and California black oak once occupied a greater proportion of the stand. This condition is a regular occurrence in dry forests where disturbances have not occurred for decades.

(B) Right: Unit #29-1 – Dry Douglas-fir Site in the Stem Exclusion Stage of structural development. This stand condition continues through some portions of riparian zones where limited EPZ Variable Density Thinning treatments would leave all hardwoods, 50% crown closure, favor leaving the largest conifers, and enhance species diversity by promoting fire resilient dry forest species such as California black oak and ponderosa pine.

Moist forests exhibit a species composition with tanoak being a major competitor. These sites are productive and Douglas-fir trees can attain large size and persist for lengthier periods than observed in dry forests. Seedlings are generally common in the understory, although some understories are occupied by a lush presence of tanoak. Some sites have been mechanically slashed and some mechanically slashed and burned. Burned sites exhibit less resprouting and shorter resprouts than unburned sites in moist forests of the Project Area.

Crown Closure

The spherical densiometer was used by a single observer to measure crown closure at point measures for the stand exams performed in the Project Area. This instrument was originally developed and published by Dr. Paul E. Lemmon which has been tested as a

statistically valid, accurate, and repeatable instrument for measuring overstory density on stands of ponderosa pine, lodgepole pine, and Douglas-fir whose pioneering work was done mainly in the Pacific Northwest (Lemmon 1956 and 1957). Ganey and Block (1994) recommend its use for single observer point measures. The average canopy closure for sampled stands in the East West Junction Project Area was 88% and ranged from 85 to 90%.

Crown closures were also estimated by the ORGANON growth and yield model. ORGANON is an individual tree growth model developed for Southwest Oregon, Northwest Oregon, the lands of the Stand Management Cooperative, and red alder plantations in Oregon and Washington. Data field collection included measuring crown widths during stand exams. Stand exam data was processed through ORGANON which predicts several stand characteristics including an estimation of crown closure. The growth and yield model uses maximum crown width equations to predict crown closure as well as crown competition factor which resulted in an average crown closure of 98% ranging from 82 to 100%. Both measures indicate that competition is high. Hall (2003) points out that a site can be fully occupied at less than 100% canopy cover because of root occupancy.

Stand Density Index

Undisturbed populations eventually compete for growing space and gradually thin the population as individuals die in a self-thinning process (Barbour, et al. 1987). Competition in a stand has been directly correlated with stand density. The more stems (ie. plants) that exist per acre on a site, the fewer resources are available per stem to sustain it. Each stem draws water and nutrients from the soil and occupies a place in the stand that captures sunlight. Absent disturbance (e.g. resulting from fire suppression or silvicultural activity), these sites become occupied by shade tolerant species capable of outlasting their shade intolerant associates. Various scientific methods have been developed over the decades that can predict or identify a threshold when a forest stand will decline in production and decrease in vigor due to factors such as competition. Relative Density Index (RDI) and the Waring Tree Vigor Index are two such measures of both stand and tree level health and productivity.

Drew and Flewelling (1979) concluded that the correlative density index rating of 0.55 for any given stand marks the initial point of imminent mortality and suppression. A productive forest stand absent of natural or human density control will continue growing unleashed until it reaches a condition where the vegetation in the stand occupies all the available growing space. The aftermath results in widespread competition and declining productivity as evident in dense stem exclusion stands. A decrease in stand vigor is expected and considered forthcoming with continued overstocking and increasing stand age. Nearly 75% of the stands inventoried have relative density indices between 0.55 and 1.00, which bounds the zone of imminent competition-mortality (Drew & Flewelling 1979). Currently, the relative densities of stands throughout the Project Area are high. This is primarily due to the lack of natural or manmade disturbance. The overall average

relative density for the East West Junction Project Area is 0.97 indicating that stands have reached the upper zone of imminent competition induced suppression and mortality.

Tree Vigor and Productivity

Waring and others (1980) developed a vigor rating using a physiological index of growth efficiency. The vigor index is a measure of health defined as the ratio of annual growth of stemwood to the area of leaves present to capture sunlight (Waring, et al. 1980). Each tree species has a specific leaf area/sapwood relationship that reflects its environmental growth potential, which can be estimated using measurements from a core sample (Kimmins 1987). Vigor rating index numbers are calculations of stem growth per unit of leaf area expressed as grams of stem growth per meter squared per year ($\text{g}/\text{m}^2/\text{yr}$).

Douglas-fir is the primary tree species in the Project Area. Tree cores were extracted and measured from 55 Douglas-fir sample trees in the Project Area using an increment borer. Douglas-fir tree vigor rating excluding site trees is currently at 55.3 g of annual wood production per square meter of foliage. The average vigor rating index for Douglas-fir including site trees was 64.4 $\text{g}/\text{m}^2/\text{yr}$ which is still considered relatively low in vigor. A vigor index of 55.3 grams of stem growth per meter squared per year ($\text{g}/\text{m}^2/\text{yr}$) is considered low in vigor. Although bark beetle outbreaks are not anticipated in the Project Area, the tree vigor rating is considered a reliable indicator of a tree's environmental growth potential; low vigor trees are under some form of physiological stress and their vigor can improve with additional growing space.

Another reliable indicator of a tree's vigor is its diameter growth per decade. Plant ecologist, Fred Hall (2003) writes in his Growth Basal Area Handbook that:

- stand density is the major factor affecting rate of diameter growth in stands unaffected by insects and diseases
- the rate of diameter growth reflects competition
- a decreasing rate of diameter growth is directly related to increasing competition/stand density
- rate of diameter growth reflects competition independent of crown closure (e.g. a 30% crown closure whose dominants are growing 0.8 inches per decade is assumed to be under a similar degree of competition as a stand at 100% crown closure with dominants growing at the same rate)
- spacing and thinning studies suggest that diameter growth of 1.0 inches per decade indicates highly significant intertree competition than does 3.0 inches per decade
- competition is not only between trees, but shrubs and herbs can also reduce tree diameter growth
- diameter growth decreases as basal area increases
- a site can be fully occupied at less than 100% canopy cover

Figure 3-2 illustrates the 10-year growth rate of all sample trees spanning to the decade ending in the year 1818. The current rate of Douglas-fir is 1.17 inches per decade

signifying that the species is under relatively heavy competition. Stocking control increases growing space, water and nutrient availability, sunlight penetration, and photosynthesis rates, thereby increasing diameter growth.

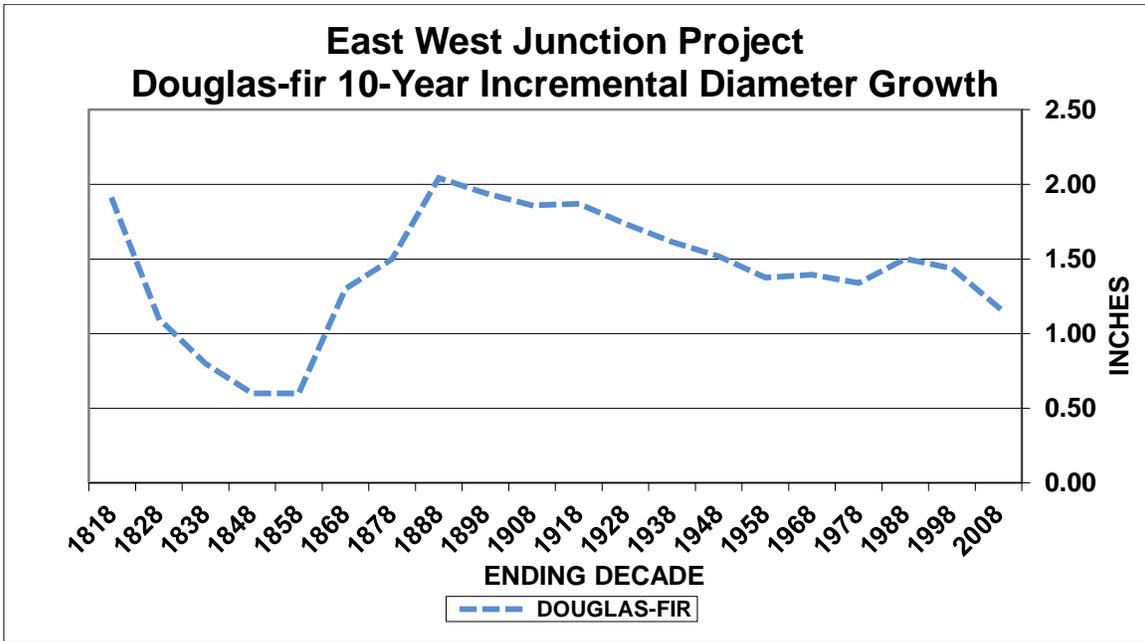


Figure 3-2. Douglas-fir Ten year Diameter Growth in the East West Junction Project

Because fire was once the most dominant, frequent disturbance in the watershed and once a major determinant of biological diversity (USDI/USDA 2000) its exclusion has resulted in major shifts in vegetative structure and growth. The exclusion of fire as well as the exclusion of replacement disturbance mechanisms following the pre-settlement fire regime (pre-1850) is evident in the long term decadal growth pattern depicted in Figure 3-2. The growth trend appears to have been in decline since the decade ending in 1888.

3.4.2 Environmental Consequences for Vegetative Resources

3.4.2.1 Alternative 1 (No Action) - Direct and Indirect Effects on Vegetative Resources

Ecological processes would remain displaced without disturbance. Stand densities would continue to rise and early seral species, particularly ponderosa pine and black oak, would continue to decline. No action would allow the relative density index of forest stands to climb above the overall average of 0.97 and stands would continue to decline in species and biological diversity. Stand densities would continue on its current trajectory and remain overpopulated. The current average relative density for the area indicates that physiologically the trees have entered the zone of imminent suppression and mortality. Individual tree vigor and growth would remain poor. Tree mortality represents a reduction in vigor, growth, volume, loss of revenue, and poor forest health.

Without silvicultural intervention, individual trees including old-growth ponderosa pine, old-growth sugar pine, and old-growth Douglas-fir trees, with seedlings through poles within their dripline, would continue to die from competition for water. Thinning would bring stands out of the stem exclusion or closed-canopy stage and accelerate the development of conditions found in late seral forests (Hayes, et al. 1997). Trees should develop large crowns, large diameter limbs, and deep fissures in the bark. Maguire, et al. (1991) found that large branches develop only on widely spaced trees or on trees adjacent to gaps or openings. Deep fissures in the bark are characteristic of large diameter Douglas-fir trees in old growth stands.

Shade intolerant pine and oak species would continue to decline in number from competition with encroaching shade tolerant white fir and Douglas-fir. Leaf area index would decline as live tree crowns decrease in size from tree competition. With large tree mortality, forest stand structure would gradually shift to the understory reinitiation stage. This is ecologically significant in that resources previously used by the dead tree are reallocated to the surviving vegetation. In dry forests that have excluded fire, ingrowth would perpetuate a cycle of growth and widespread mortality until the next disturbance. The relative densities also present a high fuel hazard across the landscape. The Medford District RMP describes the Forest condition (Forest Health) Resource Condition Objective that requires management emphasis on treatments and harvests that restore stand condition and ecosystem productivity. It directs management actions to include density management and understory reduction operations that reduce competition, increased use of understory prescribed fire, and fertilization (USDI 1994). No action contradicts the Medford District Resource Management Plan forest condition objectives in regard to forest health.

Because fire suppression has altered landscape structural densities and species composition, without any form of density control, including the crown bulk density of older stands that contribute to stand replacing fires, slow tree growth and poor vigor will result in individual tree and stand mortality. A decrease in stand vigor is expected with continued overstocking and increasing stand age. In regard to species and biological diversity forested stands in the Project Area have become predisposed to stand replacing fires and insect and disease epidemics. When left undisturbed, stands continue to grow and produce new seedlings, although in unhealthy and dense conditions. Douglas-fir, a shade tolerant species continues to occupy densely populated and thus shaded sites, even sites that previously saw far less numbers of Douglas-fir than exist today.

Dense stands heighten tree to tree competition. Growing conditions become so stagnant (at or above stand density index of 0.55) that intense competition follows and the stand begins excluding the weakest trees. During competition trees commit their energy sources for survival above their competing neighbors. This exhaustive effort predisposes a tree to damage or mortality by incoming insects and diseases. Future silvicultural options diminish when severe stand mortality results. On the other hand, hardwoods, shrubs, and forbs species would become more abundant and provide forage and hiding cover for big game animals. Song bird habitat may be enhanced.

Pine species would continue to decrease in number if openings are not created for these shade intolerant species. The more shade tolerant Douglas-fir and white fir would continue to encroach into the forest dominating sites and outcompeting shade intolerant ponderosa pine. This would result in a loss of early seral species and a decline in species diversity.

Where dense forest stands persist overtime, canopy closure would remain at 80 to 100 percent. When tree mortality is singular or in small patches, canopy closure may approach 40 to 70 percent. In pockets of mortality, canopy closure would range from 0 to 40 percent. Without controlling the relative densities, some forest stands will naturally fall below 60 percent canopy closure.

Fire hazard would increase with the abundance of dead vegetation and ladder fuels, and would be at maximum levels.

Summary

Short term effects of no treatment may result in increased competition for increasingly scarce soil moisture and nutrients as shade tolerant stems continue to proliferate. Very little diameter growth is expected in a no treatment scenario, yet some height growth may continue depending on the site and current stand condition.

In the no treatment scenario, as well as within skips of treated scenarios, the effects of long term limitations to growing space would be more pronounced. No treatment would see a decline in additional germination as nutrients and soil moisture become tied up by stronger competitors. A no treatment scenario would see less light and subsequently, less growing space with increasing crown closure. The long term result would likely exhibit a stand with widespread poor vigor and low insect and disease resistance. On drier sites, in T40S-R8W-Section 7; T39S-R8W-Section 29; and T39S-R7W-Sections 17, 20, 21, full site occupancy would occur before crown closure due to moisture and nutrient limitations. Moisture and nutrient limitations on such sites would occur before sunlight limitations become evident (ie. crown closure).

3.4.2.2 Alternative 2 (Proposed Action) - Direct and Indirect Effects on Vegetative Resources

Tables 3-6 thru 3-9 describe the short-term and long-term effects of proposed East West Junction Project treatments compared to no treatment. Projection of short-term effects has a higher degree of certainty compared to the projection of long-term effects. Stand condition and stand characteristics 11-100⁺ years into the future are highly dependent upon uncontrollable variables such as: climate stability or change, extreme weather, wildfire, future management direction, societal pressures, available funding for follow-up treatments and random events.

In summary, improvements to stand condition would likely begin to occur within the first 10 years as trees respond to newly available growing space following harvest. Increased

growing space would result in lateral and terminal branch growth and root extension stem elongation, foliage and fine root production, increased height and, to a lesser amount, diameter growth. Flower and seed production are also stimulated by release. Resistance mechanisms (to insects and diseases) are expected to improve as trees respond to release with greater oleoresin (oil and resin) production and added respiration. Trees at wider spacings with larger crowns are capable of producing enough photosynthate to resist insect attacks (Oliver and Larson, 1996). On the drier sites, T40S-R8W-Section 7; T39S-R8W-Section 29; and T39S-R7W-Sections 17, 20, 21, allocation of photosynthesis would occur first to fine root production and diameter growth may not be significant until later. Vigorous dominant leave trees would be the most productive.

In summary, the long term effects (11+ years post-harvest) would see greater increases in tree growth. A notable increase in stem (diameter) growth is expected in treated areas. Over time however, as the undisturbed stand sees densities begin to rise by natural ingrowth and crowns begin to close, individual trees would reallocate their resources to other growth priorities and stem growth would slow. With additional time for individual trees to respond to treatment, more significant growth is expected in roots, foliar production, and improved live crown ratio. Live crown ratio or the ratio of crown length to tree height is a reliable indicator of tree vigor. Long term effects of vegetation would therefore likely see an increase in the vigor of residual trees.

Table 3-6. Short term Vegetation Effects (0-10 years) from Alternative 2 of the East West Junction Project

Stand Condition	Alternative 2			
	Variable Density Thinning (Douglas-fir and Tanoak Series)	Variable Retention Harvest	Density Management/Hazardous Fuel Reduction	PCT and Hazardous Fuel Reduction
Vigor of Residual Trees	No change/decrease (in skips) to slight increase	No change/decrease (in skips) to increase	No change to slight increase	No change to increase
Growth Rate	No change/decrease (in skips) to slight increase	No change/decrease (in skips) to increase	No change to increase	No change to increase
Live Crown Ratio	No change/decrease (in skips) to no change/slight increase	No change/decrease (in skips) to increase	No change to slight increase	No change to increase
Conifer species	No change/slight decrease (in skips) to no change/increase species present	No change/decrease (in skips) in current species to increased species present	No change in current species to increased species present	No change in current species to increased species present
Hardwood Species	No change/decrease (in skips) to no change/increase	Increase	No change to increase	No change to increase
Shrubs/Brush/Forbs	Decrease (in skips) to increase as more light gets to the understory	Decrease (in skips) to increase	No change current spp. to increase	No change current spp. to increase
Snags	No change/increase (in skips) to no change	No change/increase (in skips) to no change	No change	No change
Coarse Woody Debris	No change/increase (in skips) to no	No change/increase (in skips) to slight	Remain the same to slight increase	No change

Stand Condition	Alternative 2			
	Variable Density Thinning (Douglas-fir and Tanoak Series)	Variable Retention Harvest	Density Management/Hazardous Fuel Reduction	PCT and Hazardous Fuel Reduction
	change/slight increase	increase		
Branching	Continued loss of lower limbs (in skips) to no change/increase	Continued loss of lower limbs (in skips) to increase	No change	Retention of lower limbs
Windthrow Hazard	No change/slight increase (in skips) to slight increase	No change/slight increase (in skips) to slight increase (61B)	No change to slight decrease	No change to slight decrease
Ability to Respond to Future Treatments	No change/decrease (in skips) to no change/slight increase	No change/decrease (in skips) to increase	No change to slight increase	No change to slight increase
Rate of Development of Older Forest Characteristics	No change (in skips) to slight increase	No change (in skips) to slight increase	No change to slight increase	No change to slight increase

Table 3-7. Long term Vegetation Effects (11+ years) from Alternative 2 of the East West Junction Project

Stand Condition	Alternative 2			
	Variable Density Thinning (Douglas-fir and Tanoak Series)	Variable Retention Harvest	Density Management/Hazardous Fuel Reduction	PCT and Hazardous Fuel Reduction
Vigor of Residual Trees	Decrease (in skips) to increase	Decrease (in skips) to increase	Increase	Increase
Growth Rate	Decrease (in skips) to increase	Decrease (in skips) to increase	Increase	Increase
Live Crown Ratio	Decrease (in skips) to slight increase	Decrease (in skips) to increase	No change to increase	Increase
Conifer Species	Decrease pine (in skips) to increase	Decrease pine (in skips) to increase	No change to slight increase	No change to slight increase
Hardwood Species	Decrease black oak/increase tanoak (in skips) to no change/increase	Decrease (in skips) to increase	No change to increase	No change to increase then decrease as canopy closes
Shrubs/Brush/Forbs	Decrease (in skips) to increase	Decrease (in skips) to increase	No change to increase	Increase then decrease as canopy closes
Snags	Increase (in skips-sm dia.) to decrease in numbers, increase in size	Increase (in skips-sm dia.) to decrease in numbers, increase in size to eventual increase in size and number	Decrease in numbers, increase in size	Decrease in numbers, increase in size
Coarse Woody Debris	Increase (in skips-sm dia.) to no change/slight increase	Increase (in skips-sm dia.) to no change/slight increase	No change to slight increase	No change to slight increase
Branching	Decrease of lower limbs (in skips) to retention of lower	Decrease of lower limbs (in skips) to retention of lower limbs, retention of	Retention of limbs present, possible development of large	Retention of lower limbs until canopy closes, some

Stand Condition	Alternative 2			
	Variable Density Thinning (Douglas-fir and Tanoak Series)	Variable Retention Harvest	Density Management/Hazardous Fuel Reduction	PCT and Hazardous Fuel Reduction
	limbs until canopy closes, some development /retention of large branches	limbs present, development/retention of large branches, development of epicormic branches	branches currently present	development /retention of large branches
Windthrow Hazard	Increase (in skips) to decrease (after potential short-term slight increases)	Increase (in skips) to decrease (after potential short-term slight increases – 61B)	Decrease	Decrease
Ability to Respond to Future Treatments	Decrease (in skips) to increase	Decrease (in skips) to increase	Increase	Increase
Rate of Development of Older Forest Characteristics	Increase	Increase	Increase	Increase

3.4.2.3 Alternative 2 (Proposed Action) – Cumulative Effects on Vegetative Resources

Between now and the year 2014 there are 87 acres of planned Pre-commercial Thinning & Release young stand silviculture treatments separate from this project on BLM managed land in the East West Junction Project Planning Area. These consist of maintenance to understory plantations by reducing stocking and density to favor desirable conifers and hardwoods to improve their growth and vigor.

There are also four foreseeable federal projects in the East West Junction Project cumulative effects analysis area: the East Fork Illinois Landscape Management Project (LMP), the West Fork Illinois LMP, the Althouse Sucker LMP, and the Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA. Ongoing hazardous fuel reduction projects are being implemented on private land with assistance provided by the Illinois Fire Department, ODF, private contractors, and private landowners in the East West Junction Project Planning Area. While dispersed mining is occurring on the U.S. Forest Service portion of the East West Junction Project Planning Area; there are no U.S. Forest Service projects being implemented or proposed in this Planning Area.

There are no East Fork Illinois Landscape Management Project (LMP) units that overlap proposed East West Junction Project units. The West Fork Illinois River LMP, the Althouse-Sucker LMP involves silvicultural thinning and harvest treatments. Long term beneficial effects to vegetation from this project are reduced understories subsequently improving stand density, vigor, and resource utilization.

Likewise, the cumulative vegetation effects for Alternative 2 of the East West Junction Project would be stands that exhibit improvements in stand density, vigor, and resource utilization.

3.4.2.4 Alternative 3 - Direct and Indirect Effects on Vegetative Resources

Improved stand density, vigor, and resource utilization would occur similarly to Alternative 2, although to a lesser degree than Alternative 2 Variable Density Thinning treatments. The difference would be particularly evident in units that maintain at least 60% crown closure.

Table 3-8. Short term Vegetation Effects (0-10 years) from Alternative 3 of the East West Junction Project

Stand Condition	Alternative 3			
	Commercial Thin 60	Commercial Thin 40	Density Management/Hazardous Fuel Reduction	PCT and Hazardous Fuel Reduction
Vigor of Residual Trees	No change to slight increase	No change to increase	No change to increase	No change to increase
Growth Rate	No change to slight increase	No change to increase	No change to increase	No change to increase
Live Crown Ratio	No change	No change to increase	No change to increase	No change to increase
Conifer species	No change	No change to slight increased species present	No change in current species to increased species present	No change in current species to increased species present
Hardwood Species	No change to slight increase	Slight Increase	No change to increase	No change to increase
Shrubs/Brush/Forbs	Decrease to no change	Decrease to slight increase	No change current spp. to increase	No change current spp. to increase
Snags	No change	No change	No change	No change
Coarse Woody Debris	No change	No change to slight increase	Remain the same to slight increase	No change
Branching	No change	No change to slight increase	No change	Retention of lower limbs
Windthrow Hazard	No change	No change to slight increase	No change to slight decrease	No change to slight decrease
Ability to Respond to Future Treatments	No change to slight increase	No change to slight increase	No change to slight increase	No change to slight increase
Rate of Development of Older Forest Characteristics	No change to slight increase	No change to slight increase	No change to slight increase	No change to slight increase

Table 3-9. Long Term Vegetation Effects (11+years) from Alternative 3 of the East West Junction Project

Stand Condition	Alternative 3			
	Commercial Thin 60	Commercial Thin 40	Density Management/Hazardous Fuel Reduction	PCT and Hazardous Fuel Reduction
Vigor of Residual Trees	Slight increase to no change (as crowns close)	Increase to slight increase	Increase	Increase
Growth Rate	Slight increase to no change (as crowns close)	Increase to slight increase	Increase	Increase
Live Crown Ratio	Slight increase to no change (as crowns close)	Increase to slight increase	No change to increase	Increase
Conifer Species	No change to decrease pine (as crowns close)	Slight increase to increase	No change to slight increase	No change to slight increase
Hardwood Species	No change to decrease black oak/increase tanoak (as crowns close)	Slight increase	No change to increase	No change to increase then decrease as canopy closes
Shrubs/Brush/Forbs	Decrease to no change	Slight increase	No change to increase	Increase then decrease as canopy closes
Snags	No change to slight increase due to mortality as crowns close, smaller dia.	Decrease in numbers, increase in size	Decrease in numbers, increase in size	Decrease in numbers, increase in size
Coarse Woody Debris	No change to slight increase, small dia.	No change to slight increase	No change to slight increase	No change to slight increase
Branching	Retention of lower limbs until canopy closes to slight decrease of lower limbs	Retention of lower limbs, retention of limbs present, development/retention of large branches, development of epicormic branches	Retention of limbs present, possible development of large branches currently present	Retention of lower limbs until canopy closes, some development /retention of large branches
Windthrow Hazard	No change	Slight increase to decrease (w/increased dia. growth)	Decrease	Decrease
Ability to Respond to Future Treatments	No change to slight increase	Increase	Increase	Increase
Rate of Development of Older Forest Characteristics	No change to slight increase	Increase	Increase	Increase

3.4.2.5 Alternative 3 - Cumulative Effects on Vegetative Resources

See Section 3.4.2.3 for a list of foreseeable projects in the East West Junction Project Planning Area. The cumulative vegetation effects for Alternative 3 of the East West Junction Project would be improved stand density, vigor, and resource, although in units designated as Commercial Thin the improvement would occur to a lesser degree than in

Alternative 2 which contains Variable Density Thinning treatments. The difference would be particularly evident in units that maintain at least 60% crown closure. Maintaining a minimum crown closure of 60% requires stand densities to also remain high and subject to imminent competition induced mortality. The majority of units in Commercial Thin treatments would require re-entry to recover anticipated mortality.

3.5 Water Resources and Erosion

3.5.1 Affected Environment for Water Resources and Erosion

3.5.1.1 Scale of Analysis

The East West Junction Project Planning Area is located in the East Fork Illinois River, West Fork Illinois River, and Sucker Creek HUC 5 watersheds. The Planning Area boundary includes portions of four HUC 6 sub-watersheds including the Lower West Fork Illinois River, Rough and Ready Creek, the Lower East Fork Illinois River, and Lower Sucker Creek. The land within the Planning Area drains into the mainstem Illinois River.

The East West Junction Project Planning Area follows ridgelines and includes a total of approximately 35,186 acres. The proposed units in this Planning Area total approximately 1,234 acres. The analysis for water resources and erosion includes the extent of the Planning Area, because erosion is generally anticipated to be localized within 25 ft downstream from haul routes and unit boundaries. Thus, impacts to water quality would not be of a magnitude to travel outside this Planning Area. This assumption is based on recent projects of this scale and scope using comparable Best Management Practices. Providing this analysis at a more expansive scale would not detect any measurable effects and would eliminate any meaningful discussion of the effects.

The East Fork Illinois River Watershed Analysis (WA), West Fork Illinois River WA, and the Sucker Creek WA, and West Fork Illinois River Water Quality Restoration Plan (WQRP), Lower East Fork Illinois WQRP, and Lower Sucker Creek WQRP cover the three fifth-field watersheds and the one sixth-field watershed⁴.

The East Fork Illinois River, West Fork Illinois River, and Sucker Creek HUC 5 watersheds have federal lands intermingled with non-federal land in a “checkerboard” pattern characteristic of much of the Oregon and California (O&C) railroad lands of Western Oregon.

⁴ These documents can be reviewed on the Medford District BLM website at <http://www.blm.gov/or/districts/medford/plans/inventas.php> and <http://www.blm.gov/or/districts/medford/plans/activityplans.php>.

Designated beneficial uses for the WFCC HUC 5 watershed include; public and private domestic water supply; industrial water supply; irrigation; livestock watering; anadromous fish passage, rearing, and spawning; resident fish and aquatic life; wildlife and hunting; fishing; boating; aesthetic quality; water contact recreation; and commercial navigation and transportation. Beneficial uses for the human environment in the Planning Area's HUC 5 watersheds include but are not limited to: instream, out of stream and groundwater uses, domestic, municipal, industrial water supply, mining, irrigation, livestock watering, fish and aquatic life, wildlife, fishing, water contact recreation, aesthetics and scenic attraction, hydropower, and commercial navigation

3.5.1.2 Soil Erosion and Stream Sedimentation

Soil erosion in an undisturbed forest is extremely low; generally under 0.5 ton/acre/year (Elliot et al, 1999). Soil erosion greater than natural process reduces soil productivity by reducing the amount of higher organic/microbe content in the upper soil that contributes nutrients for plant growth. Surface erosion can occur when rain splash or overland flow causes the detachment of soil particles during wet conditions, or when gravitational and wind movement causes detachment of particles during dry weather conditions where bare soil is exposed. Vegetative cover reduces the particle detachment rate and, through the binding capacity of root masses, the sediment transport rate (NOAA Fisheries, 2004, (Larson and Sidle, 1981; Harvey et al. 1994)). Therefore surface erosion, from disturbed soils that are not compacted, is normally greatly diminished within 3-5 years, following the regrowth of vegetation.

Soil displacement refers to the moving of the surface soils as a result of some applied force. When soil displacement occurs soil horizons may become mixed, essential soil nutrients, water, and soil organisms may be rearranged or removed, and topsoil may become rutted. These alterations to the soil profile or soil characteristics may result in accelerated erosion. As defined in Section 3.3.1, soil compaction is the packing together of soil particles by physical pressure at the soil surface that results in an increase in soil density and a decrease in pore space. A decrease in soil pore space results in restricted movement of water, nutrients, air, and plant roots, and as such generally decreases site productivity in most soil types. Reduced pore space also reduces infiltration, causing an increase in surface runoff that can result in accelerated erosion rates.

Soil displacement and compaction can occur during forest management activities when mechanized harvesting or yarding equipment drives over or yards timber across poorly vegetated, bare, or wet soils. Where logging or prescribed burning operations result in exposed soil, surface erosion can occur when rain splash or overland flow causes the detachment of soil particles during wet conditions, or when gravitational and wind movement causes detachment of particles during dry weather conditions. Vegetative cover reduces the particle detachment rate, and through the binding capacity of root masses, the sediment transport rate (NOAA Fisheries, 2004, (Larson and Sidle, 1981;

Harvey et al. 1994)). Therefore surface erosion, from disturbed soils that are not compacted, is normally greatly diminished within 3-5 years, following the regrowth of vegetation.

Erosion can also occur as a result of the blading of road surfaces, the use of inadequately rocked and natural surface roads, wet weather road haul, ditchline maintenance, an insufficient number of road cross drain culverts, undersized or poorly placed cross drain culverts, and in areas of exposed soil such as yarding corridors, skid trails, landings, and road construction sites. Poorly located roads can cause increased channelization of hillslopes and mass wasting (Wemple and Jones, 2003). Where hydrologically connected, un-vegetated ditchlines, road surfaces, and cross drains all mobilize eroded soils to streams.

The Oregon Department of Environmental Quality (ODEQ) is responsible for establishing water quality standards to protect beneficial uses and aquatic life in Oregon streams. Establishment of standards are usually set through threshold points to indicate when negative impacts to aquatic life or beneficial uses would begin to be detectable. Currently ODEQ does not have established criteria for measuring sediment. The current water quality standards instead address turbidity, a measure of water clarity. These standards are primarily based on an Environmental Protection Agency (EPA) recommendation from 1976. ODEQ is in the process of revising the water quality standards for turbidity based on the best available science regarding the effects of turbidity on beneficial uses, in particular aquatic life (<http://www.deq.state.or.us>). This standard does not necessarily correlate with the amount of sediment entering the stream.

Though many riparian areas in the East West Junction Project Planning Area are dominated by smaller diameter stands of Douglas-fir and hardwoods, and are lacking large wood debris, downed logs, and large tree structure, most riparian areas on BLM land have sufficient streamside vegetation in the form of brush, ground cover, and riparian hardwoods to protect water quality. BLM stream surveys in the Project Area, performed in the summer of 2008, indicate that riparian shade is generally adequate (only one of 58 stream reaches lacked a riparian buffer, a very narrow intermittent stream in T38-R7W Section 5 that has no effect on summer high stream temperatures) although of lower quality than during the pre-management era. Past harvest and fire exclusion in the riparian area have resulted in dense stands of trees that are not providing the quality of shade found in undisturbed riparian areas. Fire suppression in combination with past riparian harvest activities has led to high density, slow growing stand conditions in moderate to high gradient reaches of streams. Associated with the altered fire regime, there is a strong possibility of losing key existing soil and water characteristics to a large wildfire in the next 20 years. Data from surveys is available upon request in the Grants Pass Resource Area files in the Fish/Hydrology work areas.

The existing watershed condition is the result of past actions and natural events that have occurred in these watersheds. Numerous disturbances have occurred in these watersheds

in the past 100 years. Based on the change detection analysis⁵ combined with fire history, between 1972 and 2002, analysis shows that 1,185 acres (3.8% of watershed area) have been logged. Aerial photo interpretation in the years after 2002 shows an additional 30 acres of openings from timber harvest. The majority of harvest on federal lands occurred between the late 1970s and early 1990s before the Northwest Forest Plan was written and implemented. Between 1972 and the present, 1,073 acres (3.1% of watershed area) have burned with sufficient intensity to create openings across all ownerships.

Past and current actions have resulted in hydrologic conditions such as elevated stream temperatures, slight additions of fine sediment above background levels, reduced summer flow, and simplified stream channels. Past logging practices, road building, and agricultural development are the dominant actions that have resulted in these conditions. This includes harvest close to streams that removed riparian vegetation (including stream cleaning), and roads built alongside streams and across drainages, which route sediment and runoff into the streams. Other contributors include urban/rural development and mining. The Illinois River watershed has a long history of mining that includes present day operations that have altered channel and riparian conditions.

Non-federal entities (State, Josephine County, private timber companies, and private citizens) control 63% of the land in the East West Junction Project Planning Area. Land management constraints for private lands are less restrictive than those regulating federal lands; private forest land owners are required to manage their stands within the States' Oregon Forest Practices Act. Moreover, most of the valley bottom lands, where a major portion of the fishery streams exist, are controlled by private individuals. Agricultural and urban development and road construction in the valley bottoms have reduced stream sinuosity, reduced the amount of riparian vegetation and shade, reducing habitat complexity.

Based on field surveys, historic aerial photos (circa 1965), and current satellite imagery (2009), the East West Junction Project Planning Area currently has compaction and accelerated surface erosion as a result of timber management, and the preserving of public access routes.

5 Medford Change Detection (2002), 2009 satellite imagery, and field data were used to estimate units harvested in the past 30 years. Though this does not account for all potentially affected soils, it is the extent of the data that is presently available. This lack of data is not considered to be a measurable source of error since compaction recovers naturally over time, and it is expected that those soils that may have been unaccounted for during this analysis (as a result having been harvested prior to the first available year of data) would be in an advanced stage of recovery. This is based on average natural recovery for the soil types, climate, and elevation of this watershed, and on the skid trail conditions observed during field visits to units in these sub-watersheds harvested in the 1960s. Yarding systems were identified based on known data, visible landscape scar patterns, or slope steepness. Tractor yarding on slopes over 35% has not been permitted on federal lands since the implementation of the Northwest Forest Plan in 1994. Units identified for tractor yarding are calculated at 12% using BMPs and PDFs of the NWFP. All cable yarded units are calculated at 7% of the affected area. These percentages are based on research by Adams and Froehlich, 1981, Dryness, 1967, and Clayton, 1981.

Roads

The major ongoing sediment sources in this Planning Area are roads in close proximity to streams, un-maintained or poorly maintained roads, native surface roads used for winter haul, and roads open to year round public motor vehicle use, and non-federal and pre-Northwest Forest Plan timber harvest that included streamside harvest. Roads constructed along streams lack a vegetation to filter runoff and contribute sediment to the adjacent stream, reduce riparian habitat quality, and remove potential sources of large woody debris from streams. Un-vegetated ditchlines, road surfaces, and cross drains can all transport sediment. Oregon Department of Forestry (ODF) monitoring shows approximately one-third of private and state roads deliver sediment to streams via ditchlines, especially when used during winter hauling operations. A number of issues were identified by ODF and DEQ to be contributing to the problem of sediment delivery to streams from these roads including; a lack of filtering prior to road drainage entering streams; too wide of spacing between, or poor placement of cross drainage structures; and a “lack of rules that specifically address minimizing turbidity caused by wet-weather hauling” (ODF/DEQ, 2002).

Luce (1999) found that a few roads generated the majority of sediment. Within the Planning Area, hydrologically connected roads contribute to accelerated erosion and stream sedimentation at different levels depending on the surface type, type of use, location, maintenance frequency, and moisture levels of the road surface during use. There are 27 acres of land covered by roads that are classified as Natural; 2.5 acres of these roads are classified Natural-Graded and Drained. In addition there are approximately another 319 acres of land covered by roads that are classified “Not known” and it can be reasonably assumed that a significant portion of these acres are natural surface especially where they are on privately owned lands. There are more than 300 points where a natural surface road intersects a stream, although approximately 60 cross ephemeral streams that would not transport sediment. An additional 200 stream crossings are on intermittent streams, 110 are seasonal and none of which are long duration. On the haul routes, there are 31 stream crossings, of which 17 are natural surface. The federal government limits its use of rocked and natural surface roads to dry conditions to reduce erosion and protect road surface integrity.

In addition to the standard maintenance of ditchlines and running surfaces implemented on rocked and natural surface roads, ditchline maintenance occurs as needed on BST (bituminous surface type) and paved roads within the Planning Area. Ditchline maintenance includes the removal of debris and vegetation where it is impeding water flow, and the digging out or “pulling” of ditchlines where they are lacking the ability to carry the volume of water that is entering them without spilling out across the road surface. This maintenance results in an increase in erosion within ditchlines for the first season until protective vegetation re-grows and bare soils regain stability. Where these ditchlines are hydrologically connected to streams, ditchline maintenance can result in chronic sediment delivery to streams through the first winter, unless Best Management Practices require a sediment filter to be in place prior to stream culverts. Following the first season, ditchline maintenance results in an overall reduction in chronic erosion of the

road surface and where hydrologically connected, subsequent stream sedimentation. Proper cross drain spacing and vegetated ditchlines can greatly reduce the amount of sediment that enters streams as a result of roads. In this sub-watershed, cross drain spacing is generally adequate except during high flow events. Ditchlines are only “pulled” as necessary to protect road integrity. As a result most ditchlines in this sub-watershed have sufficient vegetation within the ditchlines to slow erosion and filter a portion of the sediment.

Sediment in streams within the Project Area varies. Stream survey information (2008) for proposed East West Junction Project units indicate no high levels of fine sediment (>30% of streambed covered with fine sediment as defined in BLM stream survey criteria).

The chief factor creating high erosion hazard is steep slopes in bare soil conditions. PDFs (Section 2.3.4.3) and unit prescriptions for the action alternatives would reduce or eliminate concentrated runoff and surface raveling for proposed units. Without these PDFs, the soil erosion processes in the East West Junction Project Area would exhibit concentrated runoff (Cornutt-Dubakella Complex and Josephine gravelly clay loam soils) with some surface raveling (Beekman-Colestine Complexes), which has contributed to past soil loss.

Forest productivity also depends on soil biotic activity, specifically assimilation of nutrients in plant-available forms as well as making water available to plants that plant roots alone cannot take up. Microbial populations, particularly ectomycorrhizal fungi (Amaranthus 1998), provide basic soil nutrients and water to forest vegetation. While there have been numerous studies examining the effects of timber harvest on soil biota, the results vary widely. Busse et al. reported that, in general, compaction, reduction in surface organic matter and vegetation control did not result in significant changes to microbial biomass or respiration. Based on their results, they concluded that soil microbial communities are largely unaffected by post-harvest soil disturbance in Mediterranean-type climates. The one exception was on a California site where they had whole-tree harvest plus removal of the forest litter layer, which resulted in significant reductions in microbial biomass in both the fall and spring relative to microbial biomass on bole-only plots (Busse et al. 2006). This type of management is more intense than what is being proposed under either Action Alternative in the East West Junction project.

Skid Trails, Landings, and Yarding Corridors

The East West Junction Project Planning Area have had soil compaction and displacement that has led to subsequent increases of erosion as a result of the construction and use of landings, skid trails, and yarding corridors during timber management operations within the past 50 years. Many of these disturbed acres are no longer visible on the ground and appear to have recovered as a result of the re-growth of vegetation. Within previously harvested units in the Planning Area, evidence of past compaction is still present along tractor skid trails, and within stream channels intersected or bordered by these trails. Where poorly rehabilitated skid trails, landings, and yarding corridors are hydrologically connected to the streams through road systems, or are adjacent to streams

that have little or no riparian buffer, these areas have become sources of stream sediment that are contributing to the current aquatic conditions discussed above.

Tractor yarding typically compacts or removes vegetation and duff, thereby exposing soils to rainfall and subsequent erosion. Tractor yarding also physically displaces soils, resulting in potential erosion and subsequent off-site sedimentation. “The assessment of surface erosion and sediment routing during the first two years following harvest indicates that a 10 meter (32.8 ft) setback for ground disturbance can be expected to prevent sediment delivery to streams from about 95 percent of harvest-related erosion features” (Rashin, et al .2006).

Cable yarding generally requires a less dense road network and creates less ground disturbance; the runoff and erosion from cable yarded areas is not so directly channeled into the road system as with tractor yarding.

Existing Condition of Proposed Units

Within proposed units, evidence of past logging operations is still present on the ground. In units proposed for both cable and ground based harvest, skid trail compaction is common and presently extends through riparian areas and across small stream channels of many units. Wet areas have developed or expanded in areas where subsurface flows have been restricted or rerouted as a result of skid trail compaction. In areas directly downslope of where skid trails cross small stream draws, streams show evidence of past erosion that has resulted in streambed downcutting. As evidenced by the moderate to deeply cut stream draws and stream side draw instability that can be viewed without leaving many of the roads within these watersheds, soils within this Planning Area are prone to surface water erosion. Though these conditions do occur as part of naturally occurring events, it is not unexpected that road construction and past harvesting practices which created extensive compaction have resulted in increased surface water and altered stream channels. Though active erosion still appears to be ongoing in small streams within proposed East West Junction Project units, widespread instances of excessive erosion that would result in measurable impacts to aquatic habitat or macroinvertebrates is not currently taking place. An onsite evaluation of current conditions within proposed units indicates that subsoiling of skid trails would assist in stream channel and subsurface flow pattern recovery.

3.5.2 Environmental Effects on Water Resources and Erosion

3.5.2.1 Alternative 1 (No Action) - Direct and Indirect Effects on Water Resources and Erosion

Under Alternative 1, urbanization and rural development on private land, and commercial logging on private and State land are expected to continue throughout the East West Junction Project Planning Area. Road building to support development and logging will also continue, creating more impervious surfaces that will not experience hydrologic recovery because most of these roads will likely be continually used.

Under the No Action Alternative, the East West Junction Project proposed in this EA would not occur but current conditions and trends would continue in the Planning Area. Planned BLM projects that could potentially continue are the East Fork Illinois Landscape Management Project (LMP), the West Fork Illinois LMP, the Althouse Sucker LMP, and the Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA. There are two planned fuel reduction projects on private in the Planning Area to be implemented with the assistance of federal grants: the Obrien Fuels treatment and the Takelma Fuels treatment (approximately 1,000 acres). The BLM would construct the equivalent of 2 acres of road, complete 231 acres of stewardship and timber harvest on 180 acres in other projects within the East West Junction Planning Area boundary. There would be no direct effects from ground disturbance on water quality or quantity in the Planning Area based on BLM actions. It is understood that the private and non-BLM government agencies would perform actions that would change the landscape with continuing trends and resultant effects as outlined above. It is assumed that these activities would occur at roughly the same rate that they have in the past. BLM fuel treatments would continue, though resulting reduction in acres of heavy fuel load conditions would be small under the Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA (EA# DOI-BLM-OR-M070-2009-0009-EA). Emphasis will be on areas near rural development. Also understory thinning may occur in riparian zones under the Aquatic Restoration EA (EA# DOI-BLM-OR-M010-2009-0004-EA) where needed to improve riparian habitat as well as to reduce fire hazard.

If a high-severity fire were to occur outside of areas treated through the above mentioned Fuel Hazard Reduction EA, it could remove the entire duff layer resulting in accelerated erosion. Intense burning could alter key soil physical, chemical, and biological characteristics resulting in diminished soil productivity (Scott and Van Wyk, 1990; Neary et al. 1999). High severity fires in the riparian zone would greatly decrease stream shade and large wood recruitment potential. After an intense, high-severity fire this condition would persist but gradually improve over the ensuing 60⁺ years. Although there is a strong probability that a high intensity fire will occur in the higher elevations of the East and West Fork 5th field watersheds within the high fire risk area, it cannot be determined when or where it may occur. Therefore this event cannot be foreseen for any particular subwatershed and is not taken into account below for each Soil and Water effect category.

- Roads

There are 233 miles of roads in the East West Junction Project Planning Area, which equals approximately 423 acres or about 1.2% (4.3 mi/mi²). This is above the 3 mi/mi² threshold for “not properly functioning” for aquatic species by the National Marine Fisheries Service (NMFS) (USFWS/NOAA Fisheries Table of Population and Habitat Indicators, USDA et al. 2004b). However, the towns of Takilma and Cave Junction maintain the highest road densities and are a combination of paved, gravel and natural surface roads, many of which have been present for more than 25 years and thus the watershed has adapted to their presence. By this we mean that the roads that are permanent have become part of the baseline conditions. Natural surface roads that are hydrologically connected may be adding sediment to creeks; all roads

are impacting runoff direction and timing as they intercept surface and subsurface flow that would otherwise be following natural flowpaths. Consequently the streams have adjusted laterally and horizontally to accommodate any increases in sediment loads and discharge. Research indicates that changes in runoff timing may occur when roads acres occupy 3-4% of the watershed (WPN, 1999). Road-caused changes in watershed hydrology are generally a result of reduced infiltration on compacted surfaces, more rapid routing of runoff in ditchlines, and the interception of surface and subsurface flows (Ziemer, 1981). As such, it would be expected that localized changes in infiltration and surface and subsurface flows would not be measurably affected within the Planning Area. These roads are now in various stages of naturally decompacting and re-vegetating. Given the soil types, and climate of these watersheds, it would be expected that advanced stages of recovery on these roads will take 50-70 years if no further use or decommissioning actions occur (Wert and Thomas, 1981).

Road construction and hauling associated with non-federal timber harvest is currently occurring and would be expected to continue to occur in this Planning Area in the future. Most roads constructed on non-federal lands are not fully decommissioned following use due to future management needs. Construction of roads to access timber lands would be expected to result in a long term increase in watershed compaction that would alter watershed hydrology to various extents dependent on the number and location of constructed roads. Where these roads are hydrologically connected, use could also increase stream sedimentation depending on use and maintenance frequency. Maintenance is performed as funding allows, based on Resource Area priority for failure prevention, or as needed for use of commercial product extraction by land owners within or adjacent to the watersheds.

Perched and undersized culverts within draws, combined with naturally erosive soils, will continue to result in stream draw erosion during high flow events. As funding is available for installing downspouts, splash pads, or reinstalling culverts, these problems will be corrected during annual road maintenance actions. Where problems associated with accelerated erosion are corrected, aquatic habitat and water quality will likely improve.

Regular passenger and all-terrain vehicle use of these road systems for access to public lands would be expected to continue. Stream sedimentation associated with this road use would continue to occur at current rates on frequently maintained roads, and would slowly increase where road maintenance is irregular due to funding constraints. Based on recent stream survey data on BLM lands, 63% of sites are functioning properly in relation to the Proper Functioning Condition criteria and 20% are trending upwards.

- Timber Harvest: Yarding Corridors, Skid Trails, and Landings
Timber harvest on non-federal lands is presently occurring and would be expected to continue to occur in this Planning Area. In the past 5 years, timber harvest on non-federal lands within this Planning Area has been occurring, on average, at a rate of

approximately 200 acres per year. This would be expected to result in up to 180 acres (0.5%) of additional compaction and disturbance within this Planning Area in the next five years as a result of non-federal harvest. This would increase the estimated current acres of disturbance and compaction from yarding corridors, skid trails, and landings from 1,014 acres (2.9%) to 1,260 acres (3.6%). Increasing the amount of acres subject to reductions in infiltration would not measurably increase the risk of water quality reductions to the Planning Area since the Planning Area is currently on the low end of a “moderate risk” of water quality impacts due to impervious areas⁶ (WPN, 1999).

Where compacted acres from road construction and timber extraction are not associated with actively maintained road systems, soil conditions would continue to improve slowly over time as tree roots and other natural processes begin to break apart soil particles, eventually resulting in a reduction in compaction on these acres. During this period, it would be expected that some areas would experience an increase in erosion due to gullies and rills that form on compacted and unmaintained skid trails. Watershed processes, such as runoff timing and subsurface flow patterns affected by existing compaction, would also slowly improve. These acres would likely reestablish full hydrologic and soil functions within 40-80 years, depending on soil type and condition at the time of harvest (Wert and Thomas, 1981).

- Activity Fuels Treatments

Activity fuels would be treated as part of the East Fork Illinois Landscape Management Project (LMP), the West Fork Illinois LMP, the Althouse Sucker LMP, and portions of the Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA. Harvest slash from these projects would be treated by either chipping, lop & scatter, pile & burn, or biomass utilization. These treatments help to reduce the probability of an intense, large scale wildfire occurring by reducing fuel loading and horizontal continuity within the stand, and would not result in offsite erosion or a measurable impact to water quality.

Broadcast burning, pile burning, and other activity fuels treatments would be expected to continue on non-federal lands under the No Action Alternative. These treatments would be required to be done in accordance with Oregon Forest Practices Act requirements. Treatment of activity fuels and site preparation of units will likely result in accelerated erosion, stream sedimentation, and localized chemical alterations to the soil and water. The extent the impact to water quality is not known. However, the magnitude of these impacts would be expected to be equal to or less than those that have occurred during past timber sales and would be expected to be compliant with the Clean Water Act. Since harvest activities have consistently occurred at similar levels in the past, it would be expected that these actions would not substantially alter current aquatic conditions within this Planning Area.

⁶ Moderate Risk is between 5-10% of total area.

3.5.2.2 Alternative 2 and 3- Direct and Indirect Effects on Water Resources and Erosion

The analysis for direct and indirect impacts for the East West Junction Project was done using the Planning Area scale because the impacts to water quality and erosion would be localized within 25 ft downstream of haul routes and unit boundaries. Thus, impacts to water quality would not be of a magnitude to travel outside this Planning Area. Providing an analysis at a larger scale would remove all measurable impacts, and eliminate any meaningful discussion of the effects.

Management actions proposed for the action alternatives would result in soil displacement and erosion in the East West Junction Project Planning Area.

Management actions proposed under the action alternatives would result in soil displacement and erosion in the East West Junction Project Planning Area. BMPs and PDFs were identified and incorporated into the project to address the remaining general management concerns identified for each soil type in this Planning Area. Following incorporation of these BMPs and PDFs, offsite erosion and stream sedimentation would be limited to during hauling and maintenance activities on roads that are hydrologically connected to streams. Since the proposed road maintenance and haul for Alternative 2 and 3 are the same, and the anticipated effects to soil erosion and sedimentation are limited to the proposed haul and road maintenance, the effects analysis for this subject is combined here. There are no detectable differences between the action alternatives to soil erosion and sedimentation.

Road maintenance and timber haul on existing roads would result in localized stream sedimentation in areas where accelerated erosion would not remain onsite due to ditchline transport and stream crossings. All other road use, temporary route construction and reconstruction (including associated decommissioning), skid trail construction and decommissioning, landing construction and rehabilitation, yarding operations, and activity fuels treatments proposed under this project, would result in accelerated onsite erosion but would be hydrologically disconnected using PDFs and BMPs, ensuring the protection of all water resources. All other critical environmental elements, related to water resources, not affected by this project are addressed in Appendix 2 and 11 of the EA.

- **Roads: Temporary Route Construction and Reconstruction, and Road Renovation/Improvement**

There are approximately 0.4 miles of temporary route construction, 0.5 miles of existing route reconstruction, and 0.8 miles of road renovation/improvement proposed to access harvest areas for the East West Junction Project. These routes would allow harvest operations using Best Management Practices to occur within portions of units 3-3, 3-4, 5-1, 7S-2, 8-2, 29-15, 29-16, 34-2, 20-1, 34-2, 7N-3, 7N-4, 29-2, and 29-4. Construction, reconstruction, and decommissioning of these temporary routes would disturb up to 2.8 acres. Following use these temporary routes constructed and reconstructed would be subsoiled, stabilized, water barred, and barricaded.

All temporary routes proposed for construction and reconstruction have been reviewed in the field. This road work would range from 0.05-0.20 miles per temporary spur for each of these units. There are 4 temporary spur routes proposed for construction and 5 temporary spur routes proposed for re-construction for the East West Junction Project. These routes are proposed on ridgelines or valley floors, except the temporary spur proposed into unit 29-4. The proposed roads on the valley floor are not hydrologically connected to any streams or wet areas and have negligible slopes and as such would not transport water or sediment to a stream or wet areas, or result in long-term productivity loss.

The proposed construction and reconstruction would not cross dry draws or streams, except one for reconstruction that would cross the top of a dry draw (into unit 29-4). Field surveys have determined that the temp route reconstruction would be approximately 200 ft above the ephemeral channel, and the channel stays ephemeral on BLM managed land. The temp route reconstruction is also 1,500 ft above the ephemeral channel's intersection with an irrigation ditch, so the temp route would not hydrologically connected to any intermittent or perennial streams.

There are two small excavated ponds, one is 8 x 12 ft and 3 ft deep, and another is 3 x 3 ft and 1ft deep. The larger pond is approximately 100 ft downstream of the proposed temp route reconstruction and the other is 50 ft further downstream. The larger pond has wetland plant species surrounding it. These ponds have water in them in the winter, but the smaller pond is dry during the summer. This ephemeral draw would receive a 25 ft buffer (see Section 2.3.4.4) for soil stabilization and to protect the hydrological function.

The route into unit 29-4 has a low slope that matches the surrounding topography. The re-construction of this route would repair the road surface to remove the current rilling and would stop the onsite sediment deposition into the ephemeral draw. Decommissioning this route would prevent rilling by preventing the channeling and routing of surface flow.

Since all temporary routes proposed for construction and reconstruction would be subsoiled, stabilized, and blocked; construction, use, and decommissioning of these proposed routes would result in a short term increase in onsite erosion, but would not result in any change to watershed hydrology or water quality.

- Roads: Timber Haul and Maintenance

A total of approximately 22.3 miles of roads would be used for haul as part of the East West Junction Project. There are approximately 13.7 miles of road that are rocked, and would receive road surface and ditchline maintenance as necessary to protect the integrity and drainage of the roads during use. The remaining 8.4 miles of roads in this Planning Area that would be utilized for haul would be natural surface roads. Approximately 7.5 miles would be existing natural surface roads that would be maintained and used for haul. The remaining 0.9 miles would be newly constructed or

reconstructed temporary roads that would be utilized, and then decommissioned. The proposed haul and road maintenance on rocked and natural surface roads would contribute to accelerated erosion within this Planning Area at different levels depending on the moisture levels of the road surface during haul, and the type of maintenance applied. All roads would be maintained as necessary to prevent road damage, excessive erosion, or exceedance of State turbidity standards for water quality.

There are roads which have evidence of erosion and may be routing water and delivering sediment to the stream network. Of these, 3.7 miles are hydrologically connected. Roads identified during field assessments that were noted as presently having drainage problems and subgrade failures result in gullying, potholes, under surface voids, and fill slope failures would be repaired prior to the occurrence of hauling activities. These roads include the 39-7-8, 39-7-17.2, 39-7-17B, 39-7-18B, 39-8-29, and 39-8-29.3. As such, repairs on these roads would reduce multiple instances of chronic erosion that is currently ongoing within the Planning Area.

Road 39-8-29 occupies Chokecherry Creek near Westside Road. While the channel is composed primarily of large cobble and within an area of high serpentine presence, there is likely some entrainment of sediment from the surrounding road during the winter. Road 39-7-21.1 was paved but the pavement is greatly broken apart for most of its length and is essentially equivalent to a rocked road. Within and leading up to the Project Area, there is no mechanism for sediment to reach any live creek.

Where hydrologically connected natural and rock roads cross intermittent or perennial stream channels, maintenance and hauling activities would result in localized instances of offsite erosion. There are approximately 12 stream crossings on natural surface roads that would be used for timber haul for this project. Of these, two are crossing perennial streams and 9 are crossing intermittent streams. There are four locations where the haul route travels within 50 ft of a stream and these are each less than 15 ft in length. During high flows, sediment introduced to streams would become an immeasurable fraction of the system sediment load; it would not be discernible or detectable at downstream locations. A long-term slight reduction in sedimentation and improved flow routing would be expected following road drainage improvement.

Standard maintenance activities on these roads would include periodic instances of roadside brushing, spot rocking, culvert cleaning, surface blading and shaping, and ditchline maintenance. All hauling and maintenance actions on hydrologically connected roads would occur during dry conditions only. This restriction would considerably reduce the amount of erosion that would occur during hauling and maintenance activities on hydrologically connected roads.

All haul routes are located on TPCC restricted soils. Primarily TPCC soils adjacent to haul roads are for reforestation restrictions that require PDF implementation to meet forested stocking levels. There would be no impact to these reforestation soil

classifications from road maintenance or haul actions because road right-of-ways are permanently excluded from the timber base, and stocking levels do not need to be maintained.

Access to the units in T39S-R8W- Section 29 would be along BLM road #39-8-29 where the BLM would use a ford across an intermittent stream. According to the EPA (2005), the use of fords is best limited to areas where the stream bed has a firm rock or gravel bottom, where the approaches are both low and stable enough to support traffic, where fish are not present during low flow, and where the water depth is no more than 3 ft. The stream involved is dry during the summer and thus fish are not present, has low and stable approaches and the stream bed is composed of firm gravel and large cobbles. Haul on this road would be limited to the dry season, generally between May 15-Oct 15 of the same calendar year (see Section 2.3.4.3).

All hauling and maintenance activities associated with the East West Junction Project would be restricted to dry conditions on hydrologically connected roads. These include roads 39-7-7, 39-7-8, 39-8-29, 39-8-29.3 and 40-8-4. As such, sediment entering stream channels at crossing locations on haul roads both within the Planning Area would not be of a magnitude to result in a visible increase in stream turbidity, or a measurable increase in the overall stream sediment deposition generally for more than 25 ft downstream within any stream channels. Sediment barriers would be installed on BLM rd #39-8-29 and #39-7-19 to prevent sediment delivery into Southern Oregon/Northern California Coasts coho salmon critical habitat (CCH) streams. Impacts to water quality would not be of a magnitude to travel outside this Planning Area. Sediment, from affected tributary streams without CCH, would not be of a magnitude to be measurable within any outlet mainstem streams. Any sediment entering streams without CCH would be redistributed and immeasurable within all reaches of the channel following the first bankfull event of the winter season. Hauling and road maintenance activities would therefore not exceed State of Oregon water quality standards and would not result in any measurable effects on macroinvertebrate communities or aquatic habitat. This action is also consistent with the standards and guidelines set forth under the 1994 Medford RMP EIS. Although the Proposed Action on BLM land would create a small localized effect to water quality of streams without CCH within 25 ft of haul roads, these sediment inputs are not of a magnitude or close enough in proximity to one another to become detectable at the Planning Area or larger scale.

- Timber Harvest: Yarding Corridors, Skid Trails, and Landings
Timber harvest actions can remove ground litter and topsoil, cause displacement, and compact soils. Where logging operations result in exposed soil, surface erosion can occur when rain splash or overland flow causes the detachment of soil particles during wet conditions (sheet erosion), or when gravitational and wind movement causes detachment of particles during dry weather conditions (dry ravel). These processes typically result in soil being detached uniformly over the entire exposed area (NOAA Tech. Manual, 1996). Vegetative cover reduces the particle detachment rate, and through the binding capacity of root masses, the sediment transport rate

(NOAA Tech. Manual, 1996, Larson and Sidle, 1981; Harvey et al. 1994). Therefore surface erosion, from disturbed soils that are not compacted, is normally greatly diminished within 3-5 years, following the re-growth of vegetation. Where soils are compacted, subsurface flow patterns and water infiltration rates are impacted, often resulting in increased surface flows. Where subsurface flows are forced to the surface and contained in low areas on the landscape, new wetlands or seeps can form upslope of compaction. Where increased surface water is confined to the compacted area on slopes, increased runoff often results in gullying and rilling in the unit. If not physically decompacted, compaction of the type of soils found in this watershed can persist on the ground for 50-80 years before natural processes are successful in alleviating the impacts (Wert and Thomas, 1981). Management techniques for this project would be implemented to greatly reduce the amount of compaction and erosion that would occur as a result of timber management. Soils protected by litter are also less prone to erosion (Rothacher and Lopushinsky 1974). Therefore, by limiting the amount of surface disturbance and the amount of exposed soil, surface erosion can be reduced.

Under Alternative 2, there are a total of 588 acres in 38 harvest units (VDT, VRH, DM/HFR). These units combined with the construction, use, and rehabilitation of landings, skid trails, whole tree and cable yarding corridors, and temporary routes would result in up to 30 acres of displacement because of accelerated on-site erosion.

Of these units, 4 units proposed for Density Management/Hazardous Fuel Reduction occur on soils that have been identified under the Timber Production Capability Classification (TPCC) as needing project design features during harvesting actions (see Sections 2.3.4.3 and 3.3.1.1 Soil Productivity (Fragile Soils). The fragile soil classification in this Planning Area is Fragile-Nutrient Restricted-Suitable (see Table 3-4), on approximately 52 acres in proposed units. These sites are considered suitable for commercial harvest actions but need BMPs/PDFs to provide necessary protection since they exhibit low nutrient levels or have a nutrient imbalance, which would limit/slow down tree regrowth compared to soils with more available nutrients. Special protection measures that would be applied to these units are:

- Minimize underburning on slopes greater than 70 percent and southerly slopes.
- Minimize whole tree yarding and biomass removal to account for nutrient retention needs.
- Tractor yarding (including mechanized) would not occur. Timber extraction would be limited to cable yarding systems.
- Scarification, subsoiling, and tractor slash piling would not occur. Winterization and/or rehabilitation work would be limited to installing and/or using water bars, berms, sediment basins, gravel pads, hay bales, small dense woody debris, seeding and/or mulching, to reduce sediment runoff as directed by the Authorized Officer.

FNR sites have reforestation difficulties rather than impacts to the physical structure and stability of the soils. Therefore, there are not additional effects for erosion at

these sites above what is already described for the project due to application of the specific protection measures to minimize soil displacement, compaction, and where hydrologically connected, stream sedimentation.

Outside of units with fragile soil, subsoiling on existing skid trails after harvest would allow for the reestablishment of a hydrologic connection for subsurface flows that are currently rerouted due to existing skid trail compaction from past harvest actions. Reestablishing this connection would reduce existing instances of accelerated surface and streambed erosion.

Riparian Reserves within the proposed units are dominated by smaller diameter stands of Douglas-fir and some hardwoods. Most riparian stands are lacking large wood debris, downed logs, and large tree structure. Thinning of dense Riparian Reserves would reduce competition on the retained trees for light, nutrients, water and growing space, allowing trees would develop larger canopies, display better vigor and put on diameter growth faster than if left untreated. Canopy closure per stream would average 50% within each unit after the treatment. Production of wood volume is a by-product of this treatment, not a primary objective. These treatments would be specifically designed to promote the development of future large woody debris and multi-story canopies. Despite minor increases in soil disturbance during yarding operations, treatments would improve the overall riparian quality in approximately 20-30 years.

Thinning would occur in portions of the Riparian Reserves of units 8-2, 20-1, 20-1A for the East West Junction Project. Outside of EPZs but within Riparian Reserves, thinning would leave a minimum canopy closure of 50% average per unit. In some instances, thinning would require the construction of skid trails and cable yarding corridors within the Riparian Reserve outside of the EPZ. Existing skid trails would be utilized where present, instead of new construction, whenever possible. Skid trails in Riparian Reserves would be rehabilitated following use, resulting in a long term improvement of current conditions. All thinning within Riparian Reserves would result in ground disturbance during the yarding of material.

In addition, landing expansions along roads could occur outside EPZs but within Riparian Reserves in conjunction with continuous landings on roads. Expansion of these landings would not remove ground level vegetation, or result in detrimental soil compaction. To protect streams and wet areas in and adjacent to units proposed for Riparian Thinning, there would be no landings, skid trails, or yarding corridors constructed in the Ecological Protection Zone (EPZ) portion of the Riparian Reserve. This would provide protection for all components of water quality, as the EPZ is designed to filter out any accelerated erosion from upslope practices that are implemented using PDFs and BMPs, (see discussion of Riparian Thinning and EPZs in Section 2.2.1).

The amount of onsite erosion within all proposed units would be measurably reduced, and kept within the guidelines of the NWFP and Medford RMP through the use of

project wide PDFs. These protection measures are designed to reduce the magnitude and total amount of ground disturbance during timber management activities. One of the management practices to be employed on this project is limiting the amount of compaction within a unit to less than 12%, and the amount of combined soil productivity loss from compaction and disturbance to less than 5%. This would reduce the total amount of ground that would experience topsoil loss or detrimental disturbance to less than 15% of the unit, thus minimizing the initial source of erosion from timber harvest activities. Timber yarding would be required to be done using a minimum of partial suspension, limiting the magnitude of the yarding impacts. Furthermore, skid trail construction, timber yarding, and landing construction would all be limited to dry conditions. This would increase the resistance of the soils to disturbance, compaction, and erosion. It would also limit the movement of detached soil particles, allowing them to become trapped within the existing ground cover of the thinning unit instead of entering streams, springs, and seeps.

BMPs would additionally be employed as necessary during timber harvest activities to provide further protection of water resources including streams, springs, and seeps from upslope erosion. For instance, all yarding corridors that are constructed upslope of, or in Riparian Reserves, or upslope of hydrologically connected roads, would be waterbarred prior to rain events. These waterbars would filter surface water runoff from yarding corridors away from stream EPZs and hydrologically connected road ditchlines, and into vegetation that is adequate to slow surface water and allow for deposition of detached soil particles. Silt fencing or other sediment control measures would be in place where hydrologically connected landings are in use during dry conditions of the wet season (October through May) that have the potential to transport erosion and result in stream sedimentation. These PDFs and BMPs would reduce erosion and break the hydrologic connection, keeping erosion from upslope activities onsite, and preventing stream sedimentation during and following implementation of these activities. Accelerated onsite erosion from landings, skid trails, and whole tree yarding corridors would not be expected to be measurable beyond the third year following the implementation of this action due to the considerable amount of remaining ground cover vegetation that would still be present in each unit.

- Activity Fuels Treatments

The need for activity fuel treatments in units would be reduced when whole tree yarding with tree tops attached can be applied. Following harvest, the majority of the slash generated from whole-tree yarding would be piled and burned at landing sites. To limit the extent and magnitude of onsite erosion, and to protect from offsite erosion, landing piles would be placed outside of EPZs and in locations that are not hydrologically connected to the ditchlines of roads. Due to the implementation of PDFs and the use of EPZs on all streams, any erosion from activity fuel treatments would remain onsite and would have no effect on water quality. Slash remaining in units after yarding may be machine or handpile/burned, chipped, or lopped and scattered based on a post-logging assessment of fuel loading (see Section 2.3.2.4).

3.5.2.3 Alternative 2 and 3- Cumulative Effects on Water Resources and Erosion

In compliance with the 1995 Medford RMP, a cumulative effects analysis for this project was completed at the Planning Area scale which is delineated by drainage and sub-watershed boundaries that encompass the proposed units. The 1995 RMP guidance to “minimize detrimental impacts on water and soil resources resulting from the cumulative impact of land management activities within a watershed” is to delineate watersheds for cumulative effects analyses using natural drainage boundaries and third to fifth order drainages (approximately 500 to 10,000 acres),” (RMP, p.153). Cumulative effects should therefore be written using a watershed delineated boundary that, as defined by acreage and stream order in the 1995 RMP, at the HUC 7 or HUC 6 scale for the Grants Pass Resource Area. This project includes portions of four HUC 6 sub-watersheds and 2 HUC 5 watersheds, which would be 5-10 times larger than the acres the RMP recommends. As such, the logical boundary for the cumulative effects analysis in this case would be the 19,540 acre HUC 6 sub-watershed delineated Planning Area boundary.

Additionally because ODEQ water quality standards are at the project level, analyzing elements of the environment, such as watershed hydrology and water quality at a larger scale would result in undetectable effects due to the larger flow capacities of these larger stream channels, and different lag-times associated with flow contributions from the various drainages reaching a given location within the mainstem of a stream. As such, information given only at the HUC 5 scale would not provide the decision maker with the best available information in determining whether the effects of this project, when put in context with other activities within these drainages, would exceed ODEQ water quality standards. Aquatic Conservation Strategy (ACS) objectives, which are measured at the HUC 5 scale, are analyzed to ensure the East West Junction Project would not cumulatively elevate effects occurring in either of the two HUC 5 watersheds to a level that would result in the degradation of aquatic and riparian habitat or species. If there are no detectable effects found to be occurring at the Planning Area scale, then there would also be no detectable effects from this project on aquatic species at the HUC 5 scale.

There are four BLM foreseeable projects within the sub-watersheds that comprise the East West Junction Project Planning Area: the East Fork Illinois LMP, the West Fork Illinois LMP, the Althouse Sucker LMP, and the Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA. The water quality and erosion cumulative effects from these projects are discussed under the “Timber Haul, Road Use, and Maintenance” subtopic below. These projects were designed to keep turbidity below 10% and would be consistent with the Clean Water Act, State of Oregon water quality standards, and ACS objectives. While dispersed mining is occurring on the U.S. Forest Service portion of the East West Junction Project Planning Area; there are no U.S. Forest Service projects being implemented or proposed in this Planning Area.

- Road Construction

The East West Junction Project would require the construction of 0.4 miles of temporary routes and 0.5 miles of existing route reconstruction to access proposed units using best management practices. These roads would not result in an increase in

road density within this Planning Area because they would all be decommissioned following use. Subsoiling of these roads would eliminate the long term impacts to watershed hydrology but would result in an increase in erosion. All accelerated erosion from the construction use and decommissioning of these temporary routes would remain onsite and would be hydrologically disconnected from all streams and wet areas.

Construction of roads on non-federal lands would be expected to continue as needed for access to non-federal lands. Construction of these roads would be expected to result in long term impacts to watershed hydrology. However the magnitude of this impact is a function of the quantity and location of the roads constructed, which is unknown at this time. Research has indicated that changes in watershed hydrology do not become measurable until road acres occupy at least 3-4% of the watershed (WPN, 1999). To reach the low end of these levels, an additional 442 miles of road would need to be constructed without any decommissioning. Given the extent of the current road network, it is unlikely that this would occur.

Development will follow Oregon's Land Use Act, which has the mission to "conserve farm land, forest land..., and other important natural resources...(and to) encourage efficient development" (ODLCD 2012).

- Timber Haul, Road Use, and Maintenance

Timber haul, road use, and road maintenance activities associated with past projects have caused an increase in erosion on all rocked and natural surfaced roads in this Planning Area. Where these roads are hydrologically connected, road use and hauling has also resulted in increased sedimentation to streams.

Combined, federal projects would result in hauling on approximately 173.7 miles and maintenance on up to 117.5 miles of roads within this Planning Area. Approximately 19.6 miles of haul and maintenance would be associated with the East West Junction Project, and about 152.74 miles of haul and maintenance would occur in conjunction with the foreseeable projects noted in Section 3.5.2.3 above. For these projects natural and rocked roads would limit timber haul and maintenance during dry conditions or the dry season (generally between May 15th and Oct 15th of the same calendar year) where roads are hydrologically connected. This restriction would considerably reduce the amount of erosion that would occur during hauling and maintenance activities. BST surfaced roads do not result in accelerated surface erosion and would receive only scheduled road or ditchline maintenance. BST roads would therefore not result in impacts to water quality.

Roads identified during field assessments for the East West Junction Project that were noted as presently having severe drainage problems and subgrade failures that have resulted in gulying, potholes, under surface voids, and fill slope failures would be repaired prior to the occurrence of hauling activities. These roads include the 39-7-18B, 39-7-8, 39-7-17.2, 39-7-17B, 39-8-29, and 39-8-29.3. Of these 0.4 miles are

hydrologically connected. As such, repairs on these roads would reduce multiple instances of chronic erosion that is currently ongoing within the Planning Area.

All rocked and natural surface roads would receive road surface and ditchline maintenance as necessary to protect the integrity of the road surface and drainage patterns during use, and as needed to prevent excessive erosion that could result exceeding the state turbidity standards for water quality. Proposed activities along rocked and natural surface roads would contribute to accelerated erosion within this Planning Area at different levels depending on the moisture levels of the road surface during haul, and the type of maintenance needed. The East West Junction Project and the foreseeable BLM projects would occur within the same Planning Area, road hauling for both projects would be limited to dry conditions, and would be maintained as needed to protect the road integrity and designed drainage patterns. Hauling and maintenance activities would also be monitored to ensure compliance with the direct and indirect effects stated within this EA, and to ensure compliance with State Water Quality Standards for turbidity. As such, impacts to water quality from hauling and maintenance activities from both projects would not exceed those impacts that have been described for the East West Junction Project.

Where hydrologically connected roads cross stream channels, maintenance and hauling activities would result in localized instances of offsite erosion. Standard road maintenance activities on these roads would include periodic instances of roadside brushing, spot rocking, culvert cleaning, surface blading and shaping, and ditchline maintenance. All hauling and maintenance actions would occur during dry conditions only. This restriction would considerably reduce the amount of erosion that would occur during hauling and maintenance activities on hydrologically connected roads.

There is no other hauling planned in association with federal projects in this Planning Area. As described in the direct and indirect water and erosion effects analysis in the EA, sediment entering stream channels at crossing locations along haul roads would not be of a magnitude to result in a visible increase in stream turbidity, or a measurable increase in the overall stream sediment deposition generally for more than 25 feet downstream within stream channels. Any sediment entering streams would be redistributed and immeasurable within all reaches of the channel following the first bankfull event of the winter season. Inputs of sediment from all projects combined would not be of the magnitude, or close enough in proximity to one another to become detectable at the Planning Area or larger scale. Hauling and road maintenance activities would not exceed State of Oregon water quality standards and would not result in any measurable effects on macroinvertebrates communities or aquatic habitat. This action is also consistent with the standards and guidelines set forth under the 1994 Medford RMP EIS.

Other ditchline and road surface maintenance in this Planning Area would only occur on federally maintained roads as scheduled under routine maintenance, or as necessary to ensure proper drainage. Where ditchlines are hydrologically connected

to streams, ditchline maintenance can result in sediment delivery to streams through the first winter. Best Management Practices would require a sediment filter to be in place prior to stream culverts if ditchline maintenance would result in exceeding water quality standards, or cause an effect to fish habitat. Following the first season, ditchline maintenance results in an overall reduction in chronic erosion of the road surface and where hydrologically connected, subsequent stream sedimentation. Due to the implementation of BMPs, PDFs, and SOPs hauling and road maintenance activities would not exceed State of Oregon water quality standards and would not result in any measurable effects on macroinvertebrates or aquatic habitat.

- Skid Trails, Landings and Yarding Corridors

Past timber management, landing and road construction, road maintenance, and use are all contributing to soil disturbance and erosion within the Planning Area. Harvest activities using BMPs or PDFs generally only result in onsite erosion on Northwest Forest Plan (NWFP) harvests on federal land. Erosion from upslope activities may be hydrologically connected to streams and would contribute to offsite sedimentation of streams in harvests prior to the implementation of the NWFP or in areas of non-federal harvest, where riparian buffers are absent or limited.

Many of the acres previously disturbed by the construction and use of yarding corridors and landings are no longer visible on the ground and appear to have recovered as a result of the re-growth of vegetation. Within previously harvested units in this Planning Area, evidence of past compaction is still present along many tractor skid trails, and in stream channels intersected or bordered by these trails. Where poorly rehabilitated skid trails, landings, and yarding corridors are hydrologically connected to the streams through road systems, or are adjacent to streams that have little or no riparian buffer, these areas have become sources of stream sediment that are contributing to the current aquatic conditions.

Timber harvest on non-federal lands is presently occurring and would be expected to continue to occur within this Planning Area. In the past 5 years, timber harvest on non-federal lands within this Planning Area has been occurring, on average, at a rate of approximately 200 acres per year. This would be expected to result in up to 180 acres (0.5%) of additional compaction and disturbance within this Planning Area in the next five years as a result of non-federal harvest. This would increase the estimated current acres of disturbance and compaction from yarding corridors, skid trails, and landings from 1,014 acres (2.9%) to 1,260 acres (3.6%). The implementation of the East West Junction Project and the foreseeable projects on BLM would result in up to 30 acres of compaction. Even assuming all acres to be compacted, increasing the amount of acres subject to reductions in infiltration would not measurably increase the risk of water quality reductions to the Planning Area since the Planning Area is currently on the low end of a “moderate risk” and would remain within the “moderate risk” range of water quality impacts due to impervious areas⁷ (WPN, 1999).

⁷ Moderate Risk is between 5-10% of total area.

Where compacted acres from road construction and timber extraction are not associated with actively maintained road systems, soil conditions would continue to improve slowly over time as tree roots and other natural processes begin to break apart soil particles, eventually resulting in a reduction in compaction on these acres. During this period, it would be expected that some areas would experience an increase in erosion due to gullies and rills that form on compacted and unmaintained skid trails. Watershed processes, such as runoff timing and subsurface flow patterns affected by existing compaction, would also slowly improve. These acres would likely reestablish full hydrologic and soil functions within 40-80 years, depending on soil type and condition at the time of harvest (Wert and Thomas, 1981).

Tree removal in Riparian Reserves, outside the EPZ, would occur in the East West Junction Project within three timber extraction units selected to improve riparian condition (see 2.2.1 Riparian Thinning). The other foreseeable BLM projects do not propose Riparian Thinning in Riparian Reserves.

Thinning in the Riparian Reserve would leave a canopy closure of at least 50%. This provides protection for all components of water quality. In addition, landing expansions could occur outside the EPZ but within the Riparian Reserve in conjunction with continuous landings on roads. Expansion of these landings would not involve removing the low lying ground vegetation, or result in detrimental compaction.

The EPZ is designed to filter out any accelerated erosion from upslope practices that are implemented using PDFs and BMPs (see discussion of Riparian Thinning and EPZs in Section 2.2.1). Thinning in the Riparian Reserves is designed to expedite the development of late successional, multi-story habitat conditions and to restore the species composition and structural diversity of the plant communities, needed to achieve ACS and Riparian Reserve objectives (Medford RMP, pp. 22 & 26).

The East West Junction Project and the foreseeable BLM projects would be implemented using BMPs and PDFs that would reduce erosion and break the hydrologic connection between the upland harvest actions and the streams and wet areas. As a result, timber removal under the East West Junction Project and foreseeable BLM projects would result in a small increase in the upslope onsite erosion but would not contribute to the degradation of streambed conditions or aquatic habitat.

- Wildfire and Prescribed Fuel Reduction
Wildfire disturbance events were recorded in the Project Planning Area boundary from the years 1959 to 2004. Minor increases in erosion have occurred as a result of the 6 wildfires, totaling approximately 1,151 acres, that have occurred in the Planning Area. The extent of offsite erosion from these small fires, though expected to be negligible, has not been measured.

Short term soil erosion has also been affected by activity fuel reduction and handpile and burning projects that were implemented within the past five years. Activity fuels treatments on federal ground are done using BMPs that protect from any measurable changes in water quality. Activity fuels treated as part of the East Fork Illinois LMP, the West Fork Illinois LMP, the Althouse Sucker LMP, and portions of the Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA would be treated by machine or handpile/burned, chipped, or lopped and scattered based on a post-logging assessment of fuel loading within the East West Junction Project Planning Area. These treatments would not result in upslope erosion and would help to reduce the probability of an intense, large scale wildfire occurring by reducing fuel loading and horizontal continuity within the stand. Activity fuel treatments for the East West Junction Project would be minimized where whole tree yarding with tree tops attached could be applied. Following harvest, slash generated from whole-tree yarding would be piled and burned at landing sites. To limit the extent and magnitude of onsite erosion, and to protect from offsite erosion, landing piles would be placed outside of EPZs and in locations that are not hydrologically connected to the ditchlines of roads. Due to the implementation of PDFs and the use of EPZs on all streams, any erosion from activity fuel treatments would remain onsite and would have no effect on water quality.

Broadcast burning, pile burning, and other activity fuels treatments would be expected to continue on non-federal lands. These treatments would be required to be done in accordance with Oregon Forest Practices Act requirements. Treatment of activity fuels and site preparation of units will likely result in accelerated erosion, stream sedimentation, and localized chemical alterations to the soil and water. The extent the impact to water quality is not known. However, the magnitude of these impacts would be expected to be equal to or less than those that have occurred during past timber sales and would be expected to be compliant with the Clean Water Act. Since harvest activities have consistently occurred at similar levels in the past, it would be expected that these actions would not significantly alter current aquatic conditions within this Planning Area.

Activity fuels treatments on non-federal lands are also designed to limit the extent and magnitude of onsite erosion, and to reduce impacts to water quality. These treatments help to reduce the probability of an intense, large scale wildfire occurring by reducing fuel loading and horizontal continuity within the stand.

Because BMPs would be followed on federal lands, and non-federal lands would treat activity fuels in accordance with Oregon Forest Practices Act requirements, short term impacts would be within the scope of the 1994 Medford District EIS.

Water quality in the Planning Area is currently in fair to good condition (BLM, 1999). Sediment from road maintenance and hauling associated with the East West Junction Project and the foreseeable BLM projects would not result in more than a 10% increase in stream turbidity, and would generally not measurably increase sediment deposits for more than 25 ft downstream of haul roads in streams without CCH. Given the

magnitude, dispersed locations, extent, and short term nature of each of the water quality impacts that would occur during these projects, having multiple projects occur within the same watershed during the same time period would not cumulatively change the magnitude of impacts, or the extent that was analyzed for the direct and indirect effects of each individual project. Logically it can be concluded that negligible increases in sediment from these activities would contribute to the overall amount of sediment entering streams from past, present, and future impacts within this sub-watershed, but sediment from these actions would be within ODEQ water quality standards and would not be distinguishable above baseline levels or have any effect on aquatic organisms.

Since implementation of these projects would only result in localized impacts to water quality that would not be distinguishable at the Planning Area or higher scale, actions within this HUC 5 watershed would be consistent with the Clean Water Act, State of Oregon water quality standards, and ACS objectives.

Cumulative Summary and Conclusions (Alternative 2 and 3)

In summary, sediment to streams would be limited to small localized deposits for the short term (3 years); however, in the long term, sedimentation in stream would be less than the current condition. The action alternatives are anticipated to have short term input of very small amounts of sediment to stream channels from the proposed maintenance and timber hauling. Generally, this addition would be minor, limited to 5 to 25 ft downstream of a crossing of a stream without CCH and would be flushed out with the return of the rainy season and thus become indistinguishable from background levels. PDFs that restrict haul during the wet season and how road/ditch maintenance is performed would limit production and movement of sediment. Yarding or tractor corridors would be hydrologically disconnected from streams with waterbars to protect water quality. A long term decrease in sediment delivered to streams from current levels is anticipated for the action alternatives as road maintenance is designed to reduce long-term erosion and sedimentation. Sediment barriers would be installed on BLM rd #39-8-29 and #39-7-19 to prevent sediment delivery into CCH streams.

The cumulative effects are within the scope of anticipated effects to water and soil determined in the 1995 RMP/EIS (pp. 4-14 to 4-24).

Table 3-10. Summary of the Cumulative Effects of Alternatives 2 & 3 of the East West Junction Project Combined with the Foreseeable BLM Projects

Sixth-field Watersheds	Action Alternatives	Affected Parameter	Cumulative Effect of the No Action Alternative	Cumulative Effect of the each Action Alternative	Rationale for Cumulative Effects Determination
Lower East Fork Illinois River	2	Sediment	Low, small localized deposits from roads and OHV trails, would likely remain in current condition (limited to 5-25 ft)	Low, slight improvement in 3 years (short term addition of few fines from roads, maintained, haul)	Channel morphology unaffected and for the long term sediment in streams on BLM should decrease
Lower West Fork Illinois River					
Lower Sucker Creek	3			Low, no change (except short term addition of few fines from roads, maintained, haul)	
Rough and Ready Creek					

3.6 Northern Spotted Owl (Threatened) and its Habitat

3.6.1 Affected Environment for Northern Spotted Owl and its Habitat

Scale of Analysis

Under current consultation with the U.S. Fish and Wildlife Service (Medford BLM Summer 2010 LAA BA and July 2010 NLAA BA) impacts from the proposed East West Junction Project were evaluated at both the local (East West Junction Project Planning Area) and provincial level (Klamath Province), based upon activities in suitable (nesting, roosting, foraging) and dispersal habitat.

The Northern Spotted Owl direct and indirect effects from the action alternatives are analyzed at both the Project and Planning level scales. The Project Area includes the units proposed for treatment as well as units no longer included in the refined proposals for Alternative 2 and 3 (referred to as “deferred”). The Planning Area includes the BLM acres within the larger hydrologically defined boundary. These scales were used because spotted owls are wide ranging species and these scales provide adequate coverage to analyze effects to multiple sites affected by the project.

Habitat Determination

Spotted owls are closely associated with older forests for nesting, foraging, and roosting throughout most of their range (Forsman et al. 1984; Carey et al. 1990; and Solis and Gutierrez 1990). Spotted owl habitat within the Planning Area was determined utilizing the McKelvey rating system, which has six levels of habitat classifications. McKelvey ratings 1 and 2 are used throughout this analysis to classify suitable spotted owl nesting, roosting, and foraging habitat (NRF). NRF habitat is characterized by forested stands

with older forest structure, multiple canopy layers, and a canopy closure of 60 percent or greater. The best quality NRF habitat has large old trees with cavities, broken tops or mistletoe platforms, large branches, large dead standing and fallen decayed trees, and multiple canopies of shade tolerant hardwoods and conifers that support prey base. NRF habitat also functions as dispersal habitat. “Dispersal-only” habitat for spotted owls (McKelvey 5 and 6) is defined as stands that have a canopy closure of 40 percent or greater, and are open enough for flight and predator avoidance. “Dispersal-only” habitat is used throughout this document to refer to habitat that does not meet the criteria of NRF habitat, but has adequate cover to facilitate movement between blocks of suitable NRF habitat. Unsuitable habitat (McKelvey 3 and 4) does not currently meet the NRF or “dispersal-only” habitat criteria. The McKelvey values for BLM lands in the Project Area were derived from two sources: 1) a Grants Pass Resource Area maintained GIS data layer representing McKelvey values across BLM lands; and 2) field visits conducted in 2009 by BLM wildlife technicians and biologists.

Table 3-11 depicts, the current amount and type of northern spotted owl habitat as described using the McKelvey rating system for BLM land within the East West Junction Project Planning Area. Figure 3-3 represents the same data graphically for the East West Junction Project and Planning Areas. The geology, fire history, ownership patterns, and past management practices have resulted in this current distribution of NRF, dispersal, and non-habitat in the watershed and Planning Area. This mosaic pattern is common throughout the Klamath Mountains Province in southwestern Oregon where fire is recognized as a key natural disturbance (Atzet and Wheeler 1982). Fire has played an important role in influencing successional processes and creating diverse forest conditions.

In June 2011, the USFWS (US Fish and Wildlife Service) finalized the *Revised Recovery Plan for the Northern Spotted Owl*, which contains 33 Recovery Actions. Recovery Actions are recommendations to guide activities needed to accomplish the recovery objectives and ultimately lead to delisting of the species. Specifically, Recovery Action 32 (RA 32) in the Recovery Plan recommends maintaining and restoring the older and more structurally complex multilayered conifer forests” (U.S. Fish and Wildlife Service 2011, III-67). The intent of RA 32 is to maintain substantially all of the older and more structurally complex multi-layered conifer forests on Federal lands in order not to further exacerbate the competitive interactions between spotted owls and barred owls. The East West Junction Project defers proposed treatment in RA 32 stands identified by interagency survey guidance (USDA/USDI 2010) and is consistent with consultation completed with the U.S. Fish and Wildlife Service (USFWS), (Summer 2010 BO, Tails #13420-2010-F-0107 and July 2010 LOC, Tails # 13420-2010-I-0178). All proposed units have been surveyed for RA 32 habitat. Approximately 25 acres were identified and dropped from treatment. The identified RA32 habitat areas were located as small inclusions in five areas proposed for treatment, ranging in size from 2.5 to 10.2 acres.

Table 3-11. Northern Spotted Owl Habitat Acres on BLM lands in the East West Junction Project Planning and Project Areas

	East West Junction Project Area (acres/percent)	East West Junction Planning Area (acres/percent)
Nesting, Roosting, Foraging Habitat	823 (18%)	1,149 (16%)
Dispersal Only Habitat	1,644 (36%)	2,771 (37%)
Non-Suitable Habitat	2,093 (46%)	3,526 (47%)
Total (acres)	4,560	7,446

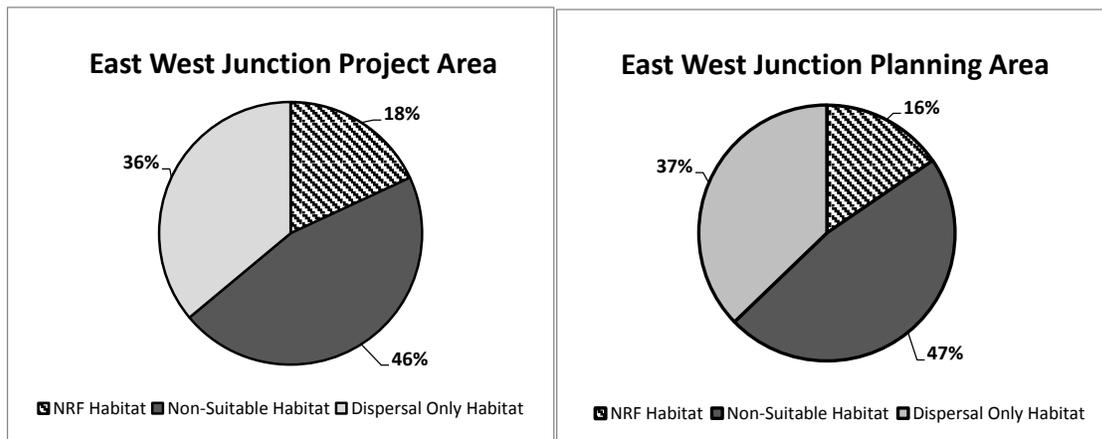


Figure 3-4. Percentages of Northern Spotted Owl Habitat on BLM lands in the East West Junction Project and Planning Areas

Methodology

When discussing changes to spotted owl habitat, the following describes how various vegetation treatments change habitat conditions after treatment implementation. Canopy closure is used as one of the critical habitat thresholds because it is highly important to NSO nest site selection and general habitat use. Increased levels of canopy also afford protection from predators, and regulate temperature extremes (Courtney et al. 2004). “NRF removed” denotes that canopy closure is reduced to < 40% in nesting, roosting or foraging habitat resulting in non-suitable habitat. NRF downgraded denotes that the NRF habitat has been downgraded to “dispersal-only” habitat because 40 to 59% canopy cover would be retained post-harvest. NRF treated and maintained denotes that habitat is degraded but still provides nesting, roosting or foraging habitat because a minimum 60% canopy cover would be retained, as well as other key habitat features such as snags and coarse woody material. Dispersal removed denotes that canopy closure is reduced to < 40% resulting in non-suitable habitat. Dispersal treated and maintained denotes that habitat is degraded but still provides dispersal because at least 40% canopy cover would be retained.

Historic Spotted Owl Sites

There are three historic northern spotted owl (NSO) sites with at least a portion of their home range (1.3 mile radius) in the Planning Area. However, only one activity center is located in the Planning Area. This historic site is a designated Known Spotted Owl Activity Center (KSOAC), with approximately 100 acres set aside in the core area. The KSOACs were established by Standards and Guidelines of the Northwest Forest Plan to protect the 100 best northern spotted owl habitat acres in close proximity to nest sites or activity centers, known to exist as of January 1, 1994 (NWFP, p. C-10). No known nests are located in proposed treatment units.

While there is no requirement to survey for spotted owls prior to taking action, at least three visits have been conducted since 2008 to the three NSO sites associated with the Planning Area. Only one site had a recent spotted owl observation, and this was only an auditory response. Limited surveys were conducted at these three sites prior to 2007, so survey history for every site in the Planning Area is not current. It has been more than eight years since any of these sites were occupied by a pair of spotted owls. However, for purposes of this analysis, all sites are conservatively assumed to be occupied.

Since 2010, additional surveys were conducted in spotted owl nesting habitat located within 1.3 miles of proposed units south of Cave Junction. These protocol surveys were conducted to determine occupancy in an area where a generated point was created based on a computer simulation to estimate potential effects to spotted owls in unsurveyed habitat for consultation purposes. No spotted owls have been found in two years of surveys. Protocol surveys would continue depending on the harvest schedule. If spotted owls are found within the provincial radius of this site, the BLM would modify the project to avoid incidental take to stay consistent with U.S. Fish and Wildlife Service consultation for this project.

This analysis considered new information presented in the 2011 Revised Recovery Plan for the Northern Spotted Owl (USDI 2011). Specifically, the recovery plan identified barred owls as one of the primary threats to the recovery of the spotted owl. Barred owls reportedly have reduced spotted owl site occupancy, reproduction, and survival (USDI 2011). There is a perceived threat because barred owls use habitats typical of spotted owl habitat. They may be able to coexist through habitat segregation; however, whether this would occur is unclear (Courtney et al. 2004). Barred owls may be more of a habitat generalist and occupy a wider diversity of habitat types than spotted owls. Displacement of spotted owls by barred owls is likely occurring, but the rate and extent of this are unknown; further, whether this effect is exacerbated by other confounding issues is uncertain (Courtney et al. 2004).

The cause of the barred owl invasion is not clear and the BLM has no control over barred owls or their encroachment into NSO habitat. To what extent the barred owl range expansion is a result of humans altering the environment is unknown (Monahan and Hijmans 2007; Livezey et al. 2008). Currently, it is unclear whether forest management

influences the outcome of interactions between barred and spotted owls (Courtney et al. 2004). The barred owl issue is being addressed at the range level by the Regional Barred Owl Working Group through research efforts, management strategies, and protocol revisions.

No coordinated surveys for barred owls have occurred in the Grants Pass Resource Area, nor are any planned at this time. All barred owl observations on the Resource Area are from incidental observations. There have been barred owl observations in the East West Junction Project Planning Area, including at two of the known NSO sites in the Planning Area.

Spotted Owl Prey

Dusky-footed woodrats, the primary prey species for spotted owls in southwest Oregon, are found in high densities in early seral or edge habitat (Sakai and Noon 1993). Down wood is an important habitat feature for these major prey species in southwest Oregon. Dusky-footed woodrats build stick nests, sometimes incorporating logs as part of the structure. Northern flying squirrels are another major source of owl prey in southwest Oregon, while red tree voles (RTV) comprise only 2.6 % of the diet of spotted owls in this area (Forsman 2004). Recent RTV surveys indicate RTVs, flying squirrels, and woodrats are present within the Planning Area.

3.6.2 Environmental Consequences Northern Spotted Owl and its Habitat

Impacts to spotted owls are measured in acres by changes to Nesting, Roosting, Foraging and Dispersal habitat from the action alternatives. Effects are analyzed at both the project and planning scales.

3.6.2.1 Alternative 1 (No Action) - Direct and Indirect Effects on the Northern Spotted Owl and its Habitat

Under the No Action Alternative, there are foreseeable actions in the East West Junction Project Planning Area that would alter northern spotted owl habitat. Table 3-12 shows the acres of proposed changes to NSO habitat on BLM lands in the Planning Area that would occur regardless of the East West Junction Project. On non-federal lands, predicting future foreseeable actions is difficult due to the multitude of individual landowners (including private and state ownership). It is assumed that industrial timber lands would be harvested on a 60-year rotation (RMP EIS pp. 3&4-5 to 3&4-6) and would be maintained in early to mid-seral habitat. The vast majority of non-federal land quantify as unsuitable habitat across the watershed. The potential for retention and maintenance of existing late-successional forest, as well as the development of future late-successional forest in the East Fork, West Fork, and Sucker Creek 5th field watersheds is greatest on federal lands.

Table 3-12. Effects to Spotted Owl Habitat on BLM Lands in the East West Junction Project Planning Area from Existing and Foreseeable Projects

Alternative	NRF Removed (acres)	NRF Downgraded (acres)	NRF Treated and Maintained (acres)	NRF No Treatment (acres)	Dispersal Only Habitat Removed (acres)	Dispersal Only Habitat Treated and Maintained (acres)	Dispersal Only No Treatment (acres)
Alt. 1	0	109	60	980	33	251	2,487

Under the No Action Alternative, no harvest, thinning, or hazardous fuel reduction would occur for this project. Management activities would not remove or alter suitable habitat in the East West Junction Project and habitat would continue to develop along current successional pathways. The development of large tree structure comparable to that of remnant trees used by spotted owls is not likely to occur. This is because current stand conditions are too dense and trees are not developing the diameter to height ratio required to develop this structure. This ratio was historically created through frequent fire events that reduced stem densities and competition that created open-grown conditions. Current stand conditions would likely develop into less complex stand structures and species compositions than that of old growth stands (Sensenig 2002).

As a result of these dense forest stands, spotted owl NRF habitat characteristics, such as large live trees, large limbs, broken top snags, multi-storied stands, and higher canopy cover would be at greater risk for loss through stand replacing fires. Additionally, stand replacing fires would remove or downgrade habitat randomly across the landscape, setting back succession and development.

As indicated in Table 3-12, proposed changes to NSO habitat would occur on BLM lands in the Planning Area regardless of the East West Junction Project. These foreseeable projects include: East Fork Illinois Landscape Management Project (LMP), West Fork Illinois LMP, Althouse Sucker LMP, and the Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA.

BLM standard road maintenance, including activities such as road surface, ditch, road bank and fills, hazardous tree removal, culvert replacement, would occur and not downgrade the spotted owl NRF habitat. Temporary and permanent right-of-way construction would continue on private lands and potentially on BLM consistent with reciprocal right-of-way agreements to allow private harvesting, resulting in the potential for removal of NRF and dispersal habitat.

3.6.2.2 Alternatives 2 & 3 – Direct and Indirect Effects on the Northern Spotted Owl and its Habitat (Effects Common to Both Action Alternatives)

The two action alternatives may affect northern spotted owls to some degree. In addition to timber harvest units, hazard trees (per OSHA requirements) along haul

roads would also be harvested. The impact on habitat of hazard tree removal would be negligible, because the scope would be small in comparison to the total Planning Area (< 1 %).

At the local level, the action alternatives for the East West Junction Project would meet Recovery Action #32, which is intended not to further exacerbate competitive interactions between spotted owls and barred, by retaining older and more complex multi-layered conifer forests.

Effects to Spotted Owl Prey Species

Treatments associated with the action alternatives that would remove, downgrade, or maintain spotted owl habitat may also impact foraging by changing habitat for spotted owl prey species (USDI 2011). Residual trees, snags, and down wood retained in the thinned stands would provide some cover for prey species over time, and would help minimize harvest impacts to some prey species, such as dusky-footed woodrats.

Variable Retention Harvest and Variable Density Thinning treatments that would drop the canopy below 40% would remove suitable habitat for arboreal prey species (flying squirrels, red tree voles), but may improve habitat for non-arboreal species (western red backed voles and deer mice). These stands would begin to develop pre-treatment habitat within 25 to 40 years, depending on treatment type, plant association, and location. Residual trees, snags, and down wood retained in thinned stands would provide some cover for prey species over time, and would help minimize harvest impacts to some prey species. Treatment implementation would be spread out temporally and spatially within the East West Junction Planning Area, which would provide areas for spotted owl foraging during project implementation and reduce the impact of these effects at the project level. Northern spotted owls seldom venture far into non-forested stands to hunt. However, edges can provide better hunting opportunities for owls due to the increased vulnerability of the prey and easier access to the prey (Zabel 1995).

Bingham and Noon (1997) reported that a spotted owl core area is the area that provides the important habitat elements of nest sites, roost sites, and access to prey, benefiting spotted owl survival and reproduction. Rosenberg and McKelvey (1999) reported that spotted owls are “central place” animals with the core area (the area closest to the nest) being the focal area. Several studies (Wagner and Anthony 1998; Dugger et al. 2005; Zabel et al. 2003; Bingham and Noon 1997) indicate the core area size for the Klamath province is 0.5 miles from the nest site (or 500 acres). Therefore, effects to prey species for each alternative would be assessed by the amount of habitat treated within the 0.5 mile core area. The core area is a 0.5-mile radius circle (approximately 500 acres) from the nest or center of activity to delineate the area most heavily used by spotted owls during the nesting season; it is included in the provincial home range circle. Due to the spatial distribution of the proposed treatments, adequate and sufficient prey habitat would remain outside of the core area, but within the home range, which would continue to provide suitable foraging opportunities within the home range.

Both action alternatives would treat approximately 136 acres of potential foraging acres on BLM lands within the 0.5 mile core areas. NRF and dispersal only habitat would be treated, but maintained as a result of the action alternatives and no habitat would be removed or downgraded. Therefore, impacts to potential foraging areas would be minimal. Treatment implementation would be spread out temporally and spatially in the Planning Area, which would provide areas for spotted owl foraging during project implementation and reduce the impact of these short-term effects at the project level.

Red Tree vole surveys were completed in all proposed units that were suitable RTV habitat in 2011. Approximately 161 acres were set aside in RTV buffers based on active and associated inactive RTV nests located during surveys. These RTV buffered areas would not be harvested, but may receive Hazardous Fuel Reduction treatments without understory burning. RTV buffers scattered throughout the Project Area would continue to provide foraging potential for dispersing spotted owls in the Project Area.

Effects from Temporary Route Construction

The temporary route construction (0.4 miles) is proposed under both action alternatives and would occur on ridge tops or on flat slopes. Due to the ridge locations, it is unlikely that temporary route construction would affect nesting spotted owls because spotted owls generally nest on the mid-slopes, which would be away from direct construction effects. No temporary route construction would occur in known spotted owl nest patches. Edge effects from this construction would not be expected because all construction would occur within units proposed for vegetation treatments. These unit level treatments would affect canopy cover and interior forest at the stand level greater than the effects to the road clearing alone. These effects are incorporated in Table 3-13. Seasonal restrictions listed as PDFs (see Section 2.3.4.7) would avoid disturbance effects to adjacent nesting spotted owls during route construction.

3.6.2.3 Alternative 2 (Proposed Action) – Direct and Indirect Effects on the Northern Spotted Owl and its Habitat

Removal and downgrading of NRF would not occur in historic NSO home ranges, 0.5 mile core areas, or nest patches associated with the East West Junction Project Planning Area. Variable Retention Harvest and Variable Density Thinning, where it would reduce canopy below 40%, would remove 62 acres of suitable NRF spotted owl habitat and 32 acres of suitable “dispersal-only” habitat (See Table 3-13). These acres would not be expected to provide suitable NRF or “dispersal-only” habitat for many years post-treatment because specific key habitat elements would be removed, including large-diameter trees with nesting cavities or platforms, multiple canopy layers, adequate cover, and hunting perches (USDI 2011).

Table 3-13. Summary of East West Junction Project Area Effects on Northern Spotted Owl Habitat (including deferred units)

Alternative	NRF Removed (acres)	NRF Downgraded (acres)	NRF Treated and Maintained (acres)	NRF No Treatment (acres)	Dispersal Only Habitat Removed (acres)	Dispersal Only Habitat Treated and Maintained (acres)	Dispersal Only No Treatment (acres)
Alt. 1	0	0	0	823	0	0	1,644
Alt. 2	62	112	320	329	32	685	927
Alt. 3	0	0	494	329	0	717	927

Variable Density Thinning, that would leave a minimum of 40% canopy cover, would downgrade 112 acres of suitable NRF habitat to “dispersal-only” habitat. These acres would no longer be suitable NRF due to the loss of potential nest trees and the reduction of canopy closure. Specific key habitat elements would be removed during thinning, but would occur to a smaller degree because more of the original stand would remain intact. The rate at which the residual stands return to NRF habitat after treatment can vary considerably depending on the abiotic (e.g., aspect, slope position, average rainfall, soil type) and biotic (e.g., tree species composition, disease, tree ages) factors at the site. However, thinned stands are expected to return to NRF habitat much more rapidly in comparison to stands treated with a Variable Retention Harvest prescription because more of the key habitat features are retained after a typical thinning operation (Zabel et al. 1992, Davis et al. 2007).

Approximately 320 acres would be thinned but would still function as NRF habitat because higher canopy cover and key habitat features would be retained. Additionally, approximately 329 acres of suitable NRF habitat would not be treated for the East West Junction Project Area (deferred areas). These areas have been deferred from the project due to wildlife and botany buffers, logging feasibility issues, or the presence of the DTMA land use allocation (2008 RMP). Therefore, 79% of the existing NRF in the Project Area would continue to provide NRF habitat throughout the Project Area for nesting owls in the future.

Even though Variable Density Thin treatments would occur in NRF habitat, the direct effects to spotted owls would be minimal because they would be distributed both spatially and temporally across the Planning Area, and NRF downgrade or removal would not occur within the home range of known spotted owl sites. Additionally, seasonal restrictions listed as PDFs (see Section 2.3.4.7) would avoid adverse disturbance to nesting spotted owls within the Planning Area.

Alternative 2 would treat but maintain 685 acres of “dispersal-only” habitat. These treatments would reduce the canopy cover within the stand, but would still function as spotted owl “dispersal-only” habitat. Approximately 927 acres of “dispersal-only” habitat within the Planning Area would not be treated and would continue to provide suitable dispersal habitat. Dispersal habitat would also be found in untreated NRF

habitat, NRF habitat that was downgraded to NRF, and NRF habitat that was treated, but maintained within the Planning Area. These areas are sufficient in area and configuration in the Project Area to continue to facilitate dispersal throughout the Planning Area.

3.6.2.4 Alternative 3 – Direct and Indirect Effects on the Northern Spotted Owl and its Habitat

Alternative 3 would not remove or downgrade spotted owl habitat in the Project Area (See Table 3-13). The alternative is designed to maintain suitable spotted owl habitat in the East West Junction Project Area. Thinning and density management is proposed to retain key structural elements (e.g., large trees, snags, coarse woody debris, hardwoods, higher canopy cover) while reducing overly dense stands and protecting habitat from stand replacing fire. Alternative 3 would treat but maintain 494 acres of NRF habitat and 717 acres of “dispersal-only” habitat. These treatments would reduce the canopy cover and understory vegetation within the stand, but stands would still function as spotted owl NRF or “dispersal-only” habitat post treatment due to the retention of higher canopy cover and key habitat features (USDI 2011). Approximately 329 acres of suitable NRF habitat would not be treated in the Project Area and the remaining 494 acres of NRF would be treated, but maintained. Therefore, 100% of the NRF would continue to provide suitable NRF habitat throughout the Project Area for nesting owls in the future. Even though treatments would occur in NRF habitat, the effects to owls would be minimal because they would be short-term (10-15 years) in nature, activities would be distributed both spatially and temporally across the Planning Area, and seasonal restrictions listed as PDFs (see Section 2.3.4.7) would avoid adverse disturbance to nesting spotted owls in the Planning Area.

Approximately 927 acres of “dispersal-only” habitat in the Planning Area would not be treated and would continue to provide suitable dispersal habitat. Additionally, suitable dispersal habitat would also be found in untreated NRF habitat as well as NRF habitat that was treated, but maintained in the Planning Area. These areas are sufficient in area and configuration within the Project Area to continue to facilitate dispersal throughout the Planning Area.

3.6.2.5 Alternative 2 and 3 - Cumulative Effects on the Northern Spotted Owl and its Habitat

Cumulative effects to spotted owls result from the incremental impact of the action alternatives added to reasonably foreseeable actions. Cumulative effects for northern spotted owls are analyzed below at multiple scales because spotted owls have large home ranges and there are range wide concerns for the species.

Planning Area Scale

The foreseeable projects in the East West Junction Project Planning Area on BLM land are the East Fork Illinois Landscape Management Project (LMP), the West Fork Illinois LMP, the Althouse Sucker LMP, and the Fuel Hazard Reduction on the Grants Pass

Resource Area 2010-2015 EA. These projects would not remove NRF habitat. However, Alternative 2 of the East West Junction Project would remove a small percentage of spotted owl NRF habitat removal within the Planning Area. This small amount of NRF removal would not preclude northern spotted owls from nesting or dispersing within the Planning Area. The foreseeable projects in the East West Junction Project Planning Area that would collectively downgrade NRF and remove dispersal habitat are the West Fork Illinois LMP and the Althouse Sucker LMP (see Table 3-14). While dispersed mining is occurring on the U.S. Forest Service portion of the East West Junction Project Planning Area; there are no U.S. Forest Service projects being implemented or proposed in this Planning Area.

Cumulatively Alternative 2 would downgrade 221 acres of NRF habitat and remove 65 acres of dispersal habitat (112 acres of NRF habitat and 32 acres of dispersal habitat from the East West Junction Project, added with 109 acres of NRF habitat and 33 acres of dispersal habitat from the Althouse Sucker LMP and the West Fork LMP). See Table 3-14.

Alternative 3 of the East West Junction Project would not cumulatively contribute to the downgrading of NRF habitat or the removal of the dispersal habitat that would occur under the foreseeable downgrading of 109 acres of NRF habitat and removal of 33 acres of dispersal habitat under the Althouse Sucker LMP and the West Fork LMP. This is the case since Alternative 3 of the East West Junction Project would treat, but maintain NRF and dispersal habitat. See Table 3-14.

Even though up to three NSO sites associated with the East West Junction Project Area could be affected by this project and foreseeable treatments, untreated late-successional forest habitat would be retained throughout the Planning Area, which would reduce potential effects by continuing to provide NRF and dispersal habitat. Additionally, even when treatments proposed in the East West Junction Project are added with the foreseeable actions, it is unlikely the actions proposed in the East West Junction Project would appreciably reduce or diminish the survival or recovery of the spotted owl due to the small percentage of habitat this would impact compared to the untreated habitat at the provincial and the range-wide levels. Additionally, at the Planning Area level, 866 acres (75%) and 1,040 acres (91%) of the existing NRF habitat would be maintained under Alternative 2 and 3, respectively. These areas would continue to provide spotted owl NRF habitat, provide habitat for late-successional forest habitat dependent species, and would help maintain future connectivity throughout the East Fork, West Fork, and Sucker Creek watersheds.

Table 3-14. Summary of Cumulative Effects of All Alternatives on Spotted Owl Habitat on BLM lands in the East West Junction Project Planning Area

Habitat	Existing Environment (acres)	Alt. 1 (acres/ % change)	Alt. 2 (acres/ % change)	Alt. 3 (acres/ % change)
Suitable NRF	1,149	1,040 (- 9%)	866 (-27%)	1,040 (-9%)

Habitat	Existing Environment (acres)	Alt. 1 (acres/ % change)	Alt. 2 (acres/ % change)	Alt. 3 (acres/ % change)
Dispersal Only	2,771	2,847 (+2.7%)	2,927 (+5.6%)	2,847 (+2.7%)
Non-Suitable Habitat	3,526	3,559 (+ 0.9%)	3,653 (+ 3.6%)	3,559 (+ 0.9%)
TOTAL (acres)	7,446	7,446	7,446	7,446

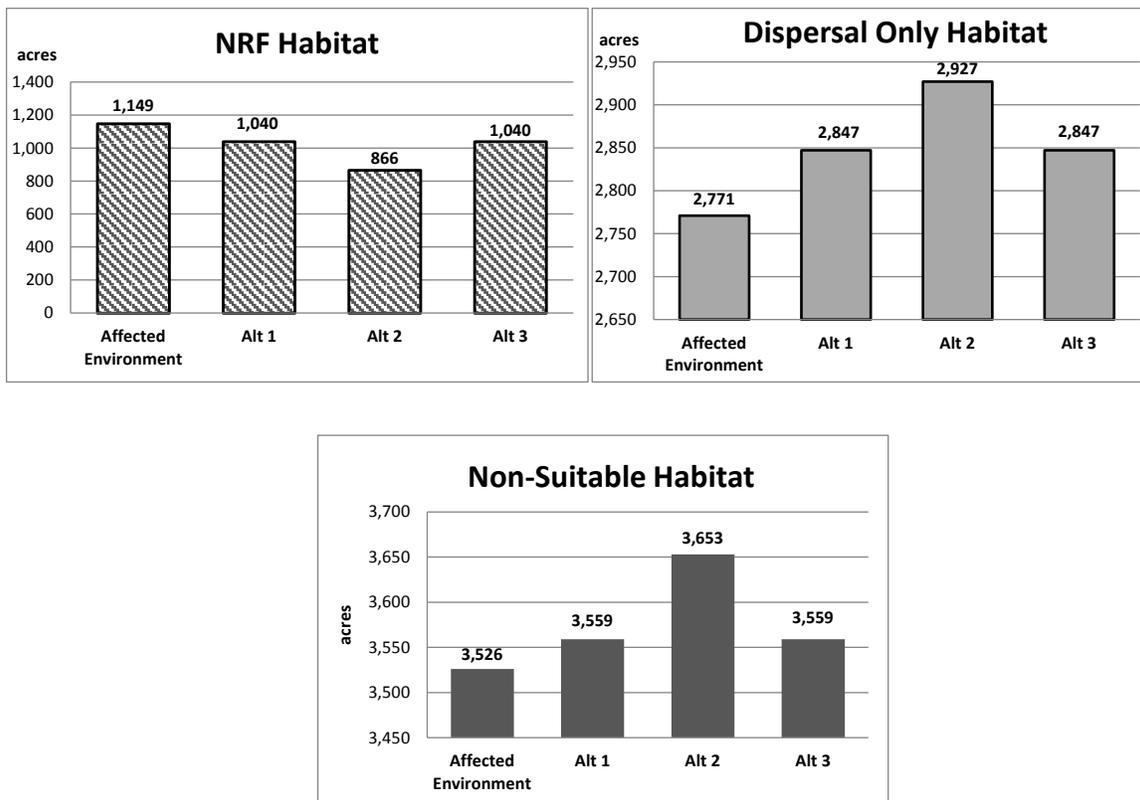


Figure 3-5. Cumulative Changes to Spotted Owl Habitat on BLM Lands in the East West Junction Project Planning Area by Alternative

Section 7 Scale

Since spotted owls are wide ranging species, Section 7 watersheds are used in consultation as a method to compare project level effects at a larger scale. Section 7 watersheds were developed by the Level 1 team (local BLM, U.S. Forest Service, and USFWS wildlife biologists) shortly after the spotted owl was listed, to evaluate effects to northern spotted owls at a larger scale when multiple projects are proposed (BLM 2004). This scale was developed because multiple projects can be dispersed across large areas and affect large numbers of spotted owl sites. They are similar, but not identical, to HUC

5 watersheds. This scale is appropriate to include for the East West Junction Project since the Planning Area covers a small portion of three large HUC 5 watersheds. Table 3-15 below shows the changes of habitat within the Illinois Section 7 Watershed as a result of the proposed activities for the East West Junction Project. Alternative 2 would reduce the amount of NRF within the Illinois Section 7 watershed by less than 1%. This small loss would not preclude owls from nesting in these watersheds in the future because the proposed treatments are relatively small and are dispersed throughout the Section 7 watersheds. Ninety-nine percent of the existing NRF habitat within the Illinois Section 7 watershed would still be available post-harvest and would continue to provide nesting habitat for spotted owls.

Table 3-15. Changes to Spotted Owl Habitat from the East West Junction Project Area on BLM Lands within the Illinois Section 7 Watershed

	Existing Environment (acres)	Alt. 1 (acres/ % change)	Alt. 2 (acres/ % change)	Alt. 3 (acres/ % change)
NRF Habitat	26,565	26,565 (0%)	26,391 (- < 1%)	26,565 (0%)
Dispersal Only Habitat	9,807	9,807 (0%)	9,887 (+ 1 %)	9,807 (0%)

Range Wide and Provincial Scales

Habitat loss due to timber harvest was identified as the paramount threat in 1990 (USFWS 2004). The rate of suitable habitat loss due to timber harvest on private, state, and federal forest lands declined in the late 1980s and early 1990s (USFWS 2004). The harvest rates in suitable habitat on BLM lands in Oregon was 3% per year (22,000 acres) in 1990, and dropped to 0.52% per year (4,911 acres) by 2003 (USFWS 2004 p.28). It is estimated that in the Northwest Forest Plan (NWFP) area, late-successional forest habitat development through in-growth (tree growth) is occurring at approximately 8% (600,000 acres) per decade over the baseline condition established in the NWFP (USFWS 2004). Not all of these estimated in-growth acres would function as suitable nesting, roosting, and foraging habitat; some would more likely function as dispersal or foraging habitat when they are added back into the baseline. The emergence of barred owls as invasive competitors, West Nile virus, and sudden oak death as new threats to spotted owls suggests an increase in risk to the species since 1990.

Range-wide, the spotted owl population has been declining at an average annual rate of almost 3 percent (Forsman et al. 2011). Spotted owl sites affected by the East West Junction Project are located in the Klamath Mountains Physiographic Provinces. According to the Forsman et al. (2011), spotted owl populations in the Klamath Mountain provinces had population trend estimates of less than 1.0, indicating a decline. However, the confidence intervals are high, suggesting the population could be stationary. In summary, the East West Junction Project would not incrementally affect the stability of the northern spotted owl population in southwestern Oregon because known sites would

not be affected. The proposed project would not reduce the amount of habitat needed to support owls within the home range of known spotted owl sites within the project Planning Area.

3.7 Fisher (Federal Candidate) and its Habitat

3.7.1 Affected Environment for Fisher and its Habitat

The Pacific fisher was petitioned for listing as endangered or threatened under the Endangered Species Act on three occasions. In 2004 and 2006, the USFWS determined that listing fishers as threatened was warranted, but was precluded by higher priority listing actions (USDI, USFWS 2004). In their 2006 update on the status of the Pacific fisher, the USFWS defined the reasons for listing as: “Major threats that fragment or remove key elements of fisher habitat include various forest vegetation management practices such as timber harvest and fuel reduction treatments. Other potential major threats include: stand-replacing fire, Sudden Oak Death, *Phytophthora lateralis*, urban and rural development, recreation development, and highways.” The USFWS also states that the three remaining fisher populations “appear to be stable or not rapidly declining based on recent survey and monitoring efforts.” (Id 71 Fed. Reg. 53777 (Sept. 12, 2006)). The species remains a USFWS candidate species (USDI, USFWS 2006).

Fishers are closely associated with low to mid-elevation (generally < 4,000 feet) forests with a coniferous component, large snags, or decadent live trees and logs for denning and resting, and complex physical structure near the forest floor to support adequate prey populations (Aubry and Lewis 2003). Buskirk and Powell (1994) hypothesized that the physical structure of the forest and prey associated with forest structures are the critical features that explain fisher habitat use, not specific forest types. Powell and Zielinski (1994) and Zielinski et al. (2004) suggest that habitat suitable for denning and resting sites may be more limiting for fishers than foraging habitat. McKelvey habitat ratings 1 and 2, used above to describe suitable spotted owl NRF habitat, also adequately describes suitable fisher denning and resting sites as they have similar key habitat requirements (high canopy cover, multi-storied stands, large snags, and large down trees on the forest floor).

Based on the McKelvey habitat analysis, approximately 823 acres of suitable fisher denning and resting habitat exist on BLM lands in East West Junction Project Area. However, all of these acres may not provide optimal fisher habitat because past harvest practices and land ownership patterns have fragmented this habitat in the Project Area. BLM checkerboard ownership may be one of the primary factors limiting the ability of BLM lands to provide optimal habitat for fishers (USDA and USDI 1994b). The largest contiguous blocks of suitable fisher denning and resting habitat is located just beyond the northeast corner of the East West Junction Project Planning Area. This is also the closest area to the known fisher locations from BLM camera sets in the Deer Creek 5th field watershed.

Forest carnivore surveys using bait stations with motion and infrared detection cameras have been conducted throughout the Grants Pass Resource Area (RA) and have detected fishers in the Williams and Deer Creek 5th field watersheds. The nearest fisher detection through camera surveys occurred at the top of the Deer Creek drainage, approximately 7 miles northeast of proposed activities for this project. Non-camera, incidental observations have also occurred near Galice Creek in the Grants Pass Resource Area. No surveys have been conducted in the Planning Area, but non-camera, incidental fisher observations have occurred in the Planning Area.

3.7.2 Environmental Consequences on Fisher and its Habitat

Impacts to fishers are measured in acres by changes to denning and resting habitat from the proposed activities. Effects are analyzed at both the project and planning scales. These scales are appropriate because fishers are wide ranging species and these scales are large enough to address habitat effects that could affect the species.

3.7.2.1 Alternative 1 (No Action) – Direct and Indirect Effects on Fisher and its Habitat

Under the No Action Alternative, the West Fork Illinois LMP and the Althouse Sucker LMP are the foreseeable actions in the East West Junction Planning Area that would collectively alter some fisher denning and resting habitat. Even though the East West Junction Project treatments would not occur under the No Action Alternative, the West Fork Illinois LMP and Althouse Sucker LMP would collectively reduce the quality of 109 acres fisher denning and resting habitat by reducing the canopy to 40% in this area. The other foreseeable projects in the East West Junction Planning Area (the East Fork Illinois LMP, and the Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA) would retain 60% canopy cover, hiding cover, and key habitat features (large overstory trees, snags, hardwoods, and CWD) essential for the life cycle of the fishers.

Since no harvest, thinning, or hazardous fuel reduction would occur under Alternative 1 of the East West Junction Project, no suitable fisher denning and resting habitat would be removed or altered in the East West Junction Project Area. Approximately 1,040 acres (91%) of the existing denning and resting habitat would be retained throughout the Planning Area. These areas would continue to provide suitable habitat for fisher and other late-successional forest habitat dependent species and would help maintain future connectivity throughout the East Fork, West Fork, and Sucker Creek watersheds. Habitat would continue to develop along current successional pathways in the Project Area. The development of key late-seral and old-growth forest stand conditions would be the same as described above for the northern spotted owl (see Section 3.5.2.1). Particularly to fishers, the greatest risk of the No Action Alternative, is the potential of wildfire related loss of large live remnant conifers as well as snags and down wood important to fisher natal and denning habitat.

3.7.2.2 Action Alternatives (Alts 2 & 3) – Direct and Indirect Effects on Fisher and its Habitat

General Effects from Vegetation Management

Proposed treatments in both action alternatives would remove and reduce the quality of suitable fisher habitat; however, no known denning sites would be impacted and proposed activities would not be expected to cause direct mortality of any fishers. Areas proposed for Variable Density Thin or Density Management that would reduce the canopy cover below 40% would no longer provide suitable fisher denning and resting habitat, because key components, such as large snags, large down wood, multiple canopy layers, and canopy closure would be reduced and large trees would be removed. These areas would not provide foraging habitat until vegetation reestablishes to provide cover in approximately 5-10 years.

Proposed Variable Density Thin, Commercial Thin, or Density Management treatments with 40% canopy retention would have short-term negative effects to fisher prey species due to the reduced vegetation. These effects are relatively short-term, as understory vegetation typically returns within 5 years and 60% canopy closure returns within 10-15 years. However, these short-term effects to fisher prey species would be minimal because the large amount of untreated areas in the Planning Area would continue to provide forage habitat while canopy cover in the treated stands increases. Additionally, all treatments would retain large snags and coarse woody debris (CWD) to provide future habitat for fishers, and reduce potential impacts.

Project activity disturbance effects to fishers are not well known. Fishers may avoid roaded areas (Harris and Ogan 1997) and humans (Douglas and Strickland 1987; Powell 1993). Disturbance from project activities would be temporally and geographically limited and would occupy a geographic area smaller than the average fisher home range. Telemetry studies have determined that fishers are wide-ranging animals (Zielinski et al. 2004). Seasonal restrictions listed as PDFs for other resources (see Section 2.3.4.7) would benefit fishers by restricting project activities until young are approximately six weeks old, which is approximately the age when fisher move young from natal dens and become more mobile. Fishers have large home ranges and would be able to move away from the action area while the disturbance is occurring without impacting their ability to forage and disperse within their home range.

3.7.2.3 Alternative 2 (Proposed Action) – Direct and Indirect Effects on Fisher and its Habitat

Where Variable Density Thin or Density Management treatments would retain less than 40% canopy, 62 acres of suitable fisher denning and resting habitat would be removed in the Planning Area (See Figure 3-6). However, older trees and skips would be retained in the units which would provide a mosaic of denning and resting habitat for the future stand. Fishers use a variety of habitats, including old regeneration harvests and heavily thinned stands which have large residual trees either within the stands or at the edge. In

the Southern Oregon Cascade Range Fisher Study, Aubry and Raley (2006) located fishers in managed forests with various degrees of overstory removal as long as the structures from the original forest were still present. Approximately 987 acres (86 %) of suitable fisher denning and resting habitat would be retained throughout the Planning Area, under this alternative.

Where Variable Density Thin or Density Management treatments would retain at least 40% canopy cover, the quality of 112 acres of suitable denning and resting habitat would be reduced due to the lower percent of canopy cover retained after treatment. Proposed treatments retaining 60% canopy cover (320 acres) would continue to provide cover and key habitat features (large overstory trees, snags, hardwoods, and CWD) essential for the life cycle of the fishers. These units would still meet fisher habitat needs for resting and foraging, and fishers would still be expected to use these stands. Hazardous Fuel Reduction and Pre-Commercial Thin units would not alter the existing canopy cover.

3.7.2.4 Alternative 3 – Direct and Indirect Effects on Fisher and its Habitat

Proposed Commercial Thinning and Density Management proposed in Alternative 3 would maintain 60% canopy cover in fisher denning and resting habitat. No habitat would be removed under this alternative. Proposed treatments (494 acres) would continue to provide cover and key habitat features (large overstory trees, snags, hardwoods, and CWD) essential for the life cycle of the fishers. These units would still meet fisher habitat needs for resting and foraging, and fishers would still be expected to use these stands. The impacts to suitable fisher habitat would be less than those generated by Alternative 2 because all denning and resting habitat, as well as residual late-successional forest legacy components, would be retained. Hazardous Fuel Reduction and Pre-Commercial Thin units would not alter the existing canopy cover.

3.7.2.5 Alternative 2 and 3 - Cumulative Effects on Fisher and its Habitat

Cumulative effects to fishers result from the incremental impact of the action alternatives added to reasonably foreseeable actions. Cumulative effects for fishers are analyzed below at the Planning Area Scale because fishers are wide ranging species.

The foreseeable projects in the East West Junction Project Planning Area are the East Fork Illinois Landscape Management Project (LMP), West Fork Illinois LMP, the Althouse Sucker LMP, and the Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA. While dispersed mining is occurring on the U.S. Forest Service portion of the East West Junction Project Planning Area; there are no U.S. Forest Service projects being implemented or proposed in this Planning Area.

Alternative 2 and 3 of the East West Junction Project would cumulatively result in a small percentage of fisher denning and resting habitat removal at the project level, but would not preclude fishers from breeding or dispersing within the Planning Area. Cumulatively for Alternative 2, these projects' thinning treatments would reduce the quality of fisher habitat in 221 acres (112 acres from the East West Junction Project and

109 acres from the Althouse Sucker LMP and the West Fork LMP), see Table 3-16. Since Alternative 3 would treat, but maintain fisher denning and resting habitat, the cumulative foreseeable effects would be limited to reducing the quality of fisher habitat in 109 acres from the Althouse Sucker LMP and the West Fork LMP.

Untreated late-successional forest habitat would be retained throughout the Planning Area, which would reduce potential effects by continuing to provide fisher denning and resting habitat. At the Planning Area level, 866 acres (75%) and 1,040 acres (91%) of the existing NRF habitat would be maintained under Alternative 2 and 3, respectively. These areas would continue to provide suitable habitat for fisher and other late-successional forest habitat dependent species and would help maintain future connectivity throughout the East Fork, West Fork, and Sucker Creek watersheds.

Table 3-16. Summary of Cumulative Effects of the Action Alternatives on Fisher Denning and Resting Habitat on BLM lands in the East West Junction Project Planning Area

Habitat	Existing Environment (acres)	Alt. 1 (acres/ % change)	Alt. 2 (acres/ % change)	Alt. 3 (acres/ % change)
Fisher Denning and Resting Habitat	1,149	1,040 (- 9%)	866 (-27%)	1,040 (-9%)

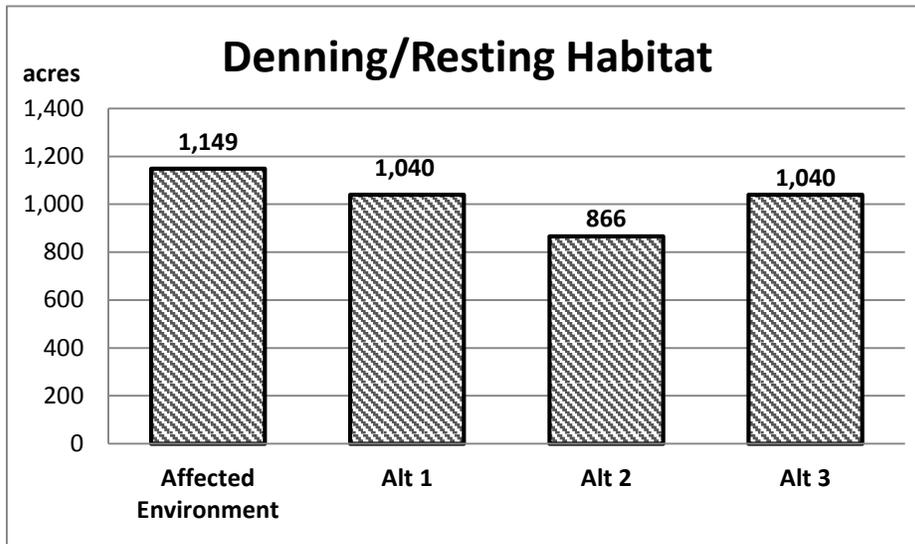


Figure 3-6. Cumulative Changes to Fisher Denning/Resting Habitat on BLM Lands in the East West Junction Planning Area by Alternative

The action alternatives would not contribute to the need to federally list the fisher as threatened or endangered because fishers would not be directly affected and suitable denning and resting habitat within the Planning Area would be retained in untreated areas or units that maintain habitat function. Habitat features, such as large snags and coarse

woody material, would be retained throughout the Planning Area, which would provide future habitat for denning and resting, and further reduce potential impacts. Fishers would not be precluded from dispersing or foraging in the Planning Area because suitable habitat would still be retained, units with higher canopy retention would aid in dispersal, and key habitat features would be retained throughout the Planning Area.

Where habitat altering treatments are proposed, the landscape is already highly fragmented by past management and ownership patterns, and the present habitat does not create sufficiently large enough blocks to support fishers in these areas. Consequently, it is unlikely that fishers maintain residence in the areas proposed for habitat altering treatments. Therefore, the action alternatives would not be expected to reduce the present fisher population in Southwest Oregon.

3.8 Lomatium Cookii and its Critical Habitat

3.8.1 Affected Environment for Lomatium Cookii and its Critical Habitat

On July 21, 2010 the U.S. Fish and Wildlife Service designated Critical Habitat for the endangered plant *Lomatium cookii* (Federal Register 2010). Eight Critical Habitat Units were designated in the Rogue River Valley and thirteen were designated in the Illinois River Valley. Table 3-17 shows the acres of ownership for each CHU in the Illinois Valley.

Table 3-17: Landownership of Critical Habitat in the Illinois Valley

Unit Number/acres	Acres BLM	Acres Private	Acres U.S. Forest Service
IV 1A 56 acres	0 (0%)	56 (100%)	0 (0%)
IV 1B 29 acres	29 (100%)	0 (0%)	0 (0%)
IV 2 70 acres	0 (0%)	67 (100%)	0 (0%)
IV 3 374 acres	271 (70%)	103 (30%)	0 (0%)
IV 4 204 acres	130 (64%)	74 (36%)	0 (0%)
IV 5 407 acres	390 (96%)	18 (4%)	0 (0%)
IV 6A 25 acres	0 (0%)	25 (100%)	0 (0%)
IV 6B 424 acres	1 (>1%)	423 (99%)	0 (0%)
IV 7 136 acres	34 (25%)	102 (75%)	0 (0%)

Unit Number/acres	Acres BLM	Acres Private	Acres U.S. Forest Service
IV 8 579 acres	26 (5%)	552 (95%)	0 (0%)
IV 9 30 acres	10 (33%)	20 (67%)	0 (0%)
IV 10 110 acres	24 (22%)	86 (78%)	0 (0%)
IV 11 292 acres	215 (74%)	71 (25%)	6 (>1%)
IV 12 1,216 acres	617 (51%)	597 (49%)	0 (0%)
IV 13 54 acres	46 (89%)	8 (11%)	0 (0%)
TOTALS 4,006 acres	1,793 (45%)	2,205 (55%)	6 (negligible)

The primary constituent elements for *Lomatium cookii* critical habitat were identified by U.S. Fish and Wildlife Service as:

1. Wet meadows in oak and pine forests, sloped mixed-conifer openings, and shrubby plant communities that are seasonally inundated and support native plant populations and are a minimum of 20 acres in size.
2. The hydrologically and ecologically functional system of streams, slopes, and wooded systems that surround and maintain seasonally wet alluvial meadows underlain by relatively undisturbed ultramafic soils within the greater watershed.
3. Silt, loam and clay soils that are ultramafic and nonultramafic alluvial origin, with a 0-40 percent slope.
4. No or negligible presence of competitive, nonnative invasive plant species. Negligible is defined as the minimal level of nonnative plant species that will still allow *Lomatium cookii* to continue to survive and recover.

These four elements can be summarized as suitable habitat for plants to disperse and germinate, hydrologic function, soil, and absence or negligible presence of competitive nonnative invasive plants, typically noxious weeds. All of the primary constituent elements do not need to occur simultaneously within a CHU for the unit to constitute critical habitat (Federal Register 2010).

Of the 13 Critical Habitat Units (CHU) designated in the Illinois Valley eight are located within the Planning Area and only three are located within proposed units: IV-9, IV-11, and IV-12.

Under current consultation with the U.S. Fish and Wildlife Service (USDI 2011) impacts from the proposed East West Junction Project were evaluated for the eight CHUs in this project's Planning Area level.

Three acres of CHU IV-9 are located in proposed Unit 5-9. The portion of the CHU located in Unit 5-9 provides hydrologic function to the critical habitat by potentially providing surface or subsurface flow of water to other areas in the CHU, these three acres do not provide habitat for dispersal and germination of the species.

Twenty-three acres of CHU IV-11 are located in proposed Units 7S-3, 7S-6, and 7S-6a. The portion of the CHU located in Units 7S-3, 7S-6, and 7S-6a could be potential dispersal and germination for *Lomatium cookii* if some of the vegetation is reduced. Currently the vegetation is more dense at this site, compared to the vegetation at sites occupied by *Lomatium cookii* in the Illinois Valley (Fritts 2011). This area also provides hydrologic function and soils to the critical habitat.

Eight acres of CHU IV-12 are located in proposed Unit 9-9. The portion of the CHU located in Unit 9-9 provides hydrologic function to critical habitat by potentially providing surface or subsurface flow of water to other areas within the CHU, these eight acres do not provide habitat for dispersal and germination of the species.

These areas of critical habitat do contain some noxious weeds but it is the professional assessment of the BLM botanist that they would not limit the dispersal and germination of *Lomatium cookii* because the noxious weeds are located along roads. In 2011 the BLM treated noxious weeds in these areas.

3.8.2 Environmental Consequences for *Lomatium Cookii* and its Critical Habitat

3.8.2.1 Alternative 1 (No Action) - Direct and Indirect Effects on *Lomatium Cookii* and its Critical Habitat

Under the No Action Alternative, no tree harvest, pre-commercial thinning, or hazardous fuel reduction would occur for this project. The hydrology in CHU IV-9 and CHU IV-12 would remain in its current condition and noxious weeds could continue to spread into *Lomatium cookie* critical habitat at an unknown rate, thus the function of the critical habitat in CHU IV-9 and CHU IV-12 would be maintained and would be unaltered. Proposed units in CHU IV-11 habitat would remain dense with vegetation and would likely continue to not support the dispersal or germination of *Lomatium cookii*. The hydrology and the soils in CHU IV-11 would be unchanged and would continue to provide functionality to the critical habitat. With the no action alternative there is still a risk that invasive and noxious weeds could spread into the critical habitat. This could occur through natural vectors such as wind, water, and animals, or spread from vehicles driving on roads adjacent to the critical habitat.

Under the No Action Alternative, standard road maintenance covered programmatically (categorical exclusion) for the Medford District would still occur. The PDFs to be applied to *lomatium cookii* critical habitat in this document would be incorporated into all road maintenance projects that could affect this species' critical habitat *cookii*, which would maintain the hydrologic function of the critical habitat and would not increase the introduction and spread of noxious weeds.

3.8.2.2 Alternative 2 and 3 - Direct and Indirect Effects on *Lomatium Cookii* and its Critical Habitat

Alternatives 2 and 3 are analyzed together because effects of the two action alternatives are very similar.

There are three acres of tree harvest and pre-commercial thinning proposed in Unit 5-9 that are in CHU IV-9. Primary constituent elements present in CHU IV-9 are hydrologic function and negligible presence of competitive nonnative invasive plants. PDFs have been developed by the East West Junction Project IDT to maintain the surface and subsurface flow of water and to reduce the risk of introduction and spread of invasive and noxious weeds (See Section 2.3.4.5).

Specifically, the PDFs would reduce the amount of compaction that could affect the hydrology flowing into the *Lomatium cookii* critical habitat, and would allow water to spread across the landscape and return the hydrology to pre-project condition. Given the Illinois Valley receives an average of 60 inches of annual precipitation, the BLM botanist ascertains that rainfall is the main contribution of water to the critical habitat, where the terrain is flat and the soils have a strong clay component, while surface and subsurface flows play a lesser role.

In the short term (approximately 1-5 years), the use of heavy equipment for yarding, and opening the canopy can contribute to the introduction and spread of noxious weeds and nonnative competitive vegetation. PDFs such as equipment washing, dry condition yarding, and seeding of skid trails have been developed to reduce that risk to a level that is indistinguishable from vectors we cannot control such as animal and wind spread and vehicle traffic, not associated with tree harvest.

In the long term (5-100 years), tree canopies would eventually expand and reduce light levels, which in turn would prevent weeds from growing and expanding within treated areas, because populations decline as the amount of light reaching the plants diminishes. Consequently, in the long term, remaining weed populations would be confined to the road prism and adjoining (private) disturbed land as canopy is re-established in treated areas over time.

Pre-commercial thinning would cause no change to the hydrologic function of the critical habitat because this activity is not ground disturbing and would not disrupt the surface or subsurface water flow. Because this activity is not ground disturbing it would not increase the risk of introduction of noxious or invasive weeds.

There are 23 acres of Hazardous Fuel Reduction proposed in Units 7S-3, 7S-6, and 7S-6a located in CHU IV-11. Primary constituent elements present are habitat for dispersal and germination in an over vegetated state, hydrologic function, soils, and negligible presence of competitive nonnative invasive plants.

Hazardous Fuel Reduction would cause a small short term (1-2 years) increase in the amount of subsurface water flow due to decrease uptake of water from cut vegetation. This increase in subsurface flow is within the range of natural variability and would not affect the hydrology of the area. As stated above the Illinois Valley receives 60 inches of annual precipitation, this is likely the main water contribution to critical habitat in CHU IV-11.

With inclusion of PDFs to spread seed on burn piles near known weed sites and to rehabilitate fire lines, the risk of increasing weeds by the action alternatives is reduced and would not cause competition with native vegetation in critical habitat.

Hazardous fuel reduction may have a long term beneficial affect by creating more open habitat that is better suited for *Lomatium cookii*. Areas that receive fuels treatments are likely to burn with less intensity during a wildfire, increasing the recovery time for the vegetative component of the critical habitat following a wildfire (Omi and Martinson 2002).

Pile burning of slash creates a black ring on the landscape that removes some of the vegetation in the short-term (5 years). PDFs would limit the size of piles to 64 square feet (8 ft x 8 ft pile). The amount of area covered with burn piles is also limited to 5% of the treatment area within critical habitat, approximately 35 piles, 8 ft x 8 ft piles per acre. This minimizes the number of piles to maximize the amount of ground left undisturbed. Personal observations have shown 5 years post-burn, the ring would be vegetated with early successional vegetation. This is the same observation made by fuels specialist on the Medford District (Larson 2011, Main 2011). Given this information, pile burning would not remove the function of the critical habitat or the primary constituent elements of the habitat.

The 8 acres of Hazardous Fuel Reduction in proposed Unit 9-9 that is located within CHU IV-12 would have the same affects to hydrology and the spread of noxious weeds as stated above for CHU IV-11. Habitat for *Lomatium cookii* is not present in the portion of CHU IV-12 that is located in proposed Unit 9-9.

The critical habitat for *Lomatium cookii* located in proposed units for the East West Junction Project would continue to function as necessary for the species to persist and expand.

3.8.2.3 Alternative 2 and 3 - Cumulative Effects on Lomatium Cookii and its Critical Habitat

The cumulative effects analysis area for critical habitat for *Lomatium cookii* is the East West Junction Planning Area. Past activities such as mining, land development, road construction, wildfire, and timber harvest have led to the current environmental baseline. This baseline is described in the Final Designation of Critical Habitat (Federal Register 2010).

There are two BLM categorical exclusions with decisions available for implementation in the East West Junction Project Planning Area of *Lomatium cookii* critical habitat: the Grants Pass Resource Area Young Stand Management (FY2010-FY2014) and the Medford District Programmatic Road Maintenance FY2010 and FY2011. Under the Grants Pass Resource Area Young Stand Management (FY2010-FY2014) Categorical Exclusion/Decision Record, there are two pre-commercial thin units in CHU IV-12, which would have no effect on critical habitat. The standard programmatic road maintenance activities would include PDFs to maintain the function of critical habitat.

There are three foreseeable projects in critical habitat in the East West Junction Project Planning Area: the West Fork Illinois Landscape Management Project (BLM), the Fuel Hazard Reduction on the Grants Pass Resource Area 2010-2015 EA, and State restoration activities planned for the Illinois River Forks State Park. While dispersed mining is occurring on the U.S. Forest Service portion of the East West Junction Project Planning Area; there are no U.S. Forest Service projects being implemented or proposed in this Planning Area.

The West Fork Illinois Landscape Management Project is located in CHU IV-12. Currently the West Fork Illinois Project is under protest and cannot be implemented until the protest is resolved, at that time units located in critical habitat would be assessed for their potential effects to critical habitat and if needed PDFs would be added to the contract to maintain the function of the critical habitat. The Illinois River Forks State Park is located in CHU IV-7. Oregon State Parks and Recreation Department is planning restoration activities for the *Lomatium cookii* habitat in the Illinois River Forks State Park. These actions would be beneficial to the critical habitat, as any overstory removal would reduce the competition for light for *lomatium cookii*.

Cumulative effects analysis of foreseeable State and private actions provide the BLM an accurate environmental baseline to assess impacts of federal actions. Proposed activities on other federal, State, county, and city lands would be done in accordance with the Endangered Species Act (ESA) requirements for designated critical habitat on federal lands. ESA does not apply to private lands, which have the largest ownership in the Illinois River Valley sub basin (2207 acres), and it is assumed that critical habitat would continue to be modified and converted to other uses, protection is unplanned or non-existent. Through time, existing critical habitat on private lands would lose their function.

For critical habitat on non-federal lands under ESA, without a federal nexus, there is no federal requirement to manage the critical habitat. Existing Oregon State laws for endangered species require State public lands (state, county, city) to address critical habitat. Critical habitat on non-federal lands have likely experienced negative impacts over the last 150 years from resource extraction (mining, grazing, and logging), the conversion of low elevation wild-lands to pastures, agricultural lands, and rural/urban centers. Habitat for *Lomatium cookii* on non-federal lands would continue to be adversely affected, or lost, as the human population of the Illinois River Valley sub-basin expands. Fifty-five percent of critical habitat occurs on private lands. This habitat may continue to function if located within green belts, parks, and refuges, but the ability of

this habitat to persist across an ever-increasing fragmented landscape is unknown and unlikely. The likelihood of critical habitat maintaining its functionality for the next 100 years is unknown, and would depend upon future landowners, or revised State laws that would require protection. Critical habitat occurring on federal lands, where the ESA specifically mandates conservation, would likely serve as the primary refugia for these species.

Because there are no laws protecting critical habitat on private lands, actions on private lands not associated with a federal nexus would continue to degrade the environmental base line for critical habitat in the East West Junction Project Planning Area. State and federal lands would continue to maintain or improve the critical habitat in the project Planning Area, the cumulative effects analysis shows no anticipated change in the environmental baseline due to BLM activities.

Chapter 4.0 List of Preparers

Interdisciplinary Preparers	Title	Resource Values
Michelle Calvert	Environmental Coordinator	NEPA, Project Co-lead
Mike De Blasi	Hydrologist	Soil and Water
Susan Fritts	Botanist	Plants/Noxious Weeds
Rachel Showalter	Botanist	Plants/Noxious Weeds
Yanu Gallimore	Fuels Specialist	Fire and Fuels
Dennis Glover	GIS Specialist	Global Information Systems (GIS)
Sean Gordon	Forester	Prescription Writer, Project Co-lead
Merry Hayden	Cultural Specialist	Cultural Resources
Bob Murray	Forester	Harvest Systems
Jon Raybourn	Fisheries Biologist	Fisheries
Jim Roper	Engineer	Roads and engineering
Robin Snider	Wildlife Biologist	Wildlife
Katrina Symons	Field Manager	Recreation and Visual Resources

Chapter 5.0 Public Involvement and Consultation

5.1 Public Scoping and Notification

5.1.1 Public Scoping

Initial contact was made with individuals, groups or agencies that have expressed interest in forest management and other types of projects through quarterly mailings of the *Medford Messenger* publication. A brief description of proposed projects, such as the East West Junction Project, a legal location and general vicinity map are provided along with a comment sheet for public responses. The East West Junction Project was included in these quarterly publications beginning in the fall of 2008.

Public scoping included a scoping letter released for public review on December 5, 2008. In 2011, the East West Junction Project was revised to contribute toward continuous timber production while restoring dry and moist forest characteristics and reducing wildfire danger. As such a subsequent scoping report was released to reflect the revised project on May 12, 2011. The scoping documents were mailed to a standard mailing list of individuals and organizations expressing interest in Grants Pass Resource Area projects and land owners within a ¼ mile of the East West Junction Project proposed units. The BLM received ten comment letters during the revised project scoping.

An open house public meeting was held in April 2009 at the Illinois Valley High School with over 23 attendees, after the initial public scoping. An opportunity to discuss and visit the proposed project was offered to those that responded to the 2011 Revised Scoping Report. As a result, two field trips were held in the fall of 2011 (November 18th and 29th). There were eight public attendees between the two field trips composed of adjacent landowners and representatives of local organizations.

All substantive comments were responded to in Appendix 3 of the East West Junction Project EA (DOI-BLM-M070-2009-011-EA). Comments were considered in the development of the project.

5.2 30-Day Public Comment Period

The East West Junction Project Environmental Assessment (DOI-BLM-M080-2009-011-EA) will be made available for a 30-day public review period. Notification of the comment period will include: the publication of a legal notice in the Daily Courier, newspaper of Grants Pass, Oregon; and a letter will be mailed to those individuals, organizations, and agencies that have requested to be involved in the environmental planning and decision making processes for activities addressed in this EA.

5.3 Consultation

5.3.1 United States Fish and Wildlife Service

Northern Spotted Owl

Medford BLM submitted a Biological Assessment (Medford BLM Summer 2010 LAA BA) to the U.S. Fish and Wildlife Service and received a Biological Opinion (Summer 2010 BO, Tails #13420-2010-F-0107) stating proposed harvest treatments that remove or downgrade spotted owl habitat “may affect and are likely to adversely affect northern spotted owls”.

Medford BLM also submitted a Biological Assessment (July 2010 NLAA BA) to the U.S. Fish and Wildlife Service and received a Letter of Concurrence (July 2010 LOC, Tails # 13420-2010-I-0178) stating proposed treatments that treat and maintain spotted owl habitat “may affect but are not likely to adversely affect northern spotted owls”.

The action alternatives do not occur in revised Critical Habitat (2008; [Federal Register \(73\): 47326-47522](#)), as designated by the U.S. Fish and Wildlife Service nor do proposed activities occur in the 1992 Northern Spotted Owl Critical Habitat (CHU).

The proposed East West Junction Project Planning Area does not occur in marbled murrelet critical habitat.

Lomatium cookii

The Medford District submitted a Biological Assessment (BA) (Medford BLM FY 2009-2013 BA) to the U.S. Fish and Wildlife Service and has received a Letter of Concurrence on each of the BAs (TAILS#: 13420-2008-I-0136) stating the proposed treatments are “may affect, but are not likely to adversely affect *Lomatium cookii*. A separate Biological Assessment (Medford BLM FY 2012-2013) was submitted by the Medford District to the U.S. Fish and Wildlife Service and a Letter of Concurrence (TAILS#: 01EOFW00-2012-I-0019) was received stating the proposed treatments are “may affect, but are not likely to adversely affect critical habitat” for *Lomatium cookii*.

5.3.2 National Oceanic and Atmospheric Administration (NOAA)

The action alternatives proposed within the Rogue River Basin and the range of the federally threatened Southern Oregon/Northern California coho salmon, would have no effect on coho or critical habitat.

Consultation for the Endangered Species Act with NOAA is not needed as the action alternatives would not affect listed species or their habitat. No consultation is needed under the Magnuson-Stevens Fishery Conservation and Management Act as there is no adverse effect to Essential Fish Habitat for coho and chinook within the Rogue River Basin.

5.3.3 State Historical Preservation Office

Required cultural surveys were completed for the East West Junction Project. The State Historic Preservation Office (SHPO) concurred that the project would have no effect to significant cultural resources referred to as Historic Properties in the National Historic Preservation Act (NHPA).

5.3.4 Native American Tribal Consultation

East West Junction Project Scoping Report (May 2011) were sent to local federally recognized Native American Tribes interested in Medford District Bureau of Land Management proposed projects. The Tribes take an active role in the management of their native lands and the BLM works with individual tribal governments to further identify and address Native American concerns and traditional uses of lands administered by the BLM. Phone conversations to these tribes did not identify cultural resource concerns for the proposed project.

APPENDIX 1 - ALTERNATIVE DEVELOPMENT SUMMARY

East West Junction Project Environmental Assessment

(DOI-BLM-M070-2009-011-EA)

Pursuant to Section 102 (2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), Federal agencies shall “Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.” The CEQ (Council on Environmental Quality) regulations for implementing the procedural provisions of NEPA states, alternatives should be “reasonable” and “provide a clear basis for choice” (40 CFR 1502.14).

In light of the direction contained in both NEPA and the CEQ Regulations, the following questions were used to 1/ identify the alternatives to be analyzed in detail in this environmental assessment that are in addition to the “Proposed Action” and “No Action” alternatives, and 2/ document the rationale for eliminating alternatives from detailed study.

The following addresses the public’s comments on Alternative Uses of Available Resources to the East West Junction Project. All substantive public comments received on the project and BLM responses can be found in Appendix 3 of this EA.

- 1. Are there any unresolved conflicts concerning alternative uses of available resources? If yes, document and go to Question #2. If no, document rationale and stop evaluation.**

The following is a summary of proposed action requests made in public comments for the East West Junction Project Revised Scoping Report (May 2011) or during two field trips (November 2011) offered to those that commented on the Revised Scoping Report:

Access

- decommission roads to reduce road density
- do not construct any temporary roads (routes)
- all haul routes occur with an easement

Stand age and owl habitat

- retain large diameter trees
- do not remove mid-sized (15-25 dbh) trees
- do not log in older stands such as Units 9-12 and 29-2
- do not downgrade or remove spotted owl habitat
- thin existing plantations
- retain coarse woody material at densities that would support the natural range of biota for the site

Recreation

- do not cut forests around the Illinois Forks State Park trail system

Noxious weeds and Disease

- do not use herbicides or pesticides
- keep tanoak competition down for unit 9-12
- neighborhood residents maintain thinning on BLM land
- prevent the spread of Port-Orford-cedar root disease through road closures, and signing, do not construction permanent or temporary roads

Fuels treatments

- do not make the fuel hazard increase by opening up the canopy
- do not cut hardwoods greater than 4 inches in diameter
- change unit 3-4 from Variable Density Thin to Hazardous Fuel Reduction
- remove off-site fir stands encroaching on stands due to the lack of fire and prior logging activities
- do not use plastic for covering hand piles to be burned

Riparian

- non-commercial thin Riparian Reserves instead of allowing extraction

Botanical

- protect the outstanding botanical values
- address Off-Highway Vehicles (OHV) damage to botanical and hydrologic resources, such as vehicle trespass into Areas of Critical Environmental Concern (ACEC)
- do not contribute to the spread of *Alyssum corsicum* near the Illinois Valley airport

Watershed Analysis

- apply the recommendations and findings of the watershed analyses

Economics

- winter harvesting and haul to keep employment going during these months
- fuels treatments be less prescriptive and more objective-based
- economic analysis – cost/benefit, viability
- heavier thinning and removing of bigger trees to make the project more economical

2. What alternatives should be considered that would lessen or eliminate the “unresolved conflicts concerning alternative uses of available resources”?

List alternatives and go to Question #3. If no alternative is identified other than the “no action” alternative, document and stop evaluation.

The land use allocations in the East West Junction Project are primarily Matrix and Riparian Reserves, under the 1995 Medford District Resource Management Plan (RMP); and Timber Management Area and Riparian Management Area land use allocations under the 2008 Medford District RMP.

The East West Junction Project is designed to meet BLM's obligation to implement the RMP and to address the primary needs identified for lands in the Planning Area. The project's primary objective is to implement forest management activities that would contribute to continuous timber production while restoring dry and moist forest characteristics and reducing wildfire danger. The RMP directs the BLM to implement the Oregon and California Railroad Revested Lands (O&C Act) which requires the Secretary of the Interior to manage O&C lands for permanent forest production.

The requested actions and concerns are addressed in the East West Junction Project where they would meet the purpose and need for this project, State water quality standards, and be consistent with completed consultation with the U.S. Fish and Wildlife Service for the northern spotted owl and lomatium cookii.

Regarding the requests to do not increase the fuel hazard by opening up the canopy or removing hardwoods greater than 4 inches in diameter, the Proposed Action would meet the objective to reduce wildfire danger.

The East West Junction Project does not entail the construction of permanent roads. Decommissioning of roads beyond the temporary route construction and reconstruction would be augmentation of timber receipts under a timber sale. Without specific statutory authority, the bartering of Government property (the value of timber) for services is prohibited because it would result in an unlawful augmentation of an Agency's appropriations. Timber sale contract requirements must enable the harvest of timber and the associated mitigation must be directly related to the harvest of timber related to the individual project.

Regarding commercial extraction in Riparian Reserves (RR), field stream surveys have been conducted by qualified personnel to establish site specific Ecological Protection Zones (EPZ) per stream (75 to 100 ft from the stream bankfull width (by slope distance) along streams; perennial springs and seeps; and unstable areas within 1 tree length of streams, and perennial springs and seeps to protect stream channel structure and water quality. Specific EPZ distances would protect individual elements of the RR including: streambank stability; shade and temperature; surface erosion of streamside slopes; fluvial erosion of the stream channel; soil productivity; the ability of streams to transmit damage downstream; the role of streams in the distribution of large wood to downstream fish bearing waters; and riparian microclimate. No extraction would occur in the EPZ.

Development of a proposal to treat and maintain northern spotted owl habitat would not downgrade any nesting, roosting, and foraging to dispersal habitat, which would resolve some of resource conflicts present under the Proposed Action.

The 2012 Silviculture Practices - Reforestation, Young Stand Management, and Forest Condition Restoration Treatments (FY12-FY17) Categorical Exclusion/ Decision Record enables the Grants Pass Resource Area to thin plantation stands less than 80 years of age across the Resource Area.

The decision to use herbicides was made under the *Medford District Integrated Weed Management Plan Environmental Assessment (1998)*. Application of herbicides would occur only where noxious weed population exists and is applied site specifically using backpack sprayer to apply herbicide and are not broadcast sprayed. The BLM would not apply any pesticides in the East West Junction Project Area. Pesticides are not used on the Medford District BLM.

Unit 3-4 has been converted to Hazardous Fuel Reduction due to the results of wildlife surveys and subsequent deferral of a portion of the unit to buffer the site. Unit 3-4 is no longer viable for commercial extraction.

The Proposed Action does address some of the requested items above. There is removal of off-site Douglas-fir proposed, see Section 2.2.1 and Appendix 4 (Silviculture Prescription). Preventing the spread of Port-Orford-cedar (POC) root disease would be accomplished with the application of Project Design Features (see Section 2.3.4.6) and risk analysis was completed for POC, see Appendix 9. Coarse woody debris retention is included as a Project Design Feature (see Section 2.3.4.1). Preventing the spread of *Alyssum corsicum* near the Illinois Valley airport, is addressed in Project Design Features (Section 2.3.4.6). There is a larger concerted effort with interagencies, local government, and organizations for the eradication of *Alyssum corsicum*, outside the scope of the East West Junction Project.

The environmental effects of taking no action are analyzed in the East West Junction Project Environmental Assessment. Requests to not logging older stands and mid-sized trees, and not construct temporary routes are considered under the No Action Alternative.

The EA will address potential impacts to the Illinois Forks State Park trail system.

The East West Junction Project's purpose and need was not to develop an OHV/ORV plan for existing unauthorized use. Therefore, addressing the management of OHV damage and trespass into ACECs, is outside the scope of the East West Junction Project.

- 3. Of those alternatives identified in Question #2, are there reasonable alternatives for wholly or partially satisfying the need for the Proposed Action? If so, briefly describe alternatives and go to question #4. If no, document rationale and stop evaluation.**

Yes. The alternative to treat and maintain northern spotted owl habitat would partially satisfy the need for the Proposed Action to implement dry and moist forest restoration forest management practices.

- 4. Of those alternatives identified in Question #3, will such alternatives have meaningful differences in environmental effects?**

Yes. An alternative that maintains spotted owl habitat would not remove or downgrade any northern spotted owl habitat. Key structural elements would be maintained (e.g., large trees, snags, coarse woody debris, hardwoods, higher canopy cover) while reducing overly dense stands and protecting habitat from stand replacing fire. Stands would function as spotted owl nesting, roosting, and foraging or “dispersal-only” habitat post treatment due to the retention of higher canopy cover and key habitat features (USDI 2011). An alternative that excludes treatment in stands 160 years and older, structurally complex stands suitable for northern spotted owl habitat (Recovery Action 32 stands), and red tree vole sites (2001 Survey and Manage ROD) found through protocol surveys for this project would substantially reduce the impacts to these species within the Project Area. See Alternative 3, Section 2.3.3.

APPENDIX 2 - ENVIRONMENTAL ELEMENTS

East West Junction Project Environmental Assessment

(DOI-BLM-M070-2009-011-EA)

In accordance with law, regulation, executive order and policy, the interdisciplinary team reviewed the elements of the human environment to determine if they would be affected by the action alternatives described in Chapter 2 of the EA (environmental assessment). The following three tables summarize the results of that review. Those elements that are determined to be “affected” will define the scope of environmental concern, Chapter 3 of the EA.

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1). This table lists some of the other authorities that may apply if either of the action alternatives (Alternative 2 or 3) described in the Environmental Assessment were implemented.		
Critical Element of the Human Environment	Status	Interdisciplinary Team Remarks
Air Quality (Clean Air Act)	1/ Not Present 2/ Not Affected 3/ Affected	1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP or 2008 RMP to reduce or avoid environmental harm
	Not Affected	Prescribed burning would be administered in accordance with the Oregon Smoke Management Plan administered by the Oregon Department of Forestry and the regulations established by the Oregon Department of Environmental Quality. The Planning Area is not located within a Class I designated airshed or non-attainment area. The impact of smoke on air quality is expected to be localized and of short duration. Particulate matter would not be of a magnitude to harm human health, affect the environment, or result in property damage. Dust created from vehicle traffic on gravel or natural-surfaced roads, road work, and logging operations would be localized and of short duration. As such, the action alternatives would be consistent with the provisions of the Federal Clean Air Act. <i>See the Air Quality Specialist Report in Appendix 12 for further discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1).

This table lists some of the other authorities that may apply if either of the action alternatives (Alternative 2 or 3) described in the Environmental Assessment were implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP or 2008 RMP to reduce or avoid environmental harm
Areas of Critical Environmental Concern (ACEC) and Research Natural Area (RNA)	Not Affected	<p>Three ACECs and one RNA are located within the East West Junction Project Planning Area: Rough and Ready ACEC, French Flat ACEC, and Waldo Takilma ACEC, and Woodcock Bog RNA.</p> <p><u>Woodcock Bog RNA (2008 RMP/ROD and 1995 RMP/ROD designated)</u>: designated for Dalingtonia wetlands on serpentine and special status plant species. Project would not affect the values for which the RNA was designated because there are no proposed units located in or adjacent to the RNA.</p> <p><u>Rough and Ready ACEC (2008 RMP/ROD and 1995 RMP/ROD designated)</u>: designated for special status plants, unique flood plain and hyporheic zone, and recreation use. No proposed units are located in this ACEC. There is one Hazardous Fuel Reduction unit (7S-6A) located on the border of this ACEC. Hazardous Fuel Reduction treatments would not directly affect the values for which the ACEC was designated because activities would not occur in the ACEC. There would be no affect to special status plants because activities adjacent to the ACEC would not affect the microclimate of the ACEC. Proposed activities would have no affect to Rough and Ready Creek because proposed activities are at least a ¼ mile from the creek. Recreation use in this ACEC would not be affected by the proposed activities because designated recreation areas (the hiking trail) are not located near the proposed Hazardous Fuel Reduction units (7S-6 and 7S-6A).</p> <p><u>French Flat ACEC (2008 RMP/ROD and 1995 RMP/ROD designated)</u>: designated for special status plants, serpentine plant communities, vernal meadow with native grasses, and historic mining. Project would not affect the values for which the ACEC was designated because there are no proposed units located in or adjacent to the ACEC.</p> <p><u>Waldo Takilma ACEC (2008 RMP/ROD designated and 1995 RMP/ROD proposed ACEC)</u>: designated for special status plants and historic mining. Project would not affect the values for which the ACEC was designated because there are no proposed units located in or adjacent to the ACEC.</p>

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1).

This table lists some of the other authorities that may apply if either of the action alternatives (Alternative 2 or 3) described in the Environmental Assessment were implemented.

<p>Critical Element of the Human Environment</p>	<p>Status</p> <p>1/ Not Present 2/ Not Affected 3/ Affected</p>	<p>Interdisciplinary Team Remarks</p> <p>1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP or 2008 RMP to reduce or avoid environmental harm</p>
<p>Cultural, Historic, Paleontological</p>	<p>Not Affected</p>	<p>Cultural surveys were completed for the East West Junction Project Planning Area. Nine historic sites and ten isolates were previously recorded in the Planning Area with past surveys. One additional isolate was recorded during the East West Junction cultural survey in 2009.</p> <p>The Planning Area is part of the Illinois and Waldo Mining Districts. These mining districts produced gold, chromite, and copper. The town of Waldo, east of the Project Area, developed as a result of the large influx of miners after the gold discovery on Josephine Creek in 1851. The town flourished as a result of mining. By 1911, most of the principal placer deposits in the county had been found and worked. By 1919 Waldo was no longer a thriving community. The town was washed away by hydraulic mining in the 1930s.</p> <p>The most important mines in the Illinois Valley were placer mines using hydraulic methods for the extraction of gold. Some of these mines included the High Gravel Mine, Cameron Mine, Logan-Esterly Mine, Deep Gravel Mine, and the Waldo Mine. The Logan Cut (a hydraulic cut-bank) was part of the historic Logan-Esterly Mine. Features of these large scale mining endeavors can still be seen across the landscape. All of these mines are listed on the National Register of Historic Places as “Mining Resources of the Upper Illinois Valley”.</p> <p>For the proposed East West Junction Project, one historic mining site is located on the edge of a proposed treatment unit and would be avoided through Project Design Features (PDFs). All trees would be directionally felled away from the site and no commercial treatments would take place within 25 ft of the site boundary. Since no work is allowed in the buffered area, the site would not be impacted or disturbed during project activities.</p> <p>No paleontological resources are known to exist in the project Planning Area.</p> <p>If cultural resources or vertebrate fossils are found during project implementation, the project would be redesigned to protect the resource values present, or evaluation or mitigation procedures would be implemented based on recommendations from the Resource Area Archaeologist with concurrence from the Field Manager and appropriate regulatory agencies.</p>

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1).

This table lists some of the other authorities that may apply if either of the action alternatives (Alternative 2 or 3) described in the Environmental Assessment were implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP or 2008 RMP to reduce or avoid environmental harm
Energy (Executive Order 13212)	Not Affected	The action alternatives would have no effect on energy development, production, supply and/or distribution.
Environmental Justice (Executive Order 12898)	Not Affected	The action alternatives are not anticipated to have a disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.
Prime or Unique Farm Lands	Not Present	There are no prime or unique farmlands in the Planning Area.
Flood Plains (Executive Order 11988)	Not Affected	The action alternatives do not involve occupancy and modification of floodplains, and would not increase the risk of flood loss. As such, the action alternatives would be consistent with Executive Order 11988.
Hazardous or Solid Wastes	Not Affected	There would be no environmental effects associated with this element due to the implementation of the Best Management Practices contained in the Medford RMP and the terms/conditions of the timber sale contract.
Invasive, Nonnative Species (Executive Order 13112)	Not Affected	<p>Activity units in the East West Junction Project Planning Area were surveyed for noxious weeds during spring and summer of 2009. One population of <i>Brachypodium sylvaticum</i> (false brome), four populations of <i>Centaurea debeauxii</i> ssp. <i>thuillieri</i> (meadow knapweed), three populations of <i>Cirsium vulgare</i> (bull thistle), seventeen populations of <i>Cytisus scoparius</i> (Scotch broom), and eight populations of <i>Rubus armeniacus</i> (Armenian blackberry) were documented within proposed activity units. The majority of the populations are associated with roads, but there are numerous <i>Cytisus scoparius</i> populations in proposed units.</p> <p>The noxious weeds <i>Alyssum murale</i> and <i>Alyssum corsicum</i> are located within the Planning Area. There have been no observations of these species within activity units. The vast majority of occurrences within the Planning Area are located around the Illinois Valley airport including the adjacent Rough and Ready ACEC. A single plant of <i>A. murale</i> was observed in 2011 along West Side Road approximately 1/8 of a mile from BLM rd #39-8-29 which accesses proposed units in T39S-R8W-Sec. 29.</p>

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1).

This table lists some of the other authorities that may apply if either of the action alternatives (Alternative 2 or 3) described in the Environmental Assessment were implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP or 2008 RMP to reduce or avoid environmental harm
<p>Invasive, Nonnative Species (Executive Order 13112)</p> <p>(continued)</p>	<p>Not Affected</p>	<p>The Medford District RMP states that the objectives for noxious weeds are to “contain and/or reduce noxious weed infestations on BLM-administered land.(p. 92),” and “survey BLM-administered land for noxious weed infestations...(p. 93).” These RMP directions for weed management are intended to be met at a landscape level. In an effort to continue to contain and/or reduce noxious weeds on federal land, the BLM proposed to treat known weed populations within the Grants Pass Resource Area. In 2011, over 4,600 acres of BLM land in the Grants Pass RA were treated for noxious weeds, including roadsides and activity units within the East West Junction Project Planning Area. The same areas in East West Junction Project are scheduled for subsequent treatment in 2012.</p> <p>There are three main reasons why potential weed establishment is not expected to result in a detectable effect to overall ecosystem health. First, surveys indicate that a very small percentage, less than 1% of acreage within the activity units, are affected by noxious weeds. Second, these sites located in units proposed for treatment have been reported during predisturbance surveys, and have received weed treatment under Medford District’s <i>Integrated Weed Management Plan and Environmental Assessment OR-110-98-14</i>.</p>
<p>Invasive, Nonnative Species (Executive Order 13112)</p> <p>(continued)</p>	<p>Not Affected</p>	<p>Third, Project Design Features (PDFs) have been established to minimize the rate at which project activities might potentially spread noxious weed seed from outside/adjacent sources.</p> <p>Seeds are spread by wind, animal/avian vectors, natural events, and by human activities - in particular through soil attachment to vehicles. BLM’s influence over these causes of the spread of noxious weeds is limited to those caused by human activities. Additional human disturbance and traffic would increase the potential for spreading noxious weed establishment, but regardless of human activity, spread of these weeds would continue through natural forces. Thus, the BLM cannot stop the spread of noxious weeds, it may only reduce the risk or rate of spread. <i>See noxious weed specialist report in Appendix 6.</i></p>
<p>Native American Religious Concerns</p>	<p>Not Affected</p>	<p>Native American groups were contacted and no concerns were identified by these groups.</p>

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1).

This table lists some of the other authorities that may apply if either of the action alternatives (Alternative 2 or 3) described in the Environmental Assessment were implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP or 2008 RMP to reduce or avoid environmental harm
T/E (Threatened or Endangered) Fish Species or Habitat	Not Affected (Southern Oregon/ Northern California Coasts coho salmon Evolutionarily Significant Unit (ESU))	Salmon are listed under the Endangered Species Act by evolutionarily significant units (ESU). An ESU is a stock of Pacific salmon that is 1) substantially reproductively isolated from other specific populations units; and 2) represents an important component in the evolutionary legacy of the species. <u>SONCC Coho Salmon</u> are in the East Fork and West Fork of the Illinois River and the Sucker Creek HUC 5 Watersheds. Harvesting, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road renovation/improvement, road maintenance hauling, and fuel treatments would have no effect on SONCC coho salmon (ESA-Threatened) and coho critical habitat (CCH). There are two haul road segments where BLM-maintained roads cross over coho bearing streams; one via a culvert, and one through a dry ford. Sediment would not be expected to enter CCH as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into CCH. Project activities would follow all provisions of the Clean Water Act (40 CFR Subchapter D) and Department of Environmental Quality's (DEQ's) provisions for maintenance of water quality standards.
T/E (Threatened or Endangered) Plant Species or Habitat	Not Affected (T/E plants)	Of the four federally listed plants on the Medford District (<i>Fritillaria gentneri</i> , <i>Limnanthes floccosa</i> ssp. <i>grandiflora</i> , <i>Arabis macdonaldiana</i> , and <i>Lomatium cookii</i>), Grants Pass Resource Area is in the range of <i>Fritillaria gentneri</i> , <i>Arabis macdonaldiana</i> , and <i>Lomatium cookii</i> , as determined by the U.S. Fish and Wildlife Service. The East West Junction Project Planning Area is in the range of <i>Arabis macdonaldiana</i> , and <i>Lomatium cookii</i> . There are 25 populations of <i>L. cookii</i> in the East West Junction Project Planning Area with no populations located in proposed units. <i>Arabis macdonaldiana</i> has never been found in Josephine county. Vascular plant surveys were conducted during the spring and summer of 2009. No populations of <i>L. cookii</i> or <i>A. macdonaldiana</i> were located in proposed units, additionally there are no previously known sites in proposed units. This project would have no effect on federally listed species because there are no locations within or adjacent to activity units.

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Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP or 2008 RMP to reduce or avoid environmental harm
T/E (Threatened or Endangered) Plant Species or Habitat (continued)	Affected <i>(Lomatium cookii</i> Critical habitat)	Critical habitat for <i>L. cookii</i> was designated by U.S. Fish and Wildlife Service in 2010. Critical habitat is present in both the East West Junction Project Planning Area and proposed units. There are three Critical Habitat units (CHU) (IV-9, IV-11, IV-12) located in proposed units. Three acres of CHU IV-9 are located in proposed Units 5-9, 12 acres of CHU IV-11 are located in Unit 7S-3, 4 acres of CHU IV-11 are located in Unit 7S-6, 7 acres of CHU IV-11 are located in Unit 7S-6a, and 8 acres of CHU 12 are located in Unit 9-9. Proposed pre-commercial thinning for Unit 5-9 would have no effect on critical habitat for the following reasons: because it would not occur in suitable dispersal and germination habitat for <i>Lomatium cookii</i> , would not disturb the soils or hydrology, and would not increase the risk of noxious weed infestation or spread because of PDFs that minimize the risk of spread and introduction. The action alternatives would not remove the function of the critical habitat or the primary constituent elements of the habitat. <i>Refer to Section 3.7 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
T/E (Threatened or Endangered) Wildlife Species, Habitat and/or Designated Critical Habitat (continued)	Affected (spotted owl habitat) Not Present (2008 NSO critical habitat) Not Affected Disturbance-NSO Not Present (MAMU, habitat, disturbance)	<u>Affected:</u> Alternative 2 would remove 62 acres, downgrade 112 acres, and maintain 320 acres of nesting, roosting, and foraging (NRF) habitat; and remove 32 acres and maintain 685 acres of dispersal habitat. Alternative 3 would maintain 494 acres of NRF habitat and 717 acres of dispersal habitat. No timber extraction cutting would occur in Recovery Action 32 (RA 32) habitat. Temporary route re-construction would not affect spotted owls because these areas are already disturbed areas and do not function as suitable spotted owl habitat. <i>Refer to Section 3.6 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i> The East West Junction Project units are not in any 2008 Northern Spotted Owl Critical Habitat Units. <u>Not Affected:</u> Proposed activities occurring during spotted owl nesting season are not expected to disturb owls because all proper Project Design Criteria distance buffers and timing restrictions during the nesting and fledging periods would be applied to proposed activities. Marbled murrelets are not known to occur in the Planning Area. The project area is outside of the Marbled Murrelet survey zone A.

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Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP or 2008 RMP to reduce or avoid environmental harm
T/E (Threatened or Endangered) Wildlife Species, Habitat and/or Designated Critical Habitat	Affected (Fisher – Candidate species)	<p><u>Affected</u>: Alternative 2 would remove 62 acres and reduce the quality of 112 acres of denning and resting habitat by reducing the canopy cover to 40%. Variable Retention Harvest would not affect fishers since this unit (9-12) is not proposed in fisher denning and resting habitat. Alternative 3 would treat 494 acres of suitable denning and resting habitat, but would still maintain the function post treatment. Temporary route re-construction would not affect fishers because these areas are already disturbed and do not function as suitable fisher habitat. The approximately 0.4 miles of temporary route construction proposed under the action alternatives would unlikely affect the ability for fisher to nest or disperse within the Planning Area due to the narrow linear nature of the tree removal for this proposed activity compared to the available habitat within the Planning Area and the fact that fishers are wide-ranging animals (Zielinski et al. 2004). The areas of temporary route construction are geographically limited and adjacent to private ownership which reduces the likelihood of fisher denning at these locations because they do not provide optimal habitat for fishers. Edge effects from this construction would not be expected because all construction would occur within units proposed for timber extraction. These unit level treatments would affect canopy cover and interior forest at the stand level greater than the effects to the road clearing alone.</p> <p><i>Refer to Section 3.7 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i></p>
Water Quality (Surface and Ground)	Not Affected Temperature	<p>Temperature: A total of 39 miles of streams in this Planning Area do not meet ODEQ water quality standards for temperature. BLM lands would continue to be managed to attain compliance with state water quality standards and the NWFP ACS objectives. Streams in this Planning Area are generally well shaded on public lands by both the mid and upper canopy streamside vegetation. Within this Planning Area, the Ecological Protection Zone (EPZ) and Riparian Thinning would maintain stream temperatures by reserving all trees within the primary shade zone (USFS and BLM, 2005) from commercial harvest.</p>

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This table lists some of the other authorities that may apply if either of the action alternatives (Alternative 2 or 3) described in the Environmental Assessment were implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP or 2008 RMP to reduce or avoid environmental harm
Water Quality (Surface and Ground) (continued)	<p>Not Affected Chemical/Nutrient Contamination</p> <p>Not Affected Sediment/Turbidity (harvest treatments yarding, landing construction, temporary route construction and reconstruction (including associated decommissioning), road renovation, and fuels and understory thinning treatments</p>	<p>Chemical/Nutrient Contamination: Application of herbicides would occur only where noxious weed population exists and is applied site specifically using backpack sprayer to apply herbicide and are not broadcast sprayed. The BLM would not apply any pesticides in the East West Junction Project Area. Pesticides are not used on the Medford District BLM. Hydraulic fluid and fuel lines on heavy mechanized equipment would be in proper working condition in order to minimize potential for leakage into streams. Due to Project Design Features such as no re-fueling of any equipment would occur within 150 ft of streams or stream crossings it would not be expected for the proposed activities to have any effect on chemical contamination of streams or waterbodies. Fuel treatments could increase nitrogen levels within the stream and riparian zone in the short term. These would be highly localized, low level increases and would not be of a magnitude that would have any adverse effect on macroinvertebrate populations which are the most sensitive indicators of water quality conditions.</p> <p>Sediment/Turbidity: All timber harvest treatments, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including associated decommissioning), road renovation, and fuels and understory thinning treatments would not result in measurable inputs of sediment to streams due to project design. In addition, the land adjacent to the East and West Forks of the Illinois River (and their major tributaries) have gentle lower slopes combined with heavy vegetation, which slows the flow of water, allowing for settling of sediment and infiltration of water before it reaches streams under undisturbed conditions. In general, slopes are below 50% and riparian buffers will be utilized to prevent the transport of activity generated sediment from entering streams. A small amount of localized sediment may enter streams during hauling and road maintenance where roads are hydrologically connected. These actions would result in measurable increases in sediment for no more than 25 feet downstream of the impact point. Sediment from hauling and maintenance actions would be within the State of Oregon water quality standard of no more than a 10% increase in turbidity. <i>See section 3.4: Water Quality: Stream Sedimentation for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i></p>
Wetlands (Executive Order 11990)	Not Affected	The action alternatives would not result in the destruction, loss or degradation of any wetland. As such, the action alternatives would be consistent with Executive Order 11990.

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This table lists some of the other authorities that may apply if either of the action alternatives (Alternative 2 or 3) described in the Environmental Assessment were implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP or 2008 RMP to reduce or avoid environmental harm
Wild and Scenic Rivers	Not Affected	The project has one proposed treatment unit (5-9) and small portions of four other treatment units (29-4, 29-8, 29-17, and 29-18) in an eligible Wild & Scenic River segment of the West Fork Illinois River. The Outstandingly Remarkable Value for the river segment is scenery, under the 2008 Medford District Resource Management Plan. This river segment is eligible for inclusion into the National Wild & Scenic River System for the Outstandingly Remarkable Value of scenery. The East West Junction Project would provide interim protection for the Outstandingly Remarkable Value of scenery on this eligible river segment through the design of this project. The visual characteristics of the landscape would not be changed in such a manner as to attract the attention of the casual observer. Changes to the stands would repeat the basic elements of form, line, color, texture, and scale for in the predominant natural features of the characteristic landscape. <i>See section Appendix 10 – Visual Resource Management and Wild and Scenic Rivers for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
Wilderness	Not Present	

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary team’s predicted environmental impact per element if either of the action alternatives (Alternative 2 or 3) described in the Environmental Assessment were implemented.

Other Elements of the Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in the 1995 RMP or 2008 RMP to reduce or avoid environmental harm
Essential Fish Habitat (Magnuson-Stevens Fisheries Conservation and Management Act)	Not Affected (EFH within the East Fork and West Fork of the Illinois River and the Sucker Creek HUC 5 Watersheds.)	Essential Fish Habitat (EFH) is within the East Fork and West Fork Illinois River and the Sucker Creek HUC 5 Watersheds. Harvesting, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road maintenance, hauling, and fuel treatments would have no effect on EFH. There are two haul road segments where BLM-maintained roads cross over EFH streams; one via a culvert, and one through a dry ford. Sediment would not be expected to enter EFH as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into EFH. Project activities would follow all provisions of the Clean Water Act (40 CFR Subchapter D) and Department of Environmental Quality’s (DEQ’s) provisions for maintenance of water quality standards.
Fire Hazard	Affected	Fire hazard within the East West Junction Project Planning Area would be reduced in Variable Density Thinning, Commercial Thinning, Density Management, and Hazardous Fuel Reduction units. The Variable Retention Harvest unit would experience an increased fire hazard for 5 to 20 years, depending on the percent retention of the older trees, and treatment of the activity and Pre-Commercial Thinning slash. Landing, machine, and hand piles may present a short term increase in fire hazard because they have the potential to produce flame lengths that exceed the fire behavior threshold to the extent of increased spotting distance, until the piles are treated in 1-2 years. <i>Refer to Section 3.2 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
Fire Risk	Not Affected	Fire risk is the probability of a fire starting, as determined by the presence of ignition sources such as lightning and human activities. New permanent road construction has the potential to increase fire risk because new roads allow for an increase in human presence by providing easier access into previously inaccessible areas. However, there is no new permanent road construction proposed in the East West Junction Project and the 0.9 miles temporary route construction and re-construction would be decommissioned after use.

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary team’s predicted environmental impact per element if either of the action alternatives (Alternative 2 or 3) described in the Environmental Assessment were implemented.

Other Elements of the Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in the 1995 RMP or 2008 RMP to reduce or avoid environmental harm
Recreation	Not Affected	<p>Recreation activities in the Planning Area included driving for pleasure, hiking, camping, hunting, fishing, rafting, off-highway vehicle use, horseback riding, and bicycling. While there might be increased logging truck traffic during the operational months, this type of activity is typical for the area because of harvesting on private and other government owned lands.</p> <p>Under the 2008 RMP, the developed BLM recreation sites on public lands in the East West Junction Project Planning Area are the Rough and Ready Botanical Area, the Illinois River Forks State Park (previously managed under a Recreation and Public Purposes Lease), and the Illinois Valley Horse Trails. The botanical area is managed by the State and BLM. The Illinois Valley Horse Trails exist in the Planning Area but are not a designated trail system under the 2008 RMP, rather they are listed as Potential Recreation Trails. The public also uses existing BLM roads, and trails and user created trails on BLM lands in Section 29 and throughout the East West Junction Project Planning Area.</p> <p>Under 1995 RMP proposed recreation sites in the East West Junction Project Planning Area are the Illinois River State Park Extension, Logan Cut Equestrian Park, Logan Cut, and Rockydale (Map 8).</p> <p>There is two designated recreation sites on Oregon State lands in the project Planning Area: the Illinois Valley Visitor Center and the trail head for the Illinois River Forks State Park. There is one city park for Cave Junction in the project Planning Area. There are several RV and camping parks in the project Planning Area that are privately owned.</p> <p>The trail head for the Illinois River Forks State Park would have signs to inform users of the trail that the trail on BLM land is temporarily closed during timber operations to prevent users and timber operators from encountering potential dangers from equipment and operations (see Section 2.3.4.9).</p>
Rural Interface Areas (1995 RMP, Map 13)	Affected	<p>Rural residents abide in the Planning Area would experience short-term noise, dust, and traffic congestion due to logging operations. These types of activities are common because of management practices occurring on private and other public lands. There are Rural Interface Areas within or immediately adjacent to proposed project units. Water or approved surface stabilizers/dust palliatives would be applied to natural surface roads as needed for dust abatement (see Section 2.3.4.2).</p>

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Special Areas (not including ACEC)	Not Affected	<p>The 1995 Medford District Resource Management Plan lists the Illinois Valley Botanical Emphasis Area as a Special Area due to the preponderance of Special Status plants. The 10,613 acre Special Area is located in the East West Junction Project Planning Area and in proposed units. The RMP allows for actions in the botanical emphasis area including timber harvest as long as they do not conflict with the habitat needs for those plants. The East West Junction Project units were surveyed for special status species during the spring and summer of 2009. See Appendix 2: “Special Status Species, and Survey and Manage (not including T/E): Plant Species/Habitat” for more information on individual species.</p> <p>PDFs (see Section 2.3.4.5 and 2.3.4.6 of the EA) would buffer Special Status plants and reduce the spread of weeds from proposed activities; therefore, the values for which the emphasis area was designated would not be degraded by the East West Junction Project.</p>

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Special Status Species (not including T/E): Fish Species/Habitat	Not Affected (Klamath Mountains Province steelhead and Southern Oregon Coast/Northern California Coast Chinook within the East Fork and West Fork of the Illinois River and the Sucker Creek HUC 5 Watersheds.)	<p>On July 26, 2007 a new Special Status Species (SSS) list went into effect (BLM 2007). This new list has two categories, Sensitive and Strategic. The former categories of Bureau Assessment and Bureau Tracking no longer exist. Both of the listed species within the project area are classified as Oregon Strategic. BLM does not manage special status species but must plan actions so that they do not contribute to the need to list them as federally threatened or endangered.</p> <p>Klamath Mountains Province steelhead and Southern Oregon Coast/Northern California Coast Chinook are within East Fork and West Fork of the Illinois River and the Sucker Creek HUC 5 Watersheds. Their habitat is contained within the Critical Habitat analyzed for SONCC coho salmon. Harvesting, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road renovation/improvement, road maintenance hauling, and fuel treatments would have no effect on Klamath Mountains Province steelhead and Southern Oregon Coast/Northern California Coast Chinook. There are two haul road segments where BLM-maintained roads cross over streams with SSS; one via a culvert, and one through a dry ford. Sediment would not be expected to enter SSS habitat as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into SSS streams. Project activities would follow all provisions of the Clean Water Act (40 CFR Subchapter D) and Department of Environmental Quality’s (DEQ’s) provisions for maintenance of water quality standards.</p> <p>Fish species are listed as special status species by ESUs. See the “T/E (Threatened or Endangered) Fish Species or Habitat” section above for the definition of ESUs.</p>

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Special Status Species, and Survey and Manage (not including T/E): Plant Species/Habitat	Not Affected	<p>Bureau Special Status, and Survey and Manage Plants</p> <p>On July 26, 2007 a new Special Status Species list went into effect (BLM 2007). This new list has two categories, Sensitive and Strategic. The former categories of Bureau Assessment and Bureau Tracking no longer exist. Sensitive species require a pre-project clearance and management to prevent them from trending toward federal listing. There is no pre-project clearance or management required for the Strategic Species at the BLM District level, thus Strategic Species will not be analyzed in this document. In addition to the new Special Status Species policy, the 2011 Settlement Agreement in Litigation over the Survey and Manage Mitigation Measure in <i>Conservation Northwest et al. v. Sherman et al.</i>, Case No. 08-1067-JCC (W.D. Wash.) went into effect July 21, 2011. A revised Survey and Manage species list was included in the settlement agreement. This list will be used for the East West Junction Project. The species categories for Survey and Manage remain the same in the settlement agreement which requires surveys for Category A and C species and management of known (documented) sites for Category A, B, C, and E species, managing ‘high-priority’ Category D species, and no site management requirement of Category F species.</p> <p>Vascular and nonvascular plant surveys were conducted in the spring and summer of 2009. Professional botanists surveyed the proposed units using intuitive controlled methodology, wherein areas supporting high potential habitat were surveyed more intensively; surveys were also in compliance with the 2011 Survey and Manage settlement agreement protocol, which requires surveys for Category A and C species. Survey and Manage protocol also requires managing known (documented) sites of Category A, B, C, and E species, managing ‘high-priority’ Category D species, and no site management requirement of Category F species. Surveys revealed the following new sites; <i>Carex serratodens</i> (Sensitive, in unit 13-16b), <i>Cyperipedium fasciculatum</i> (Sensitive and S&M C, in unit 17-1d), <i>Cyperipedium montanum</i> (S&M C, in unit 17-1d), <i>Erythronium howellii</i> (Sensitive, in units 7S-3, 9-9, and 19-1), <i>Limnathes gracilis</i> var. <i>gracilis</i> (Sensitive, in unit 34-1), <i>Microseris howellii</i> (Sensitive, in units 7S-6 and 7S-6a. However, these species would not be affected by the action alternatives as these sites would receive protection buffers and conditional restrictions (Section 2.3.4.5). <i>The NEPA casefile contains the Survey and Manage Tracking Sheet for Botanical Species per the 2011 Survey and Manage Settlement Agreement.</i></p>

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Special Status Species, and Survey and Manage (not including T/E): Plant Species/Habitat (continued)	Not Affected	<p>Bureau Special Status, and Survey and Manage Fungi</p> <p><u>Special Status</u></p> <p>The Project Area was not surveyed for Bureau Sensitive fungi, as pre-disturbance surveys for Special Status fungi are not practical, nor required per BLM – Information Bulletin No. OR 2004-121, which states “If project surveys for a species were not practical under the Survey and Manage standards and guidelines (most Category B and D species), or a species’ status is undetermined (Category E and F species), then surveys will not be practical or expected to occur under the Special Status/Sensitive Species policies either (USDA/USDI 2004a, p.3).” Current special status fungi were previously in the aforementioned S&M categories which did not consider surveys practical, and are therefore exempt from survey requirements. With the recent instatement the new Interagency Special Status Species policy (ISSSP), 20 species of fungi were designated as Sensitive, 9 of which have been documented on Medford District. As mentioned above, none of these species require surveys.</p> <p>District wide, the Medford BLM has 20 Sensitive (SEN) fungi species; 11 are suspected to occur here, while the remaining 9 have been documented. Of the 9 documented species, two have been found in the East West Junction Project Planning Area. <i>Rizopogon ellipsosporus</i> is located on private lands. <i>Phaeocollybia californica</i> is located in the East for Illinois and West Fork Illinois 5th field watersheds, which is 3.5 miles from the nearest proposed unit.</p> <p>Soil disturbance from yarding systems to occur from the action alternatives would be 7% of each cable corridor and 21% of each tractor skid trail (Landsberg 2003 pg. 29), which would result in 0.011% of BLM land in the project’s Planning Area.</p> <p>Within pile burning units, a maximum of 7% of the ground in each acre of pile burning treatment is subject to high intensity heat. The action alternatives Would affect a maximum of 0.012% of BLM lands in the Planning Area, If a Sensitive fungi species were to be located under one of these burn piles, it would likely reduce or,</p>

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Special Status Species, and Survey and Manage (not including T/E): Plant Species/Habitat (continued)	Not Affected	<p>eliminate the local population. Given this small percentage of ground disturbance and low probability of species occurrence, impacts to species are not anticipated.</p> <p>Alternatives 2 and 3 propose 0.5 miles of temporary route construction. No new permanent road construction is proposed for either alternative. The road work would create approximately 2.4 acres of ground disturbance, assuming 40 ft width of ground disturbance, representing 0.0003% of BLM land in the Planning Area.</p> <p>Ground disturbing activities such as yarding systems, pile-burning, and road construction may fragment the mycelia network (Amaranthus et al 1996). Dahlberg and Stenlid (1995) found that ectomycchorizal mycelia networks may range in size from 1.5 to 27 meters (5 to 89 feet). Given the potentially small range of mycelia networks, ground-disturbing activities may fragment the mycelia network, reducing or eliminating local populations if sensitive fungi are present in the disturbed area. However, given the small percentage of ground disturbed by proposed activities in the Planning Area, loss of local populations due to harvest method is not likely. <i>The NEPA casefile contains the Survey and Manage Tracking Sheet for Botanical Species per the 2011 Survey and Manage Settlement Agreement.</i></p>
Soil Productivity	Affected	<p>Long term soil productivity is the capability of soil to sustain natural growth potential of plants and plant communities over time. The most common types of disturbances effecting soils and associated long term productivity are displacement and compaction. Soil compaction and displacement, which effects growth, is a combined effect which cannot be separated (BLM 1994, Vol. 1, p. 4-13). The unit of measurement for this analysis is based on acre calculations of each unit independently. This unit of measurement and scale was selected for this analysis based on productivity losses of concern being associated with the harvest treatments directly. Compaction/disturbance values for this timber sale would be below the 5% productivity loss per unit and less than 12% compaction/disturbance associated with ground based harvest systems (BLM 1995, p. 166).</p>
Vegetation Resources	Affected	<p>The action alternatives would result in greater increases in tree growth. Stand densities would be reduced to increase the availability of light, water, nutrients and growing space for selected retained trees. Proposed treatments would promote increased stand and tree vigor as well as development of larger crowns on retained trees. Fewer, but larger trees throughout their diameter classes would make up these stands in the long term. These improvements would occur under the Commercial Thin (Alternative 3) silvicultural prescriptions, but to lesser degree than in the Variable Density Thinning treatments (Alternative 2). <i>See Appendix 4-Silvicultural Prescription for further discussion.</i></p>

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Soil Erodibility	Affected	Tractor and cable yarding corridors, landing construction and rehabilitation, hauling, road maintenance and use, temporary route construction and reconstruction (including associated route decommissioning), and road renovation are proposed as part of the action alternatives. These activities would result in soil compaction and disturbance that would increase erosion. Compaction would not exceed 12% within any one unit, keeping impacts from compaction within those levels assessed under the 1995 RMP. Offsite erosion and subsequent stream sedimentation is discussed in the Water Quality section of this appendix. <i>See Section 3.4: Water Resources and Erosion for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
Soil - mass wasting	Not Affected	Mass wasting causes increases in erosion that may lead to stream sedimentation, and damages to road systems. The risk of large scale mass wasting within this Planning Area is low, as soils in this region are generally not highly prone to debris flows or other large scale events. Small slumps and slides are not uncommon in this Planning Area, and are found throughout this Planning Area, primarily at contact points between different geologic formations, or in association with roads. Each unit was closely examined on the ground for any indicators that a unit would be at an increased risk of mass wasting if tree harvest, yarding, temporary route construction, or road reconstruction were to occur. Following an on the ground examination of each unit, it was determined that the risk of mass wasting would not be elevated within any of the final proposed project units.
Visual Resources	Not Affected	Proposed activities are located in VRM (Visual Resource Management) Class III-IV category lands under the 1995 Medford RMP, and in VRM Class II-IV under the 2008 Medford RMP. These VRM categories allow for varying amounts of modifications to the existing character of the landscape. The action alternatives are consistent with these visual resource management objectives as stated in the 2008 and 1995 Medford District Resource Management Plans. The Visual Contrast Rating Worksheet was completed from Key Observation Points (KOPs) as a field tool to assess if the proposed activities would change the characteristic landscape. <i>See Appendix 10 – Visual Resource Management and Wild and Scenic Rivers for further details on the affected environment and environmental effects of the alternatives related to this element of the environment.</i>

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Water Resources (not including water quality)	Not Affected	<p>Water quantity can be affected during timber harvest by soil compaction and increased open space. Total compaction/displacement associated with tractor skid trails and cable yarding corridors would account for an average of 5.34% per unit. Alternative 2 and 3 would result in a 1.7% soil productivity loss within the proposed harvest units. Since these watersheds are currently well below 12% watershed compaction known to result in substantial changes in runoff timing and peak flows, these increases would not be of a magnitude that would result in any measurable change to the watershed hydrology. Within each unit, localized increases in surface flows at the compaction site could occur that would result in an increase in surface erosion. However due to the unaffected soils that would be left on each of these sites, these localized instances of surface erosion would infiltrate back into the unit soils.</p> <p>The East West Junction Project proposed treatments would not create any continuous areas of overstory forest canopy openings that would contribute to open space in the Planning Area (WPN, 1999). The Variable Retention Harvest unit is below the Transient Snow Zone elevation and on ground with minimal slope (0-3%). The Variable Density Thinning would have discontinuous openings up to an acre in size. Small canopy gaps are not sufficient to measurably alter watershed hydrology. Road maintenance could remove individual trees and small pockets of trees to improve road function, safety, and improved maintenance. As such, the action alternatives would not have canopy gaps that would be large enough to result in a measurable effect on watershed hydrology, including no increase in peak flows, low flows, base flows, runoff timing, subsurface flow, or water storage. Since watershed hydrology would not be affected this project would not affect municipal or domestic water use or water rights.</p>
Late-Successional Forest	Action Alternatives is in compliance with the 15% Standard and Guideline	<p>BLM ownership of late-successional forest is approximately 77% (2,357 acres of 3,075 acres) of BLM land in the West Fork Illinois watershed (BLM 1999), 87% of BLM land in the East Fork Illinois watershed (2,966 acres of 3,419 acres) (BLM 1999), 68% (3,367 acres of 4,965 acres) of BLM land in the Sucker Creek watershed (BLM 1999). The Northwest Forest Plan standards and guidelines state that at least 15% of each fifth field watershed should be managed to retain late-successional patches (ROD, C-44). Alternative 2 would remove approximately 62 acres of late successional forest. The three watersheds would remain well above the 15% threshold after implementation of this alternative. Alternative 3 would not remove any late successional forest. Therefore, the action alternatives are in compliance with the 15% Standard and Guideline.</p>

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Migratory Birds Species of Concern (U.S. Fish and Wildlife Service 2008)	Not Affected	<p>Both the U.S. Fish and Wildlife Service (2002) and Partners in Flight (Altman 1999) consider the state and regional approach a key to the conservation of migratory songbirds. The Birds of Conservation Concern (USFWS 2008a) identifies species, subspecies, and populations of migratory and non-migratory birds in need of additional conservation actions that are deemed to be the highest priority for conservation actions. The BCC 2008 encompasses three distinct geographic scales—North American Bird Conservation Initiative (NABCI) Bird Conservation Regions (BCRs), USFWS Regions, and National—and is primarily derived from assessment scores from three major bird conservation plans: the Partners in Flight North American Landbird Conservation Plan, the United States Shorebird Conservation Plan, and the North American Waterbird Conservation Plan. The Northwest Forest Plan as an effort in the same type of conservation planning process, which approaches management at a regional level. The action alternatives are consistent with the Northwest Forest Plan, which is also designed to provide for the conservation of other forest-related species in the range of the Northern Spotted Owl, such as these birds that may occur.</p> <p>The potential failure or loss of some nests would not be measurable at the regional scale because of the small scope of the project in relationship to the regional scale. Therefore, the action alternatives would not affect the populations in the region would be unaffected.</p> <p>Within the Northwest Forest Plan (24,455,300 federal acres), reserved/withdrawn lands total approximately 78% of the federal land base (USDA/USDI 1994, p. 2-62:65). Not all of the reserves are in or will obtain late-successional forest conditions, but the majority is expected to contribute as suitable habitat towards migratory birds utilizing late successional habitat. In addition, Matrix lands (3,975,300 acres) representing about 16% of the federal land base, contain selected portions of the land managed to retain 15-30% in late-successional forest, which provides additional suitable habitat.</p> <p><i>See Appendix 7 – Migratory Birds for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i></p>

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<p>Survey and Manage and Special Status Species (not including T/E): Wildlife Species/Habitat</p> <p>(continued)</p>	<p>Not Affected (Survey and Manage and Bureau Sensitive: Mollusks)</p>	<p>This project is not anticipated to affect any Survey and Manage mollusk species because the proposed treatments do not occur within suitable habitat for <i>Helminthoglypta hertleini</i> and the Planning Area is outside the range of <i>Monadenia chaceana</i>. Habitat exists in the Planning Area for the Survey and Manage mollusk, <i>Monadenia chaceana</i>. However, the pre-disturbance survey requirement for the GPRA was removed in the <i>Survey Protocol for the Survey and Manage Terrestrial Mollusk Species from the Northwest Forest Plan, Version 3.0</i>, since the <i>Monadenia chaceana</i> range change (USDA and USDI 2003). Therefore, no surveys have been completed for the East West Junction Project. Additionally, since the late 1990s, more than 17 landscape management planning areas throughout the GPRA have been surveyed for mollusks using the terrestrial mollusk survey protocol (USDA and USDI 1997 and USDA and USDI 2003). Surveys have revealed no detections of <i>Monadenia chaceana</i>.</p> <p><i>See Appendix 8 – Wildlife Special Status Species for a discussion on the environmental effects of the action alternatives related to this element of the environment. The NEPA casefile contains the Survey and Manage Tracking Sheet for Wildlife Species per the 2011 Survey and Manage Settlement Agreement.</i></p>
<p>Port-Orford-cedar</p>	<p>Not Affected</p>	<p>Project is within natural range of Port-Orford-cedar (POC). A POC Risk Key Analysis was completed. No management specific to POC and POC root disease (<i>Phytophthora lateralis</i>) is required. The action alternatives would be consistent with management direction in the Port-Orford-cedar EIS (See POC Risk Key in Appendix 9).</p>

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Greenhouse Gases and Carbon Storage	Affected	<p>Scientific knowledge on the interrelationship between greenhouse gas levels and climate change is rapidly changing. Substantial uncertainties and key limitations exist. Because forests store carbon, they can affect atmospheric concentrations of carbon dioxide, a greenhouse gas. Forest management can change the amount of carbon stored in a forest.</p> <p>Treatments of the project action alternatives were compared to treatments in other recent projects and found to be similar. Carbon storage and carbon emissions of the project action alternatives were calculated to determine the net contributions of greenhouse gases resulting from the treatments. Those carbon calculations were based on assumptions in the 2008 FEIS (BLM 2008b, Appendix C) and subsequent improvements to those assumptions, as set forth in R. Hardt, personal communication, November 6, 2009 (on file in the Medford District BLM Office, and incorporated here by reference). Carbon storage was analyzed by quantifying the change in carbon storage in <i>live trees</i>, storage in forests <i>other than live trees</i> (dead wood and roots, non-tree vegetation, litter and soil organic matter), and storage in <i>harvested wood</i> products. Changes in forest ecosystem carbon over time were calculated using site specific data and the ORGANON Growth Model (Hann et al. 2007). Stand volume in cubic feet per acre per year was used to calculate tonnes of carbon stored per year. Carbon emissions (carbon dioxide) were calculated from timber harvest activities (including fuel consumption) and post-harvest fuel treatments. Net carbon storage was calculated by subtracting carbon emitted from carbon stored.</p> <p>Similar to treatments in the other projects, East West Junction Project treatments would reduce carbon stores temporarily but would result in net increases over time. For units similar to the East West Junction Project thinning units (VDT, CT, and PCT), growth within 5 years following treatment would result in carbon storage that exceed direct and indirect carbon emissions, resulting in a net storage of carbon compared to pretreatment conditions. For units similar to the East West Junction Project Density Management/Hazardous Fuel Reduction units would result in a net storage of carbon compared to pretreatment conditions within 10 years and for unit 9-12 (Variable Retention Harvest), a net storage of carbon would occur within 20 years. In addition, the treatments in the East West Junction Project would reduce the burning intensity of future fires which in the long-term would maintain higher carbon stores on the landscape.</p>

APPENDIX 3 - RESPONSE TO COMMENTS ON THE EAST WEST JUNCTION PROJECT ENVIRONMENTAL ASSESSMENT

(DOI-BLM-M070-2009-011-EA)

The East West Junction Project Scoping Report (May 2011) was released for 30-day public scoping comment period. Two comment letters were received. Areas of concern or requests for alternative development regard protection and analysis of: soils, water resources, and aquatic species; retention of large and mature trees for associated species; and wildlife habitat fragmentation.

Comments were considered in the development of the East West Junction Project. BLM responses to substantive comments identified during scoping are presented in this Appendix of the EA.

Substantive comments do one or more of the following (BLM Manual, National Environmental Policy Handbook, 1/30/2008):

- question, with reasonable basis, the accuracy of information
- question, with reasonable basis, the adequacy of, methodology for, or assumptions used for the environmental analysis
- present new information relevant to the analysis
- present reasonable alternatives
- cause changes or revisions in one or more alternative

Comments that are not considered substantive include the following:

- comments in favor of or against the proposed action or alternatives without reasoning that meet the criteria listed above (such as “we disagree with Alternative Two and believe the BLM should select Alternative Three).
- comments that only agree or disagree with BLM policy or resource decisions without justification or supporting data that meet the criteria listed above (such as “more grazing should be permitted”).
- comments that don’t pertain to the Project Area or the project (such as “the government should eliminate all dams,” when the project is about a grazing permit).
- comments that take the form of vague, open-ended questions.

If a number of comments are identical or very similar, agencies may group comments and prepare a single answer for each group. Depending on the volume of comments received, responses may be made individually to each substantive comment or similar comments may be combined and a single response made. The Code of Federal Regulations (40 CFR §1503.4) identifies five possible types of responses for use with environmental impact statements.

1. Modify action alternatives.
2. Develop and evaluate alternatives not previously given serious consideration by the agency.
3. Supplement, improve or modify the analysis.

4. Make factual corrections.
5. Explain why the comments do not warrant further agency response, citing the sources, authorities or reasons which support the agency's position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response.

Collaboration

Don Smith

Comment 1: The commenter expresses that collaboration seems to be of high importance to the agency, but states it is unclear why a collaborative process for this project is not already underway.

BLM Response: There are different forms of collaborative processes to prevent, manage, mitigate, and resolve disputes outside the conventional arenas of administrative adjudication, litigation, or legislation. The BLM is engaging with the stakeholders through public scoping on the project and holding public field trips, which are forms of collaboration. Information was shared and collected, desired outcomes were explained by the participating parties, and some shared interests were found through this process. The information collected at these meetings was shared with the BLM interdisciplinary team and revisions to the proposal were made based on these interactions. See Appendix 1 and 3 for further details.

Alternative Recommendations

Klamath-Siskiyou Wildlands Center (KS Wild)

Comment 2: KS Wild recommends an alternative that thins existing plantations, removes off-site fir stands that are encroaching on stands due to the lack of fire and prior logging activities, retain late-successional forests and large-diameter trees, address OHV damage to botanical and hydrologic resources, prevent the spread of Port-Orford-cedar root disease through road closures, and signing, do not construction permanent or temporary roads, and reduce road density through decommissioning.

BLM Response: The purpose and need of the "...designed to meet BLM's obligation to implement the RMP and to address the primary needs identified for lands in the Planning Area. The project's primary objective is to implement forest management activities that would contribute to continuous timber production while restoring dry and moist forest characteristics and reducing wildfire danger. The RMP directs the BLM to implement the Oregon and California Railroad Revested Lands (O&C Act) which requires the Secretary of the Interior to manage O&C lands for permanent forest production".

The Silvicultural Prescription (Appendix 4) describes the desired condition to "enhance species diversity on both the landscape and stand level scale include increasing the proportion of ponderosa pine, oak species (excluding tanoak), and early seral shrubs

while reducing tanoak and Douglas-fir in both Alternatives.... Thinning activities proposed in the East West Junction Project mimic the natural function of fires by thinning to reduce stand densities and contributing to a fire resilient landscape” (p. 171).

Chapter 2 of the EA describes treatment objectives for Variable Density Thin as, “treatment goals are based on ecological forestry principles to reduce ladder fuels and the risk of the loss of older trees from wildfire and competition while favoring retention of more fire and drought tolerant tree species (ponderosa pine, sugar pine, incense cedar). Removes mostly small and medium sized trees, but can include removal of some larger young trees. Older trees are defined as those at least 150 years of age.” Under Variable Retention Harvest, “the oldest trees and 20-30% of stand would be retained” (EA, p.20). For Commercial Thinning (under Alternative 3), “remove trees that function as ladder fuels, reduce risks to older trees from wildfire and competition, favor more fire and drought tolerant tree species, control stand density, increase stand vigor and place or maintain stands on developmental paths so that desired stand characteristics of dry and moist forests result in the future and primary elements for northern spotted owl habitat are maintained,” (EA, p.21).

New temporary routes and temporary re-constructed routes would be blocked, ripped, waterbarred, and seeded and mulched which would help reduce the potential future disturbance from OHV use. For any constructed skid trails in Riparian Reserves, site restoration treatments would be applied after yarding has been completed and would include such activities as ripping / decompaction, water barring, seeding, tree planting and/or blocking as needed (See Section 2.3.4.4). However, the East West Junction Project’s purpose and need was not to develop an OHV/ORV plan for existing unauthorized use.

A POC Risk Key Analysis is completed for the East West Junction Project EA. After recent field review by a BLM silviculturalist, it was determined the proposed project would not introduce appreciable additional risk of infection to uninfected POC. Therefore the probability of spreading *Phytophthora lateralis* would be low. No management specific to POC and POC root disease (*Phytophthora lateralis*) is required; however, Project Design Features for this project would require heavy equipment, to be pressure washed to remove dirt, grease, plant parts, and material that may carry noxious weed seeds into BLM lands, which could also help reduce any potential spread of POC root disease. Equipment would be inspected to verify that the equipment has been cleaned.

Molyneaux

Comment 3: The commenter requests unit 3-4 be changed from a Variable Density Thin unit to a Hazardous Fuel Reduction Unit. The commenter is concerned about additional areas open to off road vehicle use, practice shooting, and garbage dumping. The commenter believes the stand is as a healthy and diverse late successional forest. The commenter is concerned about herbicide application. The commenter is requesting a 100-200 ft buffer from their adjacent property to protect their fencing and prevent injury.

He requests access into Unit 9-12 be gated as area is used for vandalism, dumping trash, and target shooting which makes it danger for those hiking or otherwise recreating in the immeditate area.

BLM Response: Due to the results of wildlife surveys and subsequent deferral of a portion of the unit to buffer the site, Unit 3-4 has been converted to Hazardous Fuel Reduction, as it is no longer viable for commercial extraction. There is no temporary route construction or re-construction proposed into Units 9-12, 3-3, or 3-4, to potentially provide additional access into these units. The forester reviewed the project and assessed the amount of slash to be placed in skid trails during harvesting of timber units would impede the potential for additional OHV use. The access into Units 3-3 and 3-4 is gated. The terrain at the entry point of section 9, BLM road #40-8-4 is very flat and the road is very wide. In such terrain, it is difficult to limit further access with installation of a gate as many would have the ability to drive around the gate. Over half of BLM road #40-8-4 is gated (further south), before the road changes from gravel to natural surface. Josephine County has requested any potential road closures from BLM in this county be coordinated with their planning department.

Noxious weed control is discussed in the EA (See Section 2.3.4.6); however, treatments will occur under the Medford District Noxious Weed Environmental Assessment (1998) (See Section 1.5), which includes limited use of chemicals to control weeds. Chemical treatments are targeted directly on the noxious weed sites and are not broadcast sprayed. Activity units in the East West Junction Project Planning Area were surveyed for noxious weeds during spring and summer of 2009 and the species populations are disclosed in the EA (Appendix 2: Invasive, Nonnative Species)

Buffering of units along private property boundaries and the BLM are determined on a case by case basis. Since unit 3-4 is now a Hazardous Fuel Reduction treatment, the cutting of vegetation and trees would be limited to less than 8 inches in diameter at breast height. Falling of this vegetation would be directionally felled away from property boundaries and into the unit. Contractors implementing the project would be held responsible for any property damage where they are found liable.

Don Smith

Comment 4: Requests the removal of mid-sized (15-25 inch dbh) trees along streams to be avoided entirely and for intermittent streams to receive the highest protection with stream side buffers. Requests the EA to specify this and identify where those streams are on a map.

BLM Response: Ecological Protection Zones (EPZs) would be placed where Riparian Thinning is proposed. EPZs are buffers where no timber extraction would occur. See Section 2.2 for a description of Riparian Thinning, “Riparian Reserves proposed for treatment would be selected based on field stream survey information and silvicultural review. Stands with conditions such as high conifer density and few canopy layers, stands with low species diversity and stands of low conifer and hardwood vigor would be

high priorities for treatment. Treatments would occur in accordance with the following prescriptions to ensure protection of streams... For all units, an Ecological Protection Zone (EPZ) ranging from 75-100 ft from the stream bankfull width (by slope distance) would be applied along streams to protect stream channel structure and water quality (Best Management Practice, RMP p.154)... Canopy cover would remain above 50%, and species diversity would be maintained. Activities in this area would be designed to ensure that habitat conditions for the wildlife and plant species that use this zone are not degraded.” The attached EA maps identify the location of perennial and intermittent streams per field verified.

Siskiyou Project

Comment 5: Requests the scope of the project be narrowed to eliminate logging in older stands such as unit 9-12, including the proposed Riparian Thinning. The commenter states the unit was commercial thinned 15 years ago and believes further entries would “constitute unsustainable ‘timber mining’”. The commenter requests a pine plantation immediately east of unit 9-12 needs to be added to the project for restoration via heavy thinning and replanting with Douglas-fir, incense cedar, sugar pine and perhaps better adapted ponderosa pine stock.

BLM Response: There is no Riparian Thinning proposed for unit 9-12 (See Table 2-1). The previous treatment was a light thinning resulting in a two storied stand. The East West Junction Project proposed prescription is designed to stimulate a third layer and the largest trees would be left at 66 ft spacing, and the strongest dominant trees and any old growth individuals would be retained. For the understory, the East West Junction prescription would also involve understory reduction work (pre-commercial thinning) to stimulate a middle layer. For further details see Appendix 4 for the Silvicultural Prescription for the project.

The stand to the east of unit 9-12, was pre-commercially thinned at a 16x16 ft spacing and hand piled/burned in 2006. Originally this unit was clearcut in 1987 on flat terrain. Douglas-fir is very susceptible to frost damage or frostkill to planted seedlings in the flat terrain and some silvicultural records for that stand describe frost damage to Douglas-fir bud tips on trees <5 ft tall. It is a common silvicultural practice in flat terrain, to replant with tree species that can establish a tree population quickly as a nurse crop, and then plant and cultivate the desired species below the nurse crop at a later date. Also, the closest mill at the time processed ponderosa pine so re-planting with mostly this species may have partly been commodity driven. Such decisions were made prior to implementation of the Northwest Forest Plan, which currently guides the BLM and Forest Service to retain a component of older conifers and hardwoods. Due to the cost and effort already put into cultivating this plantation, it would not be economical to perform a site conversion to Douglas-fir, incense cedar, sugar pine at this time. The stand would reach commercial size around the year 2029, at which point the ponderosa pine can be harvested and replant with more natural site conifer and pine tree species.

Comment 6: Requests T40S-R8W-Section 7 not be treated for Hazardous Fuel Reduction. Wants manzanita and white oaks retained for wildlife instead. Supports silvicultural treatments (above shrub layer treatments) for this Section. Requests road into this Section be gated to prevent wildfire starting in the area. Believes gating would be more effective to preventing a large intensity fire from entering the area. Area has transient squatting and trash dumping too.

BLM Response: See Section 2.2 for a description of proposed Hazardous Fuel Reduction treatment, “Slashed material would be up to 8 inches in diameter and conifer spacing would be approximately 18 x 18 ft, and hardwood spacing would be up to 40 x 40 ft or narrower depending on hardwood size class. Riparian fuel reduction would be permitted up to 50 ft of the stream bankful width.”

See Section 2.3.4.7, “Habitat patches for the benefit of spotted owl prey, songbirds, and other species would be retained. These patches would maintain habitat diversity, a variety of vegetative structure, and utilize unique landscape features in the Planning Area. Where present, landscape features, such as wildlife and botany buffers, hardwood areas, chinquapin patches, rocky outcrops, wet areas, and areas with large woodrat nests, would contribute to or serve as these leave areas. Approximately 10% or more of the planning area would be untreated. Untreated areas would be a minimum of ¼ to ½ acre in size.”

Additionally, Units 7S-3, 7S-6, and 7S-6a have further PDFs regarding treatment of fuels to retain the function of the critical habitat primary constituent elements for *Lomatium cookii* (See Section 2.3.4.5). Unit 7S-2 would have a 100ft no commercial harvest buffer (non-commercial thinning, hand piling, and burning would be allowed) to protect a meadow (See Section 2.3.4.7).

There are three gates distributed at entry points into the Rough and Ready ACEC located in section 7. The terrain at these locations is very flat. In such terrain, it is difficult to limit access with gates as many have the ability to drive around them.

Comment 7: Requests unit 29-2 not be entered, as believes stand is in healthy condition.

BLM Response: See Appendix 4, for the project Silvicultural Prescription including current stand conditions and desired outcome for this unit. Under Alternative 2, the unit is proposed for Variable Density Thinning. Treatment goals under Alternative 2 are to reduce stand density to increase long term tree growth, quality, and vigor of the remaining trees and increase resistance of landscape to fire, drought, and insects as well as create diversified stand structure (height, age, and diameter classes) to enhance structural complexity and composition which is the result of variability. Under Alternative 3, the unit is proposed for Density Management/Hazardous Fuel Reduction with a higher canopy closure retention (60% canopy closure) than for Alternative 2 after harvest. Treatment goals under Alternative 3 are to reduce stocking levels throughout the stand and promote growth and structural development of residual trees. Pre-commercial

thinning and Pre-commercial/Hardwood Control are generally used with this treatment, which may be completed in conjunction with Hazardous Fuel Reduction.

Nov 18th – Field Trip Attendees

Comment 8: Commenters asked that no large trees be removed (> 20 inches dbh). Requests the project be a Density Management treatment only. Believes removing large trees to be counter intuitive to retaining and achieving high canopy closure to support various species.

BLM Response: The RMP does not provide a diameter limit in the Matrix (1995 RMP) or the Timber Management Area (TMA) (2008 RMP) land allocations. See Section 2.2.1 for a further explanation regarding the specific objectives of the different treatment proposals to meet dry and moist forest restoration, which also encompasses prescriptions designed to increase ground cover suitable to the site and growing conditions that provide for the establishment of early seral tree species in addition to retaining older trees with high canopy closure. The desired outcome is a mosaic landscape of older forest types, mid-seral, and early seral stages which is more closely tied to the natural stand condition of southern Oregon.

McMillen

Comment 9: States the “plan to cut the forest in and around the newly established Forks State Park trail...seems counterproductive to its intent”.

BLM Response: The Illinois River Forks State Park is located on Oregon State Lands. The proposed forest management activities for this project are located on BLM managed lands, primarily under the Matrix (1995 RMP) and the Timber Management Area (TMA) (2008 RMP) land use allocations, which objectives are to supply a sustainable supply of timber. The BLM’s portion of the Illinois River Forks State Park was previously managed under a Recreation and Public Purposes Lease (R&PPL), which has expired. The R&PPL leased the management of the BLM portion to Oregon State Parks.

A Visual Contrast Rating Worksheet (see Appendix 10) was completed from Key Observation Points (KOPs) as a field tool to assess if the proposed activities would change the natural characteristic of the landscape. For this project, the trail head of the Illinois State Park was selected as a KOP since it is the only *designated* recreation site under the 1995 or 2008 RMP that has a viewpoint into the East West Junction Project proposed activities. After field review, it was determined that these units and the temporary route construction and re-construction were not visible from this park’s trailhead due to the dense vegetation within the riparian zone and the geographic formations in sections 21 & 29. The proposed temporary route construction and re-construction are located within the boundaries of proposed units. The proposed road renovation/improvement for one unit in Section 29 would not change the view of the landscape since this work is limited to restoring or improving an existing road.

The specific unit prescriptions for the action alternatives (Alt 2 and Alt 3) on BLM land near the State Park would meet the visual management designation (VRM III) of the Medford District 1995 RMP. VRM III allows for moderate levels of change to the characteristic landscape. Since the purpose and need for this project is to implement forest management activities that would contribute to continuous timber production while restoring dry and moist forest characteristics and reducing wildfire danger the unit prescriptions for these units have been developed to repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape and would not dominant the casual view of the observer.

A Project Design Feature (Section 2.3.4.9) was developed by the IDT to ensure trail users would not be jeopardized by the proposed timber activity in the area, which would temporarily close the BLM portion of trail during timber operation.

Air Quality

Molyneaux and Siskiyou Project

Comment 10: Requests hardwoods no larger than 4 inches be cut. Concerned about the number of piles that could be burned from an air quality standpoint.

BLM Response: Depending on site conditions, sometimes limiting the cutting of hardwoods to 4 inches in hazardous fuel reduction prescriptions would meet fuel reduction objectives. However, the unit selection and the prescription that is developed for each Hazardous Fuel Reduction unit must meet the purpose and need of the project, which includes “reducing wildlifre danger” for dry and moist forests and the project objectives which includes increasing “resistance of the landscape to fire” and “reduce both natural and activity based fuel hazards”. In some sites, the fuel loading may be greater where limiting hardwood cutting to 4 inches may not accomplish these goals and reduce ladder fuels enough so a wildfire’s potential to carry to stand crowns would be substantially reduced. The prescriptions are developed to balance the objectives for other resources such as wildlife and the natural vegetative components of the stand through the interdisciplinary process. For more details about the proposed Hazardous Fuel Reduction treatments see Section 2.2.1 and Appendix 4 (Silvicultural Prescription).

See Appendix 2: Air Quality and Appendix 12 regarding the impact of smoke on air quality. The Planning Area is not located within a Class I designated airshed or non-attainment area. Smoke is expected to be localized and of short duration. Particulate matter would not be of a magnitude to harm human health, affect the environment, or result in property damage.

Multiple Commenters

Comment 11: Requests plastic not be used to cover brush piles for burning.

BLM Response: The proposed project would follow Oregon's Smoke Management Plan, as stated in Appendix 2 of the EA. This plan was established by the Oregon Department of Forestry and was consulted with the Oregon Department of Environmental Quality. See Appendix 12 of the EA regarding analysis of burning polyethylene plastic in slash piles. The available literature does not support a contention that burning PE sheeting would produce unique chemicals or classes of chemicals that are not also found in emissions from burning wood debris (Worbel & Reinhardt, 2003).

Whole tree yarding, which is proposed for this project, would result in fewer burn piles and thus lesser use of polyethylene plastic than traditional yarding techniques.

Adjacent Landowner

Comment 12: Asked if neighborhood residents could maintain thinning on BLM land.

BLM Response: The East West Junction Project's primary land use allocation is Matrix (1995 RMP) and Timber Management Area (TMA) (2008 RMP), which both have the objective to produce a sustainable supply of timber. This designation is assigned through resource management plans and an individual project cannot change such as designation.

Projects are implemented through the bidding of contracts. Bidders are licensed and bonded for safety and insurance purposes. The highest of these bidders is awarded the contract. Actions performed through timber sales are bid upon based on the fair market value. Service contracts (stewardship projects) go through either the Medford District or Oregon State Office procurement shops to evaluate potential contractor's proposals based on such criteria as service, capability, and price.

Watershed Analysis

Klamath-Siskiyou Wildlands Center

Comment 13: Requests findings and recommendations of the watershed analyses be incorporated and reflected in an action alternative for the East West Project regarding:

- Elevated amounts of small diameter trees, tree mortality, fire hazard, risk of landslides, roads and noxious weeds. WA T-3.
- Reduced amounts of big trees, interior and old growth forest habitat, grasses and forbs, pine/oak savannah, pine species, and low intensity fire. WA T-3.
- Disparity between the historic and current conditions puts many resources at risk, from old growth forest habitat to water quality. WA T-3.
- Mass wasting events/ slides evident throughout the East Fork Illinois watershed.

- Increase old growth forest habitat on non-serpentine sites in the watershed. WA T-6.
- Recommendations for frequent prescribed fire in pine/oak savannas. WA T-7.
- Reduce vehicle access to uninfected POC locations since POC root disease as an issue of concern. WA T-7 and 131.
- Noxious weed locations should be mapped and managed. WA T-8.
- Stop recreational vehicle trespass in the French Flat ACEC. WA T-8.
- Reduce road density and accelerated erosion from roads via road decommissioning, and storm proof “at risk” roads. WA T-8, T-41, and A-9.
- Special attention for stabilization and restoration should be given to slides, skid roads, landings, and other areas resistant to natural re-vegetation. WA A-9.
- Review existing OHV allocations in the 1995 RMP ROD for consistency with management objectives for the area. Obtain map of wetland locations in the watershed to better delineate OHV-limited areas. Consider plan amendment to close section 9 to OHVs, due to Phytophthora and rare plants. Do not allow OHV use in areas with healthy Port-Orford Cedar. WA 132.
- Strive towards restoring spawning of riffle substrate embeddedness to 30% or less and sand content to 20% or less by reduction of fine sediment load and addition of structure. WA 135.
- There is a serious lack of knowledge about the distribution and abundance of species of concern in the watershed. “Except for a handful of the ESA listed species, almost nothing is known about wildlife distribution and abundance in this watershed.” WA T-9.
- Most species of concern are located in old-growth, interior mature forest, snags, riparian, and large down wood. WA T-10.

BLM Response: The project’s purpose and need statement defines the scope of proposed activities, not all recommendations in the watershed analyses would be considered under this project. The East West Junction Project EA analyzed the historic and current condition, and potential risks to stand conditions and fire hazard, and of landslides, noxious weeds, POC root disease, soil stability, and fragile soils (see Chapter 3, Appendix 2, and Appendix 9). There are no designated wetlands in proposed units.

One of the desired post treatment conditions, that directed the development of the silvicultural prescription, is to enhance species diversity on both the landscape and stand level scale which include increasing the proportion of ponderosa pine, oak species (excluding tanoak), and early seral shrubs while reducing tanoak and Douglas-fir in both Alternatives (Appendix 4 – Silviculture Prescription). For a full description of the current condition and anticipated outcomes for stands after treatment for each action alternative in comparison to the No Action Alternative, see Section 3.4.1 (Vegetation Resources).

The East Fork Illinois Watershed Analysis (2000) was completed for all federally managed land (U.S. Forest Service and BLM) in this fifth-field watershed. The commenter notes p. T-6 of the East Fork Illinois Watershed Analysis (2000), regarding increasing old growth forest habitat on non-serpentine sites in the watershed. The text is

on p. T-7 and makes this recommendation for U.S. Forest Service managed land, “*On National Forest land* [U.S. Forest Service]: Increase the overall abundance of old growth forest habitat on non-serpentine sties in the watershed, especially trees > 45” dbh.” On BLM managed land the recommendation for late successional, mature, and old-growth states “Maintaining mature forest in Matrix is consistent with timber management objectives, but maintaining old growth habitat is not; therefore, restoration of old growth habitat is less likely in Matrix”. However, the prescription for the East West Junction Project would retain “trees generally older than 150 years including legacy trees, oaks, and hardwoods”, EA, p.8.

See Appendix 4 (Silviculture Prescription) for prescribed fire prescriptions in pine/oak savannas.

Regarding the request to stop recreational vehicle trespass in the French Flat ACEC, a management plan for the French Flat ACEC is being drafted by the Grants Pass Resource Area. Delineation of OHV-limited areas and prevention/enforcement of OHV trespass is beyond the scope of the East West Junction Project. The project’s purpose and need is not to develop an OHV/ORV plan for existing or future unauthorized use nor to delineate OHV-limited areas. BLM law enforcement is informed when vehicle trespass in the ACEC is reported by the public or employees. In February 2012 Secretary of Interior, Ken Salazar, announced the BLM will undertake Resource Management Plan (RMP) revisions for the management of BLM-administered lands in western Oregon. Rather than pursuing a RMP amendment to close T40S-R8W-Section 9 to OHVs, the upcoming RMP revisions will reconsider the transportation management plans of the existing RMPs.

Regarding road decommissioning, the purpose and need identified for East West Junction Project is “to implement forest management activities that would contribute to continuous timber production while restoring dry and moist forest characteristics and reducing wildfire danger”. Decommissioning of roads beyond the 0.9 mile of temporary route construction and reconstruction would be augmentation of timber receipts under a timber sale. Without specific statutory authority, the bartering of Government property (the value of timber) for services is prohibited because it would result in an unlawful augmentation of an Agency’s appropriations. Timber sale contract requirements must enable the harvest of timber and the associated mitigation must be directly related to the harvest of timber related to the individual project.

Many of the roads in the Sucker Creek and West and East Forks Watersheds of the Illinois Valley are not public roads and are under reciprocal right-of-way agreements with private landowners due to the checkerboard ownership pattern. The BLM does not have the option to close these roads due to the reciprocal right-of-way agreements.

Regarding the request to storm proofing “as risk” roads, all BLM roads used for this project would have proper road maintenance completed to ensure proper drainage prior to project implementation in that area. See Section 2.2.1 for further details.

The East West Junction Project is not an aquatic habitat restoration project, but rather a forest management project that would contribute to continuous timber production while restoring dry and moist forest characteristics through the application of silvicultural prescriptions. The project would be consistent with the recommendation to reduce fine sediment load as noted from the West Fork Illinois Watershed Analysis (2003). See Appendix 2: Water Quality (Surface and Ground) – Sediment/Turbidity and Section 3.5.2.2 for the effects on Water Resources and Erosion. In summary, “[a]ll timber harvest treatments, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including associated decommissioning), road renovation, and fuels and understory thinning treatments would not result in measurable inputs of sediment to streams due to project design....A small amount of localized sediment may enter streams during hauling and road maintenance where roads are hydrologically connected. These actions would result in measurable increases in sediment for no more than 25 ft downstream of the impact point. Sediment from hauling and maintenance actions would be within the State of Oregon water quality standard of no more than a 10% increase in turbidity”, (EA, p.149 & 150).

There is a subsequent statement regarding the knowledge of species of concern in the East Fork Illinois Watershed Analysis (2000), “Although neither the appropriate habitat elements nor the distribution and abundance is known for all the species of concern, a considerable amount is known”. See Appendix 2 and Chapter 3 for the effects analysis for botany and wildlife species. All required surveys for managed botanical and wildlife species have been completed for the East West Junction Project. As stated above from the commenter, the watershed analysis recognizes most species of concern use old-growth, interior mature forest, snags, riparian areas, and large down wood. The East West Junction Project is consistent with “[m]aintaining an appropriate distribution and abundance of these habitats as part of the purpose of the NW Forest Plan”, see Chapter 2 of the EA, including Project Design Features, Chapter 3, and Appendix 2.

Cumulative Effects

Klamath-Siskiyou Wildlands Center

Comment 14: Requests a thorough cumulative impacts analysis of the proposed logging and road construction in combination with other federal logging and private logging activities. Projects such as Althouse Sucker, East Illinois, and Forest Service projects such as East I.V. Young Managed Stands, and numerous notice level and plan of operation mining activities in the Planning Area have the potential to cumulatively effect the area’s watersheds, wildlife, and fisheries.

BLM Response: See Chapter 3 of each affected resource for the cumulative effects analysis of foreseeable projects (federal and non-federal) in the East West Junction Project Planning Area. The Planning Area boundary is used since it includes the watersheds where activities are planned and affects are not anticipated to be measurable outside this area from this project.

The geology and minerals shop of the Medford District are the information holders of mineral activity on the District. The mining baseline information is present in the “Affected Environment” sections of Chapter 3 for each of the affected resources. Since the East West Junction Project would have no effect on fisheries, there would be no incremental effect of this project on fish beyond the effects of the ongoing mining activities occurring in the Planning Area. The EA analyzed the effects to threatened and endangered, Survey and Manage, Bureau Sensitive species. Any effects to threatened and endangered wildlife species whether from East West Junction project or mining activities on federal land have been consulted with the U.S. Fish and Wildlife Service.

Comment 15: The commenter’s interpretation of CEQ’s guidance on cumulative effects analysis that it would not meet the substantive requirements of NEPA as required under 9th Circuit case law. The commenter believes there are significant cumulative impacts on late-successional ecosystems from past road construction and federal and private logging, fire suppression, mining, and ORV use combined with the proposal to log large trees in this project and the concrete and foreseeable proposal to eliminate the late successional and riparian reserves from the Northwest Forest Plan (via the WOPR) which may require the completion of an EIS for this proposed timber sale. Requests the BLM quantify the extent and impacts of ongoing and proposed mining impacts on terrestrial, biological, hydrological and fisheries values. Disclose that current mining activities are removing streamside vegetation, impacting rare plant communities, harming fish habitat, altering stream flows, and preventing BLM in-stream habitat restoration efforts.

BLM Response: Chapter 3 of the EA includes the cumulative effects analysis of affected resources. Under 43 CFR § 46.115 it states that when considering cumulative effects analysis, it must analyze the effects in accordance with relevant guidance issued by the Council on Environmental Quality (CEQ). As the CEQ, in guidance issued on June 24, 2005, points out, the “environmental analysis required under NEPA is forward-looking,” and review of past actions is required only “to the extent that this review informs agency decision-making regarding the proposed action.” Use of information on the effects on past action may be useful in two ways according to the CEQ guidance. One is for consideration of the action alternatives’ cumulative effects, and secondly as a basis for identifying the action alternatives’ direct and indirect effects.

The CEQ stated in this guidance that “[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.” This is because a description of the current state of the environment inherently includes the effects of past actions. The CEQ guidance specifies that the “CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions.” Our information on the current environmental condition as described in the EA is more comprehensive and more accurate for establishing a useful starting point for a cumulative effects analysis, than attempting to establish such a starting point by adding up the described effects of individual past actions to some environmental baseline condition in the past that, unlike current conditions, can no longer be verified by direct examination.

The second area in which the CEQ guidance states that information on past actions may be useful is in “illuminating or predicting the direct and indirect effects of a proposed action.” The usefulness of such information is limited by the fact that it is anecdotal only, and extrapolation of data from such singular experiences is not generally accepted as a reliable predictor of effects.

The environmental effects of current and foreseeable activities that would occur outside the East West Junction Project but in the Planning Area boundary are included in each of the affected resources’ environmental consequences sections (Chapter 3) under the No Action Alternative (Alt.1) and cumulative effects for each of the action alternatives.

The East West Junction Project was developed to be consistent with the 1995 and 2008 Medford District RMP. The most restrictive land use allocations are applied for management guidance, such as Deferred Timber Management Area (2008 RMP), Matrix and Riparian Reserves (1995 RMP), and eligible segments of Wild and Scenic Rivers (2008 RMP). There are no Late Successional Reserves present in the East West Junction Project Planning Area. However, the project would have followed the management guidelines of the Northwest Forest Plan for Late Successional Reserves had there been any East West Junction Project activities proposed in this land use allocation.

See response to Comment 14 regarding cumulative effects from mining activities.

Late Successional Reserves and Connectivity

Klamath-Siskiyou Wildlands Center

Comment 16: Requests a description of the current condition of the nearby Late Successional Reserves (LSRs) and disclose whether they are functioning. Describe the status of connectivity in the Matrix land use allocation.

BLM Response: The East West Junction Project does not propose any activities in Late Successional Reserves. The action alternatives would maintain the current connectivity in Matrix lands within the Project Area. See Section 3.6.2.5 and 3.7.2.5 for further information.

Plant and Animal Surveys

Klamath-Siskiyou Wildlands Center and Don Smith

Comment 17: Has the BLM conducted “rare plant, animal and RA-32 habitat surveys” in the project area? Requests BLM to complete such surveys prior to issuance of the NEPA document so the public can make timely, informed, and site-specific comments on the actual layout and potential impacts of proposed BLM activities.

BLM Response: The East West Junction Project is consistent with the Survey and Manage Record of Decision (2001) for survey requirements for botanical and wildlife species. Recovery Action 32 (RA-32) habitat surveys are completed. See Project Design Features (Section 2.3.4.5 and 2.3.4.7) that would be applied to these sites. Threatened and Endangered Species surveys were completed for botany and wildlife for this project as well. No timber extraction cutting would occur in Recovery Action 32 (RA 32) habitat.

Coarse Woody Debris

Klamath-Siskiyou Wildlands Center

Comment 18: Requests retention of coarse woody material at densities that would support the natural range of biota for the site. States “snags and down logs build soil and provide habitat for a variety of organisms critical to ecosystem recovery after natural disturbance. The adaptive management direction of the NFP encourages site-specific research and planning for CWM retention.”

“Down logs will reflect the species mix of the original stand. Models will be developed for groups of plant associations and stand types that can be used as a baseline for developing prescriptions... In areas of partial harvest, [retention of CWM] can be modified to reflect the timing of stand development cycles...” (RMP p. 47).

BLM Response: Decadent woody material would be retained as either snags or down wood and meet 1995 RMP guidelines. Residual trees, snags, and down wood retained in the thinned stands would provide some cover for prey species over time, and would help minimize harvest impacts to some prey species, such as dusky-footed woodrats.

Soils

Klamath-Siskiyou Wildlands Center

Comment 19: Requests the following:

- BLM to address soil chemistry, productivity, hydrology, and biological integrity on a site-specific (i.e., unit-by-unit) basis in the EA.
- Map with soil types and composites (from field reconnaissance data) in the EA.
- Qualified, journey-level soil scientist on the ID Team.
- Actions and mitigation designed after you have collected field reconnaissance data on soils at every site proposed for action.

Concerned about potential for action to increase the risk of sedimentation, peak flows, and soil compaction due ground-based disturbance from tractor yarding.

BLM Response: See Chapter 3 for unit specific analysis of productivity, hydrology, and affected managed species as well as mapping data used to assist the decision maker in

making an informed decision. A discussion of soil chemistry would not provide the decision maker further information for making an informed decision.

Field surveys were used to identify and defer all areas that have the potential to result in chronic erosion or landsliding. BMPs and PDFs were then identified and incorporated into the East West Junction Project to address the remaining general management concerns identified for each soil type in these sub-watersheds. Road maintenance and timber haul on roads proposed under the action alternatives would result in localized stream sedimentation in areas where accelerated erosion would not remain onsite.

Following incorporation of these BMPs and PDFs, offsite erosion and stream sedimentation would only occur during hauling and maintenance activities on roads that are hydrologically connected to streams. These actions are discussed below. All other temporary route construction, road use, temporary route construction and decommissioning, skid trail construction and decommissioning, and yarding operations proposed under this project, would be hydrologically disconnected using PDFs and BMPs ensuring the protection of all water resources.

Sediment would not be expected to enter Southern Oregon/Northern California Coast coho salmon critical habitat (CCH) as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into CCH.

Road Construction and Road Use

Klamath-Siskiyou Wildlands Center

Comment 20: Requests reduction of the existing road network, since the East West Junction Project proposes temporary road (route) construction. States watershed analyses for the affects watersheds recommend reducing the road density via road decommissioning.

Requests disclosure and analysis of the impacts of road construction on terrestrial and hydrological forest resource and states these impacts would be to the level of significance.

Please note, yet more road construction in these important salmon-bearing watersheds is certain to engender opposition to the proposed project.

BLM Response: See Section 3.5.2.2: Water Resources and Erosion (Roads: Temporary Route Construction and Reconstruction, and Road Renovation/Improvement), Section 3.6.2.2: Northern Spotted Owl (Effects from Temporary Route Construction), and Appendix 2: Fisher for the effects discussion on affected terrestrial and hydrological forest resources regarding temporary route construction. The 0.4 miles of temporary route construction and 0.5 miles of existing route reconstruction to access proposed units,

would not result in an increase in road density in this watershed because they would all be decommissioned following use.

All temporary routes proposed for construction and reconstruction have been reviewed in the field. This road work would range from 0.05-0.20 miles per temporary spur for each of these units. There are 4 temporary spur routes proposed for construction and 5 temporary spur routes proposed for re-construction for the East West Junction Project. These routes are proposed on ridgelines or valley floors, except the temporary spur proposed into unit 29-1. The proposed roads on the valley floor are not hydrologically connected to any streams or wet areas and have negligible slopes and as such would not transport water or sediment to a stream or wet areas, or result in long-term productivity loss. The proposed construction and reconstruction would not cross dry draws or streams, except one for reconstruction that would cross the top of a dry draw (into unit 29-4). Field surveys have determined that the temp route reconstruction would be approximately 200 ft above the ephemeral channel, and the channel stays ephemeral on BLM managed land. The temp route reconstruction is also 1,500 ft above the ephemeral channel's intersection with an irrigation ditch, so the temp route would not hydrologically connected to any intermittent or perennial streams.

These roads would result in a short term increase in onsite erosion, but would not result in any change to watershed hydrology or water quality. As such, Southern Oregon/Northern California Coast Coho Salmon though present in the East and West Forks of the Illinois River and Sucker Creek HUC 5 Watersheds would not be affected by this project. See Appendices 2 and 5 for further details.

These impacts are well below the level of significance.

McMillen

Comment 21: The commenter is concerned the BLM plans to haul or use a privately owned road without an easement.

BLM Response: The BLM will not haul or use any privately owned roads without an easement in place prior to project implementation, see Section 1.6 of the EA. The area of interest to the McMillens would be hauled on BLM rd# 39-8-29, not BLM rd#39-8-31.

Aquatic Conservation System

Klamath-Siskiyou Wildlands Center

Comment 22: States threatened and sensitive fish species exist in and downstream of the Project Area. Requests cumulative analysis of ongoing and proposed mining activities in the Planning Area and from the existing logging road network and the commenter states believes these impacts to be to the level of significance.

BLM Response: See response to comment 14. For further details see Appendix 2: Threatened or Endangered Fish Species or Habitat and Appendix 5 for the Aquatic Conservation Strategy Analysis.

Water Supply

McMillen

Comment 23: The commenter is concerned that a perennial stream that runs through a proposed unit and private residents' land would be affected in such a way as to harm their water supply and the watershed.

BLM Response: There is no Riparian Thinning for the two units that are adjacent to the McMillen's property. These units are proposed for Density Management/Hazardous Fuel Reduction. No timber extraction would occur in the Northwest Forest Plan Riparian Reserve for these units. The Riparian Reserve for the watersheds in the East West Junction Project is 185 ft on both sides of non-fish bearing streams, at bankfull width (by slope distance) and 370 ft on both sides of fish-bearing streams, at bankfull width (by slope distance). See Appendix 2: Water Resources (not including water quality for the effects analysis regarding water supply for water rights. "... the action alternatives would not have canopy gaps that would be large enough to result in a measurable effect on watershed hydrology, including no increase in peak flows, low flows, base flows, runoff timing, subsurface flow, or water storage. Since watershed hydrology would not be affected this project would not affect municipal or domestic water use or water rights."

Clean Water Act

Klamath-Siskiyou Wildlands Center

Comment 24: Commenter believes any additional sediment delivery would be cumulative and threaten to violate the Clean Water Act (CWA) due to past logging and road construction in the East and West Fork Illinois watershed. States increased surface erosion may deliver sediment to streams through degraded riparian areas and increased peak flows may trigger new erosion cycles and, at a minimum, increase stream turbidity. Commenter attached the 9th Circuit Court of Appeal (NEDC ruling) which the commenter interprets is indicating that sediment from logging road culverts and ditches qualifies as point source pollution in the CWA.

BLM Response: The BLM will comply with the Clean Water Act to the extent required. Through the use of Best Management Practices (BMPs) and Project Design Features (PDFs), the East West Junction Project would minimize sediment delivery to streams to the maximum extent practicable. See Appendix 2: Water Quality, Section 3.5.2.2, and response to comment 19 & 20 for further details.

Noxious Weeds and Herbicide Use

Gordon Lyford

Comment 25: Concerned about the spread of the noxious weeds *Alyssum murale* and *Alyssum corsicum* near the Illinois Valley airport that have been found on nearby BLM land.

BLM Response: There have been no observations of *Alyssum murale* and *Alyssum corsicum* within activity units. See Section 2.3.4.6 for the Project Design Features to be applied to regarding reducing the spread of noxious weeds, including the cleaning and inspection of equipment. The Medford District RMP states that the objectives for noxious weeds are to “contain and/or reduce noxious weed infestations on BLM-administered land.(p. 92),” and “survey BLM-administered land for noxious weed infestations...(p. 93).” These RMP directions for weed management are intended to be met at a landscape level. In an effort to continue to contain and/or reduce noxious weeds on federal land, the BLM proposed to treat known weed populations within the Grants Pass Resource Area. In 2011, over 4,600 acres of BLM land in the Grants Pass RA were treated for noxious weeds, including roadsides and activity units within the East West Junction planning area. The same areas in East West Junction are scheduled for subsequent treatment in 2012.

There are three main reasons why potential weed establishment is not expected to result in a detectable effect to overall ecosystem health. First, surveys indicate that a very small percentage, less than 1% of acreage within the activity units, are affected by noxious weeds. Second, these sites located in units proposed for treatment have been reported during predisturbance surveys, and have received weed treatment under Medford District’s *Integrated Weed Management Plan and Environmental Assessment OR-110-98-14*.

McMillen

Comment 26: The commenter’s understanding is the BLM routinely uses herbicides and/or pesticides as a part of what we call restoration treatments. The commenter is “opposed to the spraying of any toxic chemicals or other materials that enter the soil or the watershed”. The commenter asks if there is any intent to spray herbicides or pesticides during any phase of the proposed operation.

BLM Response: As stated in Chapter 1 of the Revised EA (Section 1.5), the East West Junction Project EA tiers to the analysis completed in the *Medford District Integrated Weed Management Plan Environmental Assessment (1998)*, tiered to the *Northwest Area Noxious Weed Control Program (EIS, 1985)*.

In 2011, over 4,600 acres of BLM land in the Grants Pass RA were treated for noxious weeds, including roadsides and activity units within the East West Junction Project Planning Area. The same areas in East West Junction Project are scheduled for subsequent treatment in 2012. Roadside noxious weed populations would be treated

prior to project activity with subsequent treatments as necessary and as funding is available.

To retain the function of critical habitat primary constituent elements for *Lomatium cookii*, all noxious weeds observed during monitoring would be treated with methods consistent with existing weed treatment protocol on Medford District to prevent the introduction of noxious weeds. This would occur in units 5-9, 7S3, 7S-6, 7S6a, 9-9, and BLM rd # 38-8-9.

Application of herbicides would occur only were noxious weed population exists and is applied site specifically using backpack sprayer to apply herbicide and are not broadcast sprayed. The BLM would not apply any pesticides in the East West Junction Project Area. Pesticides are not used on the Medford District BLM.

The herbicide that has been used and would be used is glyphosate. It is the least toxic and most stable of the herbicide types and breaks down the quickest in the environment. It readily bonds to soil particles, and once bound becomes inactive. Microorganisms found within all soils quickly degrade glyphosate herbicides giving it a half life of 21-60 days. Glyphosate is so strongly absorbed into the soil that crops can be seeded or transplanted immediately into treated areas. Because these products quickly bind to soil particles, transport of these herbicides into subsurface water that might be used by living organisms or for irrigation would not be expected.

Botanical Values

Klamath-Siskiyou Wildlands Center

Comment 27: Commenter notes the West Fork Illinois River Watershed is one of the most botanically rich watersheds within the Medford District (as stated in the West Fork Illinois Watershed Analysis) due to the juxtaposition of serpentine to forested habitats throughout the watershed. The majority of the watershed falls in the Resource Management Plan designated Botanical Emphasis Area. The majority of the special status species found are endemic to the serpentine soils of the Klamath-Siskiyou ecoregion. This ecoregion was designated as an area of global botanic significance by the World Conservation Union (DellaSela et al. 1999). Protection of the serpentine habitats in this watershed is of high priority because of the rarity of most of the Special Status species.

The BLM needs to acknowledge, and protect the outstanding botanical values of this project area from the cumulative impacts of mining, OHV damage and fire suppression.

BLM Response: Appendix 2 acknowledges the Illinois Valley Botanical Emphasis Area due to the preponderance of Special Status plants. The RMP allows for actions in the botanical emphasis area including timber harvest as long as they do not conflict with the habitat needs for those plants. The East West Junction Project units were surveyed for special status species during the spring and summer of 2009. See Appendix 2:

“Special Status Species, and Survey and Manage (not including T/E): Plant Species/Habitat” for more information on individual species.

PDFs (see Section 2.3.4.5 and 2.3.4.6 of the EA) would buffer Special Status plants and reduce the spread of weeds from proposed activities; therefore, the values for which the emphasis area was designated would not be degraded by the East West Junction Project.

Forest Health and Management

Klamath-Siskiyou Wildlands Center

Comment 28: The commenter is concerned that ¼ to 1 acre gap openings would open up the stand to a considerable degree with the potential to detrimentally affect forest health. The BLM should cite documentation in which past application of Variable Density Thinning was used elsewhere along with an assessment of the results to assist the public in determining the effectiveness and potential consequences of such practices. The commenter requests the EA to state the percent of volume of trees cut which are commercial vs. strictly thinning, and whether logging of large trees conflicts with one of the stated purposes and needs for the project, namely to "utilize ecological forestry principles and plant communities to restore characteristic structure and composition, ecological conditions, and ecosystem functions." The commenter further requests the EA address these concerns by indicating how removal of large trees would benefit the health of the area vs. increasing risk of wildfire. The commenter is concerned that the amount of harvesting proposed would cause excess heating of the landmass, which they believe will not increase resistance to drought but would exacerbate the dry forest instead of restoring it.

BLM Response: The dry and moist forest prescriptions for the East West Junction Project are similar to Commercial Thinning treatments with a component of Modified Group Selection as analyzed in the 1995 Medford District RMP. These prescriptions apply what the commenter has been requesting in previous projects, variable thinning. The proposed prescriptions follow the guidelines of Southern and Northern General Forest Management Areas as described in the 1995 RMP.

See Appendix 2: Fire Hazard and Fire Risk, and Section 3.2 for the potential impacts on fire hazard from the proposed project activities. Fire hazard would be reduced in Variable Density Thinning, Commercial Thinning, Density Management, and Hazardous Fuel Reduction units. The Variable Retention Harvest unit would experience an increased fire hazard for 5 to 20 years, depending on the percent canopy closure retained slash treatment.

Landing, machine, and hand piles may present a short term increase in fire hazard because they have the potential to produce flame lengths that exceed the fire behavior threshold to the extent of increased spotting distance, until the piles are treated in 1-2 years.

Variable Density Thinning would aim to reduce stand basal area to remove mostly small and medium sized trees. Treatments would reduce ladder fuels and the risk to older trees from wildfire and competition, while favoring more fire and drought tolerant tree species. Thinning treatments would reduce torching and crowning potential by increasing canopy base heights.

At the local level, the action alternatives for the East West Junction Project would meet Recovery Action #32, which is intended not to further exacerbate competitive interactions between spotted owls and barred, by retaining older and more complex multi-layered conifer forests.

Areas buffered (not treated) for Red Tree Voles (RTVs) would not be harvested, but may receive hazardous fuels treatments without understory burning. RTV buffers scattered throughout the Project Area would continue to provide foraging potential for dispersing spotted owls in the Project Area.

Oregon Wild

Comment 29: States “fuel treatments have a significant chance of making fire hazard worse instead of better by opening the canopy and making, stands hotter, drier, and windier, creating slash, and stimulating the growth of surface and ladder fuels”.

BLM Response: See Section 2.2.1 for a complete description of the proposed Hazardous Fuel Reduction (HFR) treatments, which would thin the stand understory on vegetation up to 8 inches in diameter, conifers would be spaced at approximately 18 x 18 ft, and hardwood spacing would be up to 40 x 40 ft or narrower depending on hardwood size class to reduce the amount of surface and ladder fuels present.

Underburning in approximately 7-10 years or other follow-up treatments would reduce ladder fuel development. Since HFR would primarily retain the upper canopy, sunlight exposure to the forest floor would largely remain unchanged. Substantial openings of the upper canopy can encourage ladder fuel development. This project is not the final entry for treating hazardous fuels and the stand would be re-evaluated for future treatment.

Adjacent Landowner

Comment 30: Adjacent landowner was concerned about the amount of tanoak that grew after harvesting completed by the BLM in the year 2000.

BLM Response: See Appendix 4 for the silvicultural prescription for unit 9-12. Some tree planting is proposed after thinning this unit to initiate a conifer component suitable to the natural character of the plant community in places previously occupied by tanoak, and in nonstocked or poorly stocked areas (approximately 225 trees per acre or 14x14 spacing).

McMillen

Comment 31: Requests the purpose and need statement be clarified....what is “activity based fuel hazard through methods”, what are “other forest commodities”.

BLM Response: Activity fuel is slash created from timber and vegetative cutting. To reduce the full loading, activity slash within units may be machine or handpile/burned, chipped, or lopped and scattered based on a post-logging assessment of fuel loading. (Glossary section of the EA) and Section 2.3.2.4 for a full description of each of these slash treatment methods for this project.

The EA’s purpose and need statement includes the following, “Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability”. “Other forest commodities” is also described as biomass, which is slash wood or woody fiber by-products that result from forest and woodland restoration, thinning activities, and fuel treatments to be applied towards bio-energy use and/or products manufactured from material such as posts, poles, and firewood (Glossary section of the EA).

French Flat Area of Critical Environmental Concern (ACEC) and Off-Highway Vehicle Use

Klamath-Siskiyou Wildlands Center and Oregon Wild

Comment 32: The commenter notes the French Flat Area of Critical Environmental Concern (ACEC) is located within the East West Junction Project Planning Area boundary and the main impact to the ACEC is recreational vehicle/OHV use. Although the BLM officially closed the road into French Flat through the Federal Register in 1992 and gating and fencing has since been installed, trespass vehicle entry continues, leaving portions of the ACEC heavily damaged including as recently as May and June 2011. Requests the BLM to develop an effective plan to protect the endemic botanical values of the ACEC. Requests no additional road development under the East West Junction Project, as it will most likely provide more off road vehicle access.

BLM Response: A management plan for the French Flat ACEC is under development. Development of a management plan is outside the scope of the East West Junction Project’s purpose and need statement.

Siskiyou Project

Comment 33: The commenter requests the project to include the construction of effective barriers, gates and signs to eliminate unauthorized motorized vehicle entry to BLM lands and ACEC at this site and other motorized access routes along Airport Road and HWY 199, specifically BLM road #40-8-4. The commenter requests such barriers to be installed prior to the summer to prevent unwanted campers and motorized use that is likely spreading *Alyssum* sp. along motorized routes into the Rough and Ready ACEC

(personal comm. Gordon Lyford, Wendell Wood). The commenter requests cutting encroaching small Douglas fir trees and shrubs adjacent vigorous deciduous oaks and pines to benefit the ecological goals of the ACEC. The BLM needs to investigate a haul route via a unnumbered route further west on Airport Drive that accesses the BLM lands in section 9, which would avoid damage to sensitive plant and animal habitat adjacent the powerline road.

BLM Response: See response to Comment 13 regarding unauthorized vehicle use in the ACEC. See Appendix 4 for unit prescriptions adjacent to the Rough and Ready ACEC in Section 7, which are proposed for Hazardous Fuel Reduction. There would be no removal of materials for haul. Access and treatment of these unit would be consistent with consultation completed with the U.S. Fish and Wildlife Service regarding *Lomatium cookii* (See Sections 2.3.4.5 and 3.8 and Chapter 5).

Port-Orford cedar

Klamath-Siskiyou Wildlands Center

Comment 34: Believes the Final Supplemental EIS for Management of Port-Orford-Cedar as the Bureau of Land Management Proposed Resource Management Plan Amendment is inadequate to address significant POC at the site-specific level. Requests the EA address POC with site-specific information and analysis. Believes the current risk key analysis does not provide adequate quantitative or qualitative information regarding POC to the public or the decision maker.

BLM Response: See response to Comment 1 (last paragraph) regarding POC analysis.

Economics

Don Smith

Comment 35: Requests a cost/benefit analysis to determine whether the receipts from the sale of commercial timber exceeds that of the administrative costs, as implied by the stated need to support government funding.

BLM Response: As there are constant fluctuations in timber market prices, a detailed market analysis would not be useful in the EA. An economic analysis is also not relevant to decision making while a relative economic comparison between alternatives is relevant to making a decision. Economic viability of a timber sale is assessed during project layout, marking and cruising, and includes factors such as logging methods feasibility, hauling distances and a myriad of other factors relevant to a viable timber sale, factors that are not necessary for an informed environmental analysis of project effects.

McMillen

Comment 36: Questions the financial viability of “producing wood for mills” in a “down timber market that shows no signs of recovery”. “Who gets the jobs that you intend to provide and for how long”? How would the project relate to “community stability”?

BLM Response: See response to comment 35 regarding the financial viability of the project. Regarding who would get the jobs for implementing the project, timbers sales are bid upon based on the fair market value. Bidders are licensed and bonded and the highest of these bidders is awarded the contract. For service contracts (stewardship projects) each contract goes through either the Medford District or Oregon State Office contracting shops to analyze proposals on contracts. Each contractor that submitted a proposal would be evaluated on their proposals based on such criteria as service, capability, and price. Contracts on timber sales can be active for 4 years, and may be extended under certain circumstances. In some communities, one mill may employ more people compared to any other individual business in the nearby area. Job opportunities contribute to community’s economic stability.

Gordon Lyford

Comment 37: Requests sustained yield be defined and described, including the annual average sustained yields expressed in millions of board feet (mbf) per acres for each timber species. The commenter further requests three tables of information showing: (1) by 50 year age class groups of each tree species the average number of stems per acre for natural conditions, present conditions, and desired future conditions for each unit and treatment; (2) how many mbf each timber species stem contains by 50 year age class groups; and (3) how many stems per acre would be logged and how many would remain for each timber species by 50 year age class groups in each unit for each treatment.

The commenter believes this information will allow the public to better understand the magnitude of each proposed treatment, and believes this would reveal whether or not the BLM plans are truly sustainable or not. The commenter states most people want to know how many large trees would be cut and how many would remain following logging. The commenter states the EA should clearly describe the desired future conditions of the BLM lands using such tables, and drawings or diagrams.

BLM Response: A letter was sent on January 12, 2012 to the commenter and others interested in this topic at the East West Junction November field trip, which provided silvicultural sample stand data for this project. Stand information such as diameters and species were collected on a representative of sample of units. This data was then entered into the ORGANON Growth and Yield Modeling System and produced the stand table information. It was explained that growth and yield models, including ORGANON, are calibrated using assumptions about growth and yield known during the construction of the site index equations within the model (Hann and Scrivani 1987 site index equations for southwest Oregon. The images were created derived from the SVS (Stand

Visualization System) Program which generates images depicting stand conditions represented from ORGANON.

Siskiyou Project

Management Plans

Comment 38: Requests the EA to note which resource management plans the document is using and why.

BLM Response: See Section 1.5, the project was developed to be consistent with the 1995 and 2008 Medford District RMP. The most restrictive land use allocations are applied for management guidance, such as Deferred Timber Management Area (2008 RMP), Matrix and Riparian Reserves (1995 RMP), eligible segments of Wild and Scenic Rivers (2008 RMP).

EIS Determination

McMillen

Comment 39: Do “you alone get to decide ‘whether or not to prepare an EIS’”?

BLM Response: Per the BLM National Environmental Policy Act Handbook (H-1790-1) (2008), Section 7.2, “Actions whose effects are expected to be significant and are not fully covered in an existing EIS must be analyzed in a new or supplemental EIS (516 DM 11.8(A)).

The following actions normally require preparation of an EIS:

- (1) Approval of Resource Management Plans.
- (2) Proposals for Wild and Scenic Rivers and National Historic Scenic Trails.
- (3) Approval of regional coal lease sales in a coal production region.
- (4) Decision to issue a coal preference right lease.
- (5) Approval of applications to the BLM for major actions in the following categories:
 - (a) Sites for steam-electric power plants, petroleum refineries, synfuel plants, and industrial structures
 - (b) Rights-of-way for major reservoirs, canals, pipelines, transmission lines, highways and railroads
 - (6) Approval of operations that would result in liberation of radioactive tracer materials or nuclear stimulation
 - (7) Approval of any mining operation where the area to be mined, including any area of disturbance, over the life the mining plan is 640 acres or larger in size.

See the Finding of No Significant Impact at the beginning of the EA. The East West Junction Project action alternatives were reviewed and were determined to be not major

federal actions and would not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined in the Code of Federal Regulations (40 CFR 1508.27). Therefore, an environmental impact statement is not needed. This finding is based on context and intensity. Consultation with the State Historic Preservation Office, U.S. Fish and Wildlife Service, and local federally recognized Native American Tribes also determined the action alternatives would not violate any federal, state, or local law requirements for the protection of the environment (Criteria #10: intensity of significance). Had there been an affected of listed fish species or their habitat consultation with National Oceanic and Atmospheric Administration would have helped determine if there were any significant impacts on fish species.

Comment 40: AFRC is concerned about the economics of this sale. Requests as much larger wood as possible be harvested, while still meeting the objectives of the sale, to assist in the economic feasibility of logging the sale. States 4-8 mmbf/acre is difficult to log economically and requests some of the larger distressed dominants and co-dominants be removed.

BLM Response: Though the silvicultural prescription for East West Junction Project would retain “trees generally older than 150 years including legacy trees, oaks, and hardwoods”, EA, p.8. Some dominants and co-dominants may be removed to meet forest health objectives. See Appendix 4 for further details on the silvicultural prescription.

Comment 41: AFRC supports the need for road construction and maintenance for future fuel reduction treatments and the ability to respond to potential wildfires. Temporary routes can be removed or made inaccessible to vehicles after logging operations are complete.

BLM Response: Access construction for East West Junction Project would be limited to temporary route construction and reconstruction, both of which would decommissioned after harvesting and activity fuels are treated.

Comment 42: Request the BLM consider mechanical harvesting and pre-bunching of processed logs where possible (slopes less than 45%) on ground based, skyline, and helicopter units to make all phases of the timber sale more economical and to treat slash at the same time. Requests these units be identified in the Prospectus so potential purchasers can bid accordingly.

BLM Response: There is no helicopter logging proposed for the East West Junction Project. Mechanical harvesting was analyzed for all areas proposed for tractor yarding. See Chapter 2, Sections 2.3.2.2 and 2.3.2.3 for further details.

Comment 43: Comments suggests BLM consider winter harvesting on improved roads or allow for roads and spurs to be improved so winter harvesting can be accomplished. “...loggers need winter work and the mills generally need winter wood, this is a big bidding issue for a purchaser.”

BLM Response: Some logging operations and haul may occur during the winter months during dry conditions. See Chapter 2, Sections 2.3.2.2 and 2.3.2.3 to protect water quality.

Comment 44: “For fuel treatments, AFRC would like to see the BLM have some flexibility. Rather than specifying a specific method of accomplishing your resource objectives, you should instead identify the objectives you are trying to accomplish and any limitations to resource disturbance you require. The purchaser could then identify the method they would like to implement to meet the resource objectives given their particular employee/equipment mix. By doing this, the purchasers' can maximize their efficiencies' which will translate into higher bid rates and higher returns to the government. In the case of hand piling, the resource objective might be to reduce the amount of 1-20 hour fuels to XX tons per acre while not increasing soil compaction on more than XX percent of the unit by more than XX and not damaging more than XX% of the leave trees. The purchaser could then determine the most cost effective method to accomplish the resource objectives thereby maximizing the retained receipts that could be used for other restoration activities.”

BLM Response: See Chapter 2, Section 2.3.2.4 regarding the objectives and parameters for determining which type of treatment would be applied to differing levels of activity fuels, such as providing a discontinuous pattern of fuels across the forest floor and reducing activity fuels along roadsides.

APPENDIX 4 - SILVICULTURE PRESCRIPTION

East West Junction Project

Introduction

The Proposed Action (Alternative 2) of the East West Junction Project is Variable Density Thinning of 18 units (235 acres), Variable Retention Harvest of 1 unit (32 acres), Density Management/Hazardous Fuel Reduction of 19 units (325 acres), and Hazardous Fuel Reduction of 22 units (642 acres) within the Lower West Fork and Lower East Fork Illinois River sub-watersheds. Stands in this Planning Area can be classified as mixed conifer and generally fall into the following plant series: Douglas-fir, Tanoak, and Ponderosa Pine. The primary conifer species in the Project Area is Douglas-fir with lesser percentages, in decreasing order of sugar pine, ponderosa pine, incense cedar, and Jeffrey pine. Hardwood and shrub species include, but are not limited to the following in descending order: Pacific madrone, California black oak, tanoak, canyon live oak, Oregon white oak, manzanita, ceanothus spp., poison oak, and California hazel.

Land Use Allocation Objectives:

The action alternatives would occur within the Matrix and Riparian Reserve (RR) land use allocations under the Medford District's 1995 RMP, and occur within the Timber Management Area (TMA) and Riparian Management Area (RMA) land use allocations under the 2008 RMP. There is Deferred Timber Management Areas (DTMA) land use allocation (2008 Medford RMP) in the East West Junction Project Planning Area, but no timber extraction would occur in these areas under this project. There are some Hazardous Fuel Reduction units proposed in DTMA, which is an approved activity under the 2008 RMP.

Matrix Lands (1995):

- Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability.
- Provide connectivity between Late-Successional Reserves.
- Provide habitat for a variety of organisms associated with both late-successional and younger forests.
- Provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components such as down logs, snags, and large trees.
- Provide early-successional habitat.

Riparian Reserves (1995):

- Aquatic Conservation Strategy objectives (1995 RMP p. 22-23)

- Provide habitat for terrestrial species associated with late-successional forest habitat.
- Provide dispersal habitat for the northern spotted owl.
- Implement strategies to achieve the goals established in the BLM's Riparian Wetland Initiative for the 1990s.

Timber Management Area (2008):

- Manage forests to achieve continuous timber production that could be sustained through a balance of growth and harvest.
- Enhance the health, stability, growth, vigor, and economic value of forest stands.

Riparian Management Area (2008):

- Provide for conservation of special status fish and other special status aquatic species.
- Provide for riparian and aquatic conditions that supply stream channels with shade, sediment filtering, leaf litter and large wood, and streambank stability.
- Maintain and restore water quality.

Stands were defined using the forest operational inventory boundaries. Boundary changes were delineated on aerial photographs, and then transferred to GIS ArcMap when field review was complete. Field reviews consisted of defining stand layers, determining trees per acre for each layer, average stand basal area/acre, average age, age of each layer, plant series, plant association group, vegetation condition, and stand structure type. These were all considerations in establishing treatment proposals. Treatments were selected based on the need to reduce stocking/stand densities and meet a desired future condition.

For a full description of the current condition of stands in the East West Junction Project see Section 3.4.1 (Vegetation Resources).

Desired Condition

Future conditions rely on the implementation of the Medford District Resource Management Plan which envisions enhancing, restoring, or maintaining the ecological health of the environment while providing a sustainable production of natural resources. The East West Junction Project landscape objectives contribute to continuous timber production while maintaining or restoring healthy, functioning ecosystems, ecological processes and functions on both temporal and spatial scales.

Ecological processes such as disturbance regimes define the temporal scale whereas the ecological unit of the landscape or ecosystem defines the spatial scale. As noted earlier in the EA, the West Fork Illinois River Watershed Analysis (2003), the East Fork Illinois River Watershed Analysis (2000), and the Sucker Creek Watershed Analysis (2007) note at the landscape level there is less diversity, stands are more homogenous, and canopy closures have increased where specifically, ponderosa pine species has decreased in numbers while tanoak and Douglas-fir, conversely, have increased at the stand level and across the landscape.

A desired condition to enhance species diversity on both the landscape and stand level scale include increasing the proportion of ponderosa pine, oak species (excluding tanoak), and early seral shrubs while reducing tanoak and Douglas-fir in both Alternatives. Early seral vegetation resulted from more frequent historic fire disturbances that silvicultural manipulation aims to mimic. Disturbance regimes, such as fire served to thin forests and keep stand and landscape densities low which provided vigorous growing conditions of individual trees and maintained fire resiliency across the landscape. Thinning activities proposed in the East West Junction Project mimic the natural function of fires by thinning to reduce stand densities and contributing to a fire resilient landscape. Activities seek to provide a sustainable production of natural resources into the future.

Recommended Treatments

Alternative 2: Forest Restoration Strategy

The Forest Restoration Strategy applies the principles of ecological forestry to achieve healthy and sustainable natural systems. The strategy aims to restore, maintain, or enhance the compositional, structural, and functional ecological processes and components in the ecosystem across both spatial and temporal scales. The desired future condition is to maintain a sustainable system that is fire resilient and provides a sustainable production of natural resources.

- Composition: an increase in abundance of patches or skips and gaps across the landscape thereby improving ecological composition is a desired future condition.
- Structure: the configuration of patches defines the ecological structure. Restoring structural heterogeneity on the stand and landscape level is another desired condition.
- Function: how response and adaptation of an ecosystem to its natural life cycles and disturbance regime defines the ecological function. Restoring an ecosystem to its natural fire adapted environment is desired. A fire resilient landscape in a fire dependent ecosystem is a desired outcome in the East West Junction Project.

The objectives for harvest are as follows: 1) Utilize ecological forestry principles and plant communities to restore characteristic structure and composition, ecological conditions, and ecosystem functions; 2) Reduce stand density to increase long term tree growth, quality, and vigor of the remaining trees and increase resistance of landscape to fire, drought, and insects; 3) Create diversified stand structure (height, age, and diameter classes) to enhance structural complexity and composition which is the result of variability. The Medford District Record of Decision and Resource Management Plan (1994) specifies that forests be managed toward a variety of structures, stands containing trees of varying age and size, and stands with an assortment of canopy configurations. Over time, manage for a balance of seral stages. This is what this alternative is designed to do.

Variable Density Thinning

Silvicultural actions under this prescription are based on Plant Series defined by Plant Association Groups during field surveys. Treatments would leave a variable density of trees after incorporating skips, gaps, and thinnings.

Douglas-fir Series

Units 7S-8, 8-2, 20-1, 20-1A, 21-6, 29-1, 29-2, 29-4, 29-8, 29-11, 29-12B, 29-13, 29-15, 29-16, 29-17, and 34-2

These stands (204 acres) are relatively dry composed of the following Plant Association Groups: PSME-QUCH2/RHDI6, PSME-PIPO/RHDI6, and PSME-QUKE/RHDI6. These associations are cool and dry. Douglas fir is the predominant conifer species with ponderosa pine, sugar pine, and incense cedar often present. These species can be found in all stand layers although the latter three are far less frequent in the middle layer. White fir appears in lesser amounts and is confined entirely to the understory. Some stands are bordering the Pine Series, particularly in Section 20 and 29. Whiteleaf Manzanita and Oregon white oak can be found in these and there is large ponderosa pine mortality evident as well as Douglas-fir mortality widespread through these stands. Large Douglas-fir tends to grow into these sites under optimal conditions for rapid proliferation. However, the sites cannot sustain the moisture and resource demands that large Douglas-fir require and they subsequently die off.

The Douglas-fir Series comprise 56% of surveyed forestland in the Project Area. In acreage PSME-QUKE/RHDI6 plant association group is the largest represented plant association in the Project Area at 35%. According to Atzet and Wheeler (1984) this Association is the warmest of the Douglas-fir dry associations and also one of the lowest in elevation. Primary species in this group are Douglas-fir, sugar pine, ponderosa pine, California black oak, pacific madrone, and poison oak. Moisture is the most limiting growth factor and the association is characterized as dry and hot. Surveyed stands show the Douglas-fir Series with 74% in understory reinitiation and 26% in stem exclusion. These sites are classified as Poles, Mid, or Mature vegetation condition classes. Units in Section 20, 29, and Unit 7S-8 are the driest in the Planning Area.

Tanoak Series

Units 3-3 and 5-9

These stands (31 acres) are prevalent in warm, wet, uniform climates indicative of tanoak sites (Atzet and Wheeler, 1984). Tanoak requires moister soils than most associated hardwoods and germinants establish readily in shade (Fryer, 2008). Furthermore, studies found that seedling establishment was limited on open, disturbed sites due to acorn predation (McDonald et al., 1987; Tappeiner et al., 1986), however existing sprouts would increase in growth with additional light (Fryer, 2008). Because of their higher productivity these sites can also sustain large diameter trees for longer periods of time than stands in the Douglas-fir Series.

The Tanoak range is limited to southwest Oregon and northwest California. Frost, drought, and fire limit its survival and ability to compete (USDA 1996a). In the southern end of the Tanoak series range, Atzet et al. (USDA 1996a) suggest checking the Key to Tanoak Associations in Northern California by Thomas Jimerson in Region Five (USDA 1996b). This field guide was referenced when surveying Tanoak sites in Townships 40 and 41 South to determine the best fit for identifying a plant association group within the Tanoak Series. The Tanoak Series comprise 27% of the Project Area. Evergreen huckleberry is found in Unit #3-3 indicating that this unit is associated with warm, wet plant associations. This unit is in the LIDE2/BENE plant association group whereas 5-9 is a LIDE2/COCOC plant association.

Variable Retention Harvest

Unit 9-12

The stand is in a Plant Association Group of LIDE2/COCOC and is determined to be a wet site. According to Jerry Franklin (2011) the aim to restore ecological systems allowed land managers the flexibility to make appropriate calls to retain density criteria. The unit was thinned in 1997 to about 140 ft² BA/AC and subsequently treated in the understory.

One red tree vole buffer, 11 acres in size, bisects the unit and provides for the majority of the 20% goal retention. This buffer in fact exceeds the 20% retention aim by leaving 38% of the stand forest floor untouched. Additional retention would occur as individual tree retention of strong dominants, any old growth as well as snags and small clusters of trees and other patches along the northern BLM property line, and clusters of old trees. Retention patches currently constitute 38% of the stand or 12 acres of retention.

Activity fuels would be treated. Precommercial thinning is planned to space conifers and hardwoods to reallocate growth to desirable trees. Natural ingrowth of trees would be relied on and minimal tree planting would follow, supplementing natural ingrowth, to initiate a conifer component suitable to the natural character of the plant community. This would occur in nonstocked or poorly stocked areas (approximately 225 trees per acre or 14x14 spacing) and in places previously occupied by tanoak.

Density Management/Hazardous Fuel Reduction

Units 5-1, 7N-2, 7N-3, 7N-4, 7N-9, 7N-10, 13-14, 13-16A, 13-16B, 17-4A, 17-10, 19-3, 20-3, 20-4, 29-9, 29-12A, 29-18, 33-5, and 34-1

These stands exhibit less square feet of basal area per acre than Variable Density Thinning and Variable Retention Harvest stands. These stands also contain a need for understory treatment, although they vary in condition and need. Unit 5-1 in particular, is a wet site classified as LIDE2/COCOC plant association group. In this unit the main purpose is to reduce fuels particularly from excessive tanoak densities choking the stand, whereas other units exhibit a different species understory composition in need of treatment. The units in this prescription have overstory components that are configured

in clumps and not consistent throughout the stand. These stands are either in the Poles or Mid vegetation condition class.

This treatment reduces stocking levels throughout the stand. The aim is to promote growth and structural development of residual trees by reducing stand densities. In general, the treatment includes commercial extraction and is generally used together with Hazardous Fuel Reduction. This treatment aims to reduce stand densities to achieve a relative density of from 0.25 to 0.45. Basal areas would range between 60 and 200 according.

Hazardous Fuel Reduction

Units 3-4, 7N-1, 7N-8, 7S-2, 7S-3, 7S-6, 7S-6A, 8-3, 9-8, 9-14, 13-3A, 13-3B, 13-6B, 17-1, 17-1D, 17-2, 17-4, 18-1, 18-4 19-1, 20-2, and 29-3

These areas exhibit a fuel loading that have been determined to be hazardous to resource objectives and control in suppression in the event of a wildfire. Densities can be as high as 10,000 understory trees per acre, oftentimes higher in clumps. Hand piling and burning to reduce the fire hazard is typically applied to reduce fuels. Standard conifer spacing is 18x18, hardwoods 40x40, both with a $\pm 25\%$ variance to accommodate site conditions. Unit numbers 7S-2/3/4/6/6A are the driest in the entire Planning Area. Units 7S-6/6A, 29-1, and 13-6B are in the PIPO-PSME plant association groups.

Riparian Thinning

Units 8-2, 20-1, and 20-1A

Ecological Protection Zones (EPZ) zones are modified riparian zones that function more as an upland dry forest ecology than by a riparian function. EPZ recommendations apply a *Variable Density Thinning (Douglas-fir)* prescription in modified riparian zones because these dry forest areas currently demonstrate a need for restoration. A crown closure of 50% would be maintained within riparian zones up to these EPZ boundaries. By applying EPZ boundaries, restoration treatments would be accomplished that would benefit the ecological functions and processes of the stand without inhibiting riparian function.

Units and EPZ distances

- 8-2: 100 ft no extraction buffer
- 20-1: 75 ft no extraction buffer
- 20-1A: 75 ft no extraction buffer

Alternative 3: Treat & Maintain Northern Spotted Owl Habitat

Alternative 3 seeks to provide for all of the elements of the Forest Restoration Strategy of Alternative 2 without removing or downgrading any existing northern spotted owl habitat. Alternative 3 would treat, but maintain existing spotted owl habitat. Restoring a fire resilient ecosystem by enhancing its natural composition, structure, and function while also providing for Nesting, Roosting, Foraging, and Dispersal northern spotted owl

habitat is desired at the stand level and across the landscape. In addition, a desired future condition of providing a sustainable production of natural resources into the future is sought amidst these desired components. According to the Medford District Project of NLAA Biological Assessment in Forested Habitat, “many NLAA fuels, silviculture, and timber projects may have a long-term benefit because they reduce the unnaturally high brush and dense trees that have resulted from years of wildfire suppression. Resulting treated stands are more ecologically sustainable for high fire return interval ecosystems.”

- Nesting, Roosting, and Foraging (NRF) Habitat: Designations are made at the project level by BLM Resource Area wildlife biologists by site-specific determinations and delineations of NRF habitat. Typical NRF habitat components, in general, consist of dead down wood, snags, dense canopy, multistoried stands, or mid-canopy habitat, however NRF in southwest Oregon varies greatly. In portions of southwest Oregon NRF, one or more of these habitat components might be lacking or even absent. Vegetative features of NRF habitat in southwest Oregon are typified by mixed-conifer habitat, recurrent fire history, and patchy habitat components. Mixed conifer habitat, multistoried stands, and patchy habitat components will also be created or enhanced. Achieving healthy and sustainable natural systems while maintaining NRF habitat is the desired future condition in these designated areas under this alternative.
- Dispersal Habitat: Is described as forested habitat usually more than 40 years old, with canopy closure more than 40%, average diameter greater than 11 inches, and flying space for owls in the understory without the components found in NRF habitat. Achieving healthy and sustainable natural systems while maintaining Dispersal habitat is the desired future condition in these designated areas under this alternative.

Some forested stands have been selectively logged, underburned by fire, commercially thinned, or have suffered mortality, to a lesser extent, from natural processes. Disturbed stands tend to be more diverse in species composition and vertical structure. Historically, fires eliminated the buildup of ladder fuels that could contribute to stand replacement fires (USDI/USDA 2000). The silvicultural activities proposed resemble natural disturbances that are inherent to forests in which the forest canopy is reduced. A silvicultural modification is similar to a moderate forest ecosystem disturbance regime (Oliver & Larson 1996, Waring & Schlesinger 1985) such as moderate and frequent fires and moderate insect and disease-induced mortality pockets. Thinning would bring stands out of the stem exclusion or closed-canopy stage and accelerate the development of conditions found in late seral forests (Hayes, et al. 1997). Trees should develop larger crowns, larger diameter limbs, and deep fissures in the bark. Deep fissures in the bark are characteristic of large diameter Douglas-fir trees in old growth stands. Maguire, et al. (1991) found that large branches develop only on widely spaced trees or on trees adjacent to gaps or openings. The following summarizes variations in prescriptions based on stand types that aim to meet an NLAA objective.

Commercial Thin 60% canopy closure retention for Nesting Roosting, and Foraging (NRF) Habitat

Units 3-3, 5-9, 8-2, 20-1, 29-4, 29-8, 29-11, and 29-16

The prescription will employ the use of selective thinning treatments that maintains 60 percent crown closure as well as enhance or create the habitat components found in southwest Oregon NRF. Treatments would enhance or maintain attributes of NRF. Selective thinning would consist of thinning from below to accelerate the growth of large trees and provide sufficient open space below the canopy for owls to fly. Because ponderosa pine, a shade intolerant species, is losing ground in many mixed conifer sites, small gaps (1/4 acre at most in size or 59 foot radius) would create openings around large diameter pine seed trees. This treatment would favor the regeneration of pine in the stand to retain both a patchy and a biologically diverse mixed-conifer habitat component typical in southwest Oregon NRF. Any openings created would be limited to a distance of 350 feet between the edges of openings.

Silvicultural strategies include the use of selective thinning and limited gaps for the maintenance of pine. To encourage the maintenance and establishment of fire resilient species, favor leaving ponderosa pine, incense cedar, sugar pine, and Douglas-fir, respectively.

Commercial Thin 40% canopy closure for Dispersal Habitat

Units 7S-8, 9-12, 21-6, 29-15, 29-17, and 34-2

Selective thinning would consist of thinning from below to accelerate the growth of large trees and provide sufficient open space below the canopy for owls to fly. Because ponderosa pine, a shade intolerant species, is losing ground in many mixed conifer sites, small gaps (1/4 to 1/2 acre at most in size or 59-83 foot radius) would create openings around large diameter pine seed trees. This treatment would favor the regeneration of pine in the stand to retain both a patchy and a biologically diverse mixed-conifer habitat component. Any openings created would be limited to a distance of 350 feet between the edges of openings.

Density Management / Hazardous Fuel Reduction

This treatment reduces stocking levels throughout the stand. The aim is to promote growth and structural development of residual trees by reducing stand densities. It is used together with Hazardous Fuel Reduction to reduce stand densities across the entire vertical stand structure and to reallocate growth to desirable trees.. Retains the 40% or 60% crown closure required for stands designated Dispersal or NRF habitat.

Density Management/Hazardous Fuel Reduction_40

Units 5-1, 7N-2, 7N-4, 7N-9, 13-14, 13-16B, 19-3, 20-3, 20-4, 29-9, 29-12A, 29-12B, 29-18, 33-5, and 34-1

Treatment goals are to reduce stocking levels throughout the stand and promote growth and structural development of residual trees. Pre-commercial thinning and Pre-commercial/Hardwood Control are generally used with this treatment, which may be completed in conjunction with Hazardous Fuel Reduction. Basal areas would range from 60-140 ft²/acre to maintain 40% crown closure in dispersal spotted owl. Hazardous Fuel Reduction slash would be treated using one or more of the following actions: lop & scatter, pile & burn, chipping, or biomass utilization. Maintenance underburning is generally performed within 7 years following initial treatments and would be driven by the condition of the stand and re-growth of slashed vegetation.

Density Management/Hazardous Fuel Reduction_60

Units 7N-3, 7N-10, 13-16A, 17-4A, 17-10, 29-1, 29-2, and 29-13

Treatment goals are to reduce stocking levels throughout the stand and promote growth and structural development of residual trees. Pre-commercial thinning and Pre-commercial/Hardwood Control are generally used with this treatment, which may be completed in conjunction with Hazardous Fuel Reduction. Basal areas would range from 140-160 ft²/acre to maintain 60% crown closure in nesting, roosting, and foraging spotted owl habitat. Hazardous Fuel Reduction slash would be treated using one or more of the following actions: lop & scatter, pile & burn, chipping, or biomass utilization. Maintenance underburning is generally performed within 7 years following initial treatments and would be driven by the condition of the stand and re-growth of slashed vegetation.

Hazardous Fuel Reduction

Units 3-4, 8-3, 9-8, 9-9, 9-14, 7N-1, 7N-8, 7S-2, 7S-3, 7S-6, 7S-6A, 13-3A, 13-3B, 17-1, 17-1D, 17-2, 17-4, 18-1, 18-4, 19-1, 20-1A, 20-2, and 29-3

Treats understory components of stands to reduce hazardous fuel loading. Treatments involve thinning conifers and hardwoods at specified spacing appropriate for the site condition. Hand piling and burning to reduce the fire hazard is typically applied to reduce fuels. Standard conifer spacing is 18x18 ft. with hardwood spacing of 40x40 ft. with a ± 25% variance to accommodate site conditions.

Pre-commercial Thinning (PCT)

Units 3-3, 5-9, 7S-8, 8-2, 9-9, 9-12, 20-1, 21-6, 29-1, 29-2, 29-4, 29-8, 29-11, 29-12B, 29-13, 29-16, 29-17, and 34-2

The understory in the East West Junction Project is defined as conifer and hardwood tree species less than 8 inches DBH. Stands in need of PCT are overstocked. Understory trees are experiencing early competition by hardwoods and neighboring conifers. Understory reduction would consist of thinning conifers and hardwoods up to 8 inch

DBH. Young stands respond well to early release treatments and growth would be reallocated to the larger understory trees and to desirable conifer species while maintaining a significant hardwood component. These stands will see hardwoods controlled at a wider spacing than the conifers. The largest hardwoods would be left at 27 TPA (40x40 ft. spacing) to allow conifers to occupy the available growing space and reestablish species dominance and improved growth rates.

APPENDIX 5 - AQUATIC CONSERVATION STRATEGY CONSISTENCY ANALYSIS

“The Aquatic Conservation Strategy was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The strategy would protect salmon and steelhead habitat on federal lands managed by the Forest Service and Bureau of Land Management within the range of the Pacific Ocean anadromy” (1995 Medford District RMP pg. 22).

The four components of the Aquatic Conservation Strategy (ACS) are Riparian Reserves, key watersheds, watershed analysis, and watershed restoration. The ACS was designed to meet the nine objectives discussed below.

This ACS consistency analysis evaluates the East West Junction Project EA on BLM land.

Analysis of the Four Components of the ACS:

Riparian Reserves: The proposed project is consistent with the actions and directions within Riparian Reserves as described in the Medford District RMP. The action alternatives would result in thinning and understory treatments to promote forest health and the development of large woody debris (LWD) within Riparian Reserves outside the Ecological Protection Zone (EPZ). Thinning would be designed to expedite the development of late successional, multi-story habitat conditions and restore the species composition and structural diversity of the plant communities, needed to achieve ACS and Riparian Reserve objectives (Medford RMP, p. 22 and p. 26 respectively). Riparian Reserves within the proposed units are currently dominated by Douglas-fir and some hardwoods. Most riparian stands are lacking large wood debris, downed logs, and large tree structure. Thinning of dense Riparian Reserves would reduce competition on the retained trees for light, nutrients, water and growing space, allowing trees to develop larger canopies, display better vigor and put on diameter growth faster than if left untreated.

The project is also consistent with the Best Management Practices (BMP) within Appendix D of the 1995 Medford RMP.

2. Key Watershed: The Planning Area is not located in a Key watershed.

3. Watershed Analysis: The Grants Pass Resource Area completed the East Fork Illinois River and West Fork Illinois River Watershed Analyses in 2000 and 2003, respectively, and the Sucker Creek Watershed Analysis in 2007. The proposed activity is consistent with the Watershed Analyses.

The Watershed Analyses found that management directions in the Northwest Forest Plan and the 1995 RMP including the Aquatic Conservation Strategy, Best Management

Practices, and Riparian Reserve management would be adequate at protecting, maintaining and improving aquatic and riparian ecosystems. The Watershed Analyses recommended reducing road densities which are not needed for future management.

The Watershed Analyses discussed restricting road construction or considering alternatives to constructing new roads in sensitive soil areas. Permanent road construction is not proposed under the East West Junction Project. Many of the roads in the Planning Area are not public roads and are under reciprocal right-of-way agreements with private landowners because of the checkerboard ownership pattern. The BLM does not have the option to close these roads due to the reciprocal right-of-way agreements.

4. Watershed Restoration: Though the East West Junction Project is not an aquatic watershed restoration project, it would aid in the improvement of watershed health through the following proposed activities: thinning and activity fuels reduction in Riparian Reserves.

Analysis of the East West Junction Project for consistency with the Aquatic Conservation Strategy objectives:

The ACS gives direction to maintain and restore ecosystem health at watershed and landscape scales. For the purposes of this analysis the watershed scale will be discussed in terms of site or project scale and will be at the HUC 6 and 7 watersheds. The landscape scale will be at the HUC 5 watershed level.

Appropriate consideration of potential cumulative effects is a critical element in determining a project's consistency with the ACS. The minimal effects at the HUC 7 scale would not reach a magnitude detectable at the HUC 6 or HUC 5 scales. Because there would be no detectable cumulative effects caused by the action alternatives, cumulative effects will not be discussed in the individual ACS objectives.

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.

The watershed and landscape-scale features which protect species, populations, and communities dependent on aquatic systems would be maintained and in some cases enhanced in the short term and long term. The distribution, diversity, and complexity of watershed and landscape-scale features needed for the protection of aquatic systems would be maintained. Proposed activities such as road decommissioning and riparian thinning would restore watershed features in the short and long term.

Riparian Reserves

One key component of watershed and landscape scale features needed for the protection of aquatic systems is Riparian Reserves. Riparian Reserves would be maintained at the site and watershed levels in the short and long term. Riparian vegetation treatments (thinning) would enhance riparian characteristics. Riparian thinning would result in a

reduction in stand densities and would allow for the development of late successional riparian characteristics. One of these characteristics is multi-level canopy cover which helps to maintain cool water temperatures. Late successional characteristics in riparian areas also include downed coarse woody debris and large woody debris (LWD) which increases channel complexity, and diverse species composition which provides a variety of chemical and biological inputs to streams. Riparian thinning would also reduce the spread of disease and the risk of a high intensity or severity fire in Riparian Reserves. Such a fire could result in tree mortality and a reduction in shade, which could negatively affect fish habitat by causing an increase in water temperature, a reduction in future recruitment of LWD, an increase in soil erosion and sediment entering streams.

Roads

The project would result in 0.9 miles of temporary route construction and reconstruction along the ridgetops into units 3-3, 3-4, 5-1, 7S-2, 8-2, 29-15, 29-16, 34-2, 20-1, 34-2, 7N-3, 7N-4, 29-2, and 29-4 to access timber in those units that would be decommissioned after use. This action would not lead to stream sedimentation due to the ridgetop location of these roads which are hydrologically disconnected.

Project Design Features (PDFs) would be expected to minimize sediment routing to streams through restrictions on ditch blading, use of cross drains, and the use of temporary sediment control measures. A small amount of sediment may enter streams without CCH (Coho Critical Habitat, which overlaps all other listed fish habitat in the project) during log haul and existing road maintenance where roads are hydrologically connected. All sediment producing actions would result in detectable sediment inputs for no more than 25 ft downstream of the impact point, and would all be within the State of Oregon water quality standard of no more than a 10% increase in turbidity over background levels. Sediment would not be expected to enter CCH streams as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into CCH.

This project would not increase the number of permanent roads within these sub-watersheds, since permanent road building is not part of the proposed project. No foreseeable permanent road construction is planned on federally managed lands within this sub-watershed.

Peak Flows

The action alternatives would not affect the timing, magnitude, duration, and spatial distribution of peak, high and low flows.

2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

The spatial and temporal connectivity within and between watersheds would be maintained in the short and long term at the site and landscape scales. Chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species would be maintained.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

The physical integrity of aquatic systems, including shorelines, banks, and bottom configurations would not be affected at the site or landscape scale in the short or long term. The proposed activities would not manipulate or affect shore lines, banks or bottom configurations.

4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

Water quality necessary to support healthy riparian, aquatic and wetland ecosystems would be maintained. Water quality would remain within the range that maintains biological, physical, and chemical integrity streams.

Harvesting, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road renovation/improvement, road maintenance hauling, and fuel treatments would have no effect on SONCC coho salmon (ESA-Threatened) and coho critical habitat (CCH). There are two haul road segments where BLM-maintained roads cross over coho bearing streams; one via a culvert, and one through a dry ford. Sediment would not be expected to enter CCH as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into CCH.

Slight increases in turbidity would occur in the short term in localized areas as a result of road activities in streams without CCH. Best Management Practices (BMPs) would be implemented to minimize the amount and duration of sediment entering these stream channels. Such increases in turbidity would not measurably alter the biological, physical, or chemical integrity of streams. Aquatic and riparian dependent species' survival, growth, reproduction, and migration would be maintained.

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

The sediment regime under which aquatic ecosystems evolved would be maintained at the site and landscape scales in the short and long terms. Some of the proposed activities such as road reconstruction and road maintenance would reduce sediment input in the

short and long term. Streams within the Planning Area evolved with sediment input. Sediment input can result from natural disturbances such as landslides, slumps, wildfires, bank erosion, and channel scour.

Road Related Activities

Roads proposed for dry condition haul would result in negligible amounts of sediment entering streams without CCH because the roads are either bituminous surface treatment (BST) or crushed aggregate (rocked) or are hydrologically disconnected due to ridgetop location of timber sale units.

The roads proposed for dry condition haul could result in sediment entering stream channels without CCH, but because of PDFs the amount would be minimal. Sediment would not be expected to enter CCH as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into CCH.

Changes in embeddedness, interstitial spaces, and pool depth would not be measurable. Road maintenance would result in a minimal amount of sediment reaching stream channels without CCH. Increased sediment levels from road maintenance would not be detectable above background levels following the first few substantial rain events, therefore sediment input would be short term. Negligible changes to stream channels without CCH from sediment input would be expected. Changes in embeddedness, interstitial spaces, and pool depth would not be measurable. Following the first winter and thereafter sediment entering streams without CCH would decrease to the point of being negligible.

Harvest Activities

All other soil disturbing activities are located outside the EPZ, and would be implemented using BMPs that minimize the quantity and transport of soil erosion. Since the EPZ is designed to filter out sediment produced during upslope activities that are implemented using BMPs, these activities would not result any sediment entering streams.

6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and woodrouting. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

The East West Junction Project would not affect the timing, magnitude, duration, and spatial distribution of peak, high and low flows.

7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

The timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands would not be affected by any of the proposed activities. There are no wetlands, as defined on page 117 of the 1995 RMP, in the Planning Area.

8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

The species composition and structural diversity of plant communities in riparian areas would be maintained at the site and landscape scales in the short and long term. There are no wetlands, as defined on page 117 of the 1995 RMP, in the Planning Area. Vegetation treatments proposed for the action alternatives were designed to enhance riparian conditions in the short and long term. Plant communities in riparian areas would be maintained and enhanced through silvicultural prescriptions and no treatment buffers in order to provide for adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.

Habitat for riparian-dependent plant, invertebrate and vertebrate species would be maintained at the site and landscape scales. Vegetation treatments proposed were designed to enhance riparian conditions in the short and long term. There would not be a reduction of habitat needed to support riparian dependent species in the short term or long term.

CONCLUSION:

Based on this analysis at both the site and landscape scale of the proposed activities in the East West Junction Project, it was determined that the actions are consistent with the nine objectives and the four components of the ACS. This determination was based on the small spatial and temporal disturbances associated with the proposed activities.

APPENDIX 6 - NOXIOUS WEEDS

Specialist Report Memo

To: Katrina Symons, Field Manager, Grants Pass Resource Area
 From: Susan Fritts, Botanist, Grants Pass Resource Area
 Re: Noxious Weed Specialist Report for the East West Junction Planning Area
 Date: November 21, 2011

East West Junction Project – Noxious Weeds – PRESENT, NOT AFFECTED

Units in the East West Junction Project Planning Area were surveyed for noxious weeds during spring and summer of 2009. The Planning Area is known to have noxious weeds. Five populations of meadow knapweed (*Centaurea debauxii* ssp. *thuilleri*), one population of squarrose knapweed (*Centauria triumfettii*), six populations of Scotch broom (*Cytisus scoparius*), and five populations of Armenian blackberry (*Rubus armenicus*) were documented in activity units. Armenian blackberry is the only one considered an established species for which current control measures would have little effect on reducing the overall infestation; thus, only small (10 plants or less) isolated sites are treated. Table A6-1 lists specific information about each of the four species.

Based on these population sizes, per noxious weed reports provided by professional botany contractors, the Grants Pass botanist estimated that less than 1% of the proposed activities acreage harbor noxious weeds. The acreage occupied by all noxious weed species reported in or directly adjacent to East West Junction proposed units is approximately 9.3 acres.

Table A6-1. 2009 Plant Surveys Revealing Noxious Weed Species in the East West Junction Project Area Units

Location in Township (T), Range (R), Section (S)	Species	Coverage in Sq. Yard	Oregon Department of Agriculture Designation	Plant Description / Habitat Requirements
T39S-R7W-13 T39S-R7W-17 T39S-R7W-21 T40S-R8W-5 T40S-R8W-9	Armenian Blackberry	30 2900 9926 24200 24200	B**	Himalayan blackberry (<i>Rubus discolor</i>) is a perennial bramble introduced from Western Europe that forms large impenetrable thickets of prickly canes. It colonizes disturbed sites including waste areas, pastures, forest plantations, roadsides, and waterways. Detrimental effects include displacement of native species, decrease of plant diversity, reduced forage, and reduced accessibility by humans and animals. Successful control methods include mechanical, prescribed burning, and chemical.
T39S-R7W-17 T39S-R7W-21	Meadow knapweed	36 8970	B**	Meadow knapweed (<i>Centaurea debauxii</i> ssp. <i>thuilleri</i>) is a perennial forb that is a

Location in Township (T), Range (R), Section (S)	Species	Coverage in Sq. Yard	Oregon Department of Agriculture Designation	Plant Description / Habitat Requirements
T29S-R8W-29 T40S-R8W-5 T40S-R8W-9		4 9680 16940		fertile hybrid between black knapweed (<i>C. nigra</i>) and brown knapweed (<i>C. jacea</i>), which are both native to Europe. Meadow knapweed was originally introduced as a potential forage species. This species invades moist sites, including irrigated pastures and moist meadows, river banks, streams, irrigation ditches, and openings in forested areas. It reproduces primarily by seed, but root crown fragments will resprout when disturbed by heavy equipment or cultivations. Meadow knapweed seeds are carried in rivers, streams, or irrigations water, in hay, or by vehicles along roadsides. Successful control methods include grazing, herbicide application, mowing, manual digging if only a few plants are present, competitive planting, and biological controls.
T40S-R8W-5	Squarrose knapweed	2634	A*	Squarrose knapweed (<i>Centaurea triumfettii</i>) is a perennial forb native to Asia. It often grows on degraded rangeland soils and is more adaptable to drought and cold temperatures than other spotted knapweeds. This plant reproduces exclusively through seed dispersal. Successful control methods include grazing, herbicide application, mowing, manual digging if only a few plants are present, competitive planting, and biological controls.
T39S-R7W-17 T39S-R7W-19 T39S-R7W-21 T39S-R8W-29 T40S-R8W-5 T40S-R8W-9	Scotch broom	4 8 4 36 1894 4840	B**	Scotch broom (<i>Cytisus scoparius</i>) is a perennial shrub native to Europe and Africa. It was introduced into the United States as an ornamental, and later used to stabilize roadcuts. Scotch broom invades roadsides, pastures, and other disturbed places. It produces a large amount of long-lasting seed (up to 80 years). It can form dense fields that displace native plants and degrade habitat for wildlife. Successful control methods include manually pulling the entire plant, herbicide application, controlled burning, and a combination of cutting and herbicide treatment.

Location in Township (T), Range (R), Section (S)	Species	Coverage in Sq. Yard	Oregon Department of Agriculture Designation	Plant Description / Habitat Requirements
Total Sq. feet		With blackberry 106,306 sq yd = 21.9 ac Without blackberry 45,050 sq yd = 9.3 ac		

** “A” designation; a weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent. Infestations are subject to eradication or intensive control when and where found. (ODA, 2011)

** “B” designation; a weed of economic importance which is regionally abundant but which may have limited distribution in some counties. Where implementation of a fully integrated statewide management plan is not feasible, biological control shall be the main control approach (ODA, 2011).

Over the last 150 years activities such as motor vehicle traffic, recreational use, rural and urban development, timber harvest, road construction, and natural process have introduced and transported noxious weeds into the Rogue Valley. Noxious weeds are spread by the wind and by seed via attachment to vehicles and vectors such as humans, animals, and birds, and are able to grow on suitable habitat (generally considered as any newly disturbed ground and/or an influx of light due to canopy removal). Since the 1970’s, a recognition that weeds were causing environmental damage resulted in the passage of State noxious weed laws, the Carson-Foley Act of 1968 – Plant Protection Act of 2000, and Presidential executive orders like Invasive Species E.O. 13112, which directs federal agencies to combat the noxious weeds on federal lands. Additional direction is provided by the Medford District RMP, which states the district is to “contain and/or reduce noxious weed infestations on BLM-administered land...(p. 92),” and “...survey BLM-administered land for noxious weed infestations...(p. 93).” These RMP directions for weed management are intended to be met at a landscape level; whether the direction is achieved is not intended to be measured at the site specific level nor with the implementation of each project. Thousands of acres of weed treatments have occurred on federal (and non-federal) lands over the last decade across the Medford District with the RMP-driven objective of containing or reducing – not eradicating - noxious weed populations (Budesá, 2006). In an effort to continue to contain and/or reduce noxious weeds on federal land, the BLM proposed to treat known weed populations within the Grants Pass Resource Area. In 2011, over 4,400 acres of BLM land in the Grants Pass Resource Area was treated, including proposed units and roadsides adjacent to East West Junction Project units. These same areas are scheduled for subsequent treatment in 2012.

Environmental Consequences of the East West Junction Project Implementation

Alternative 1 (No Action) – Direct and Indirect Effects

Under the No Action Alternative, noxious weeds within the Planning Area would continue to spread into suitable habitat at an unknown rate. The rate at which noxious weeds spread is impossible to quantify, as it depends on a myriad of factors including, but not limited to, logging on private lands, motor vehicle traffic, recreational use, rural and urban development, and natural processes (Northwest Area Noxious Weed Control Program EIS, p. 59). The following table (1-2) illustrates how each of these activities affects noxious weed dispersal.

Table A6-2. Factors Affecting the Determination of the Rate of Noxious Weed Spread

Activity	Role in Potential Noxious Weed Seed Dispersal
Private Land	Private lands host a perpetual source for noxious weed seed, which can be dispersed when seeds attach to tires, feet, fur, feathers or feces, or when natural processes such as wind and/or flooding events transport the seed from its source to another geographical vicinity.
Logging on Private Lands	Logging activity presents a key dispersal opportunity for noxious weed seeds per 1) attachment to tires/tracks of mechanized logging equipment, tires of log trucks, and various other logging-related substrates which subsequently transport the seed from its source to another geographic vicinity, 2) creation of openings for potential noxious weeds colonization and 3) a lack of PDFs – such as equipment/vehicle washing, etc. - which attempt to reduce the activity’s spread of noxious weed seeds.
Motor Vehicle Traffic (including Log Trucks)	Roads on public land include public use, which results in a plethora of seed-dispersing activities occurring on a daily basis. Private landowners use public roads to haul logs, undertake recreational pursuits, and/or access their properties. This transportation often occurs along BLM-administered roads, which are situated within a checkerboarded ownership arrangement. How or when seed detachment occurs is a random event could take place within feet or miles from the work site/seed source, presenting a high likelihood of detachment on public lands.
Recreational Use	The public often recreates on BLM-managed public lands, and can spread seed from their residences to public land in a variety of ways such as attachment to vehicle tires, hikers’ sox, shoes, or other clothing, the fur of domesticated animals, etc.
Rural and Urban Development	Rural development occurring within the checkerboard land arrangement often requires public landowners to acquire a Right-of-Way (ROW) from the BLM to legally access their parcel(s). These ROWs, or use of BLM-administered roads is often granted (Groves, 2006). Please refer to ‘Motor Vehicle Traffic’ and ‘Private Land,’ for clarification of how this affects the spread of noxious weeds from private to public lands.
Natural Processes	Wind, seasonal flooding, and migration patterns of birds/animals are a few natural processes that potentially spread noxious weeds, especially from private land to public land. Wind carries seeds, and deposits them at random intervals. High water caused by flooding reaches vegetation (often harboring a noxious weed component) growing on the banks of rivers/creeks/streams, and deposits seeds downstream.

The abovementioned activities would contribute to noxious weed spread, which could degrade some elements of the environment. To predict the rate of this degradation would be highly speculative, as the extent of weed expansion is dependent on so many factors that it is considered impossible to quantify. The degree of degradation would depend on the noxious weed species, as some, such as Scotch broom and meadow knapweed, are more intrusive than others. Across the Grants Pass Resource Area, the more aggressive

species are slated for treatment under Medford District's *Integrated Weed Management Plan and Environmental Assessment OR-110-98-14* under a separate project. However, the success of implementing the weed management plan would be temporary, as logging on non-federal lands, recreational use, rural and urban development, natural processes and vehicle traffic will continue to spread noxious weed populations into the Planning Area.

Indirect effects of noxious weed spread include the potential degradation of wildlife habitat (Rice et. al. 1997, Harris and Cranston 1979), a decline in natural diversity (Forcella and Harvey 1983; Tyser and Key 1988; Williams 1997), and decline in water quality (Lacey et al. 1989); however, a very small amount of East West Junction activity unit acreage (less than 1% of unit acreage under Alt. 2 and 3) is covered by noxious weeds, making it difficult to quantify any potential decline in ecosystem health related to existing noxious weed populations, or to quantify the potential decline in ecosystem health related to any additional noxious weed populations potentially established by the activities described in Table A6-2.

Alternatives 2 and 3– Direct and Indirect Effects

Alternatives 2 and 3 are analyzed together because either the actions are the same for the two alternatives or the differences between the effects of the two alternatives are negligible.

In the short term (approximately 1-5 years), proposed activities within the Planning Area would result in the reasonable probability of spreading noxious weeds. However, the rate at which this potential spread would occur is unknown due to the indistinguishable causal effect of other activities and factors listed in table A6-2 on the spread of noxious weeds. Openings, caused by tree extraction (580 acres Alt 2, 576 acres Alt 3), exposed soil caused by Hazardous Fuel Reduction burn piles (640 acres Alt2, 644 acres Alt 3) 0.8 miles of road renovation/improvement, 19.6 miles road maintenance, 0.4 miles of temporary route construction, and 0.5 miles of temporary route re-construction would provide suitable habitat for noxious weeds to colonize. In addition, during project implementation, increased vehicle traffic could increase, or at least perpetuate, weed infestations along road systems because of seed dispersal.

Openings and disturbance provide the greatest opportunity for the establishment of noxious weeds. In an effort to address the potential for project activities to increase the rate of spread of noxious weeds, Project Design Features (PDFs) have been included in the project to decrease the potential spread of weeds associated with the action alternatives. Project Design Features include washing equipment prior to moving it on-site and seeding and/or planting newly created openings with native vegetation to reduce the potential establishment of noxious weeds. These PDFs are widely accepted and utilized as Best Management Practices (BMPs) in noxious weed control strategies across the nation (Thompson, 2006). Table A6-3 delineates the project design features and their expected implementation results.

Table A6-3. Project Design Features and Expected Implementation Results

Project Design Feature (PDF)	Result of Implementing PDF
Washing equipment	Removes dirt that may contain viable noxious weed seeds, thereby reducing the potential for noxious weed spread
Seeding and/or planting newly created openings with native seed vegetation.	Introduces native vegetation to the site prior to noxious weed seed recruitment, allowing native plants an advantageous jump-start in reestablishment, which reduces the potential for noxious weed infestation.

Implementing the PDFs that reduce the potential spread of noxious weeds associated with the action alternatives, and using native species for seeding/planting newly disturbed openings is expected to result in a similar potential of noxious weed expansion as associated with the No Action Alternative.

In the long term (5-100 years), tree and shrub canopies would eventually expand and reduce light levels, which in turn would prevent weeds from growing and expanding within treated areas, because populations decline as the amount of light reaching the plants diminishes. Consequently, in the long term, remaining weed populations would be confined to the road prism and adjoining (private) disturbed land as canopy is re-established in treated areas over time.

The effect of implementing Alternative 2 or 3 could possibly result in the establishment of new noxious weed populations. Although the *immediate* potential for weed spread would be less with the No-Action Alternative than for Alternatives 2 and 3, the potential for the spread of existing noxious weeds and the introduction of new species is considered similar for all alternatives, because of the inclusion of PDFs in Alternative 2 and 3, and the fact that under the “No Action” Alternative, populations would continue to establish and spread due to seed transport by vehicular traffic, wildlife, and other natural dispersal methods listed in Table A6-2. Indirect effects associated with noxious weed population enlargement are similar to those mentioned in the No Action Alternative, and are known to include, generally, declines in the palatability or abundance of wildlife and livestock forage (Rice et al., 1997), declines in native plant diversity (Forcella and Harvey, 1983; Tyser and Key, 1988; Williams, 1997), reductions in the aesthetic value of the landscape, encroachment upon rare plant populations and their habitats, potential reductions in soil stability and subsequent increases in erosion (Lacey et. al, 1989), and an overall decline of ecosystem health. However, considering implementation of Alternative 2 or 3, there are three main reasons why potential weed establishment that might be caused by the action alternatives is not expected to result in a detectable effect to overall ecosystem health. First, surveys indicate that a very small percentage - less than 1% of acreage within the activity units are affected by noxious weeds. Second, these sites located in units proposed for treatment have been reported during pre-disturbance surveys, and some (depending on how aggressive the species is) have already received treatment in 2011 under Medford District’s *Integrated Weed Management Plan and Environmental Assessment OR-110-98-14*, which means that the acreage in the Planning Area affected by noxious weeds is decreased but ongoing activities listed in Table A6-2 would potentially re-introduce weeds into the Planning Area. Third, as

aforementioned, Project Design Features (PDFs) have been established to minimize the rate at which project activities might potentially spread noxious weed seed from outside/adjacent sources.

Alternative 2 and 3 cumulative

In order to address the cumulative effects of the action alternatives on the spread of noxious weed encroachment, the condition of non-federal lands must be considered. However, there is no available or existing data regarding noxious weed occurrence on local non-federal lands. Therefore, for purposes of this analysis, BLM assumes that 1) there is a perpetual source of noxious/invasive weeds on non-federal lands that can spread to federal lands, especially when the land ownership is checkerboarded, as within the Planning Area, and 2) conversely that noxious weeds are not established on these lands, and therefore there is a need to reduce the risk of spread of noxious weeds from the federal lands to the adjoining non-federal lands. Seeds are spread by the wind, by animal/avian vectors, natural events, and by human activities, in particular through soil attachment to vehicles. BLM's influence over these causes of the spread of noxious weeds is limited to those caused by human activities. Additional human disturbance and traffic would increase the potential for spreading noxious weed establishment, but regardless of human activity, spread of these weeds would continue through natural forces. Thus, the BLM cannot stop the spread of noxious weeds, it may only reduce the risk or rate of spread.

Given the unpredictable vectors for weed spread, such as the vehicle usage by private parties, wildlife behavior, and wind currents, it is not possible to quantify with any degree of confidence the rate of weed spread in the future, or even the degree by which that potential would be increased by the action alternatives.

Foreseeable activities within the Planning Area are expected to be similar to past and current activities: motor vehicle traffic, recreational use, rural and urban development, timber harvest, road construction, and firewood collection. These types of activities could result in new disturbed sites available for colonization by existing noxious weed populations, and they do offer the possibility of introduction of new noxious weed species to the Planning Area under any alternative, including the No-Action Alternative. As stated above, there is no available or existing data concerning the rate of weed spread occurring on either federal or non-federal lands as a consequence of these types of activities. Also, as discussed above, there is no information on what, if any, increase in the rate of weed spread the action alternatives would cause, and hence, it is not possible to quantify with any degree of confidence what the incremental effect of Alternatives 2 and 3 on the spread of noxious weeds would be when added to the existing rate of weed spread caused by past, present, and future actions.

PDFs exist to reduce the potential that Alternatives 2 and 3 would contribute to the spread of weed seed and establishment of new populations. PDFs are not intended or expected to completely eliminate any possibility that the action alternatives would contribute to the spread of weed seed and establishment of new populations; however, PDFs ensure that any incremental contribution of the action alternatives to the spread of

weeds, when added to the rate of weed spread caused by past, present, and future actions, would be so small as to be incapable of quantification or distinction from background levels.

As described above, PDFs for this project include washing vehicles/equipment and seeding/planting newly created openings with native vegetation. BLM, and other federal and nonfederal organizations involved in combating noxious weed spread, routinely utilize these PDFs in noxious weed control strategies. These PDFs are widely accepted as Best Management Practices (BMPs), as they are inexpensive to implement, easily attainable, and accomplish the objective of reducing the potential of spreading noxious weeds as a result of project-oriented activities.

Data collection would not reduce the inherent speculation in predicting incremental effects of the action alternatives on the spread of weeds because of (1) the unpredictable natural factors that largely determine whether weeds would spread after project activities, (2) the unlikelihood that future data collection would be able to detect or measure any difference between background rates of weed spread and the rate of weed spread as affected by the action alternatives and correspondingly reduced by PDFs, and (3) the included PDFs that would reduce, if not eliminate, any project effects on the rate of weed spread that would make the already undetectable effects of the action alternatives even more undetectable. Finally, further data collection on the rate of spread would not alter the PDF techniques already being applied to reduce that rate of spread. It cannot be over emphasized that under the “No Action” Alternative, noxious weeds are likely to spread over time regardless of whether or not the East West Junction project occurs, and that rate would not be altered to any detectable degree by Alternatives 2 and 3.

APPENDIX 7 – MIGRATORY BIRDS

Specialist Report Memo

Land Birds (Neotropical Migrants and Year-Round residents)

Land birds use a wide variety of habitats, including late-successional forests, riparian areas, brush in recovering clear-cuts, and small trees in developing stands. Some birds, such as the olive-sided Flycatcher, use residual canopy trees for perching and forage over adjacent clear-cuts. Many land birds are associated with deciduous shrubs and trees in early-successional habitats (e.g., Rufous hummingbirds). All neotropical migrants go to Central or South America each year. They are addressed here due to widespread concern regarding downward population trends and habitat declines. Neotropical birds, as a group, are not on BLM's list of special status species.

BLM has issued interim guidance for meeting BLM's responsibilities under the Migratory Bird Treaty Act and Executive Order (EO) 13186. Both the Act and the EO promote the conservation of migratory bird populations. The interim guidance was transmitted through BLM Instruction Memorandum (IM) No. 2008-050. The IM relies on two lists prepared by the U.S. Fish and Wildlife Service (USFWS) in determining which species are to receive special attention in land management activities; the lists are *Bird Species of Conservation Concern* (BCC) found in various Bird Conservation Regions and *Game Birds Below Desired Condition* (GBBDC). In December, 2008, the USFWS Service released The Birds of Conservation Concern 2008. This publication identifies species, subspecies, and populations of migratory and non-migratory birds in need of additional conservation actions, updating the April 2008 Birds of Conservation Concern List. Medford District BLM biologists conferred with local bird groups and knowledgeable individuals to identify which birds on the list in our region (Bird Conservation Region 5, USFWS Region 1) are present within Medford District BLM lands. Table A7-1 below displays a list of the Migratory Birds of Conservation Concern (BOCC) and Game Birds below Desired Condition (GBBDC) in the Grants Pass Resource Area that are known or likely to be present in the East West Junction Project Planning Area and could be affected by the action alternatives.

Land Birds Effects from Vegetation Management

While the extent and scope would change for each action alternative the general effects would be the same for both action alternatives. Due to the variety of land-bird habitat requirements, any action that changes or removes vegetation used by one species may benefit another. Species requiring dense cover and forage that have benefited from lack of fire and dense understories could be negatively affected by thinning treatments designed to reduce vegetation density. Due to habitat removal, songbird composition and abundance in treated stands could be reduced in the for approximately 25 to 40 years (Janes 2003; Hagar et al. 2001; Siegel et al. 2003). There would be a reduction of 32 acres of late-successional forest habitat as a result of proposed Variable Retention

Harvest (unit 9-12). Untreated late-successional forest habitat would continue to provide adequate hiding cover, foraging, and nesting habitat within the Planning Area for birds that use older forests. Habitat for birds that use early seral habitat would increase as a result of Variable Retention Harvest treatments and small gap openings in Variable Density Thinning. Species, such as the Rufous Hummingbird, which use nectar producing plants would benefit from the increase in forbs and flowering shrubs that would occur post treatment. This increase would continue until the tree canopy recovers and shades out these plants, which would occur in approximately 25 to 40 years.

There would be no complete removal of any type of potential bird habitat under Alternative 3. Treatments would maintain key habitat features, which would minimize impacts within the Planning Area.

Some individual birds may be displaced during project activities. However, untreated areas adjacent to the treatment areas would provide refuge and nesting habitat, minimizing short-term loss of habitat. In treated stands, riparian areas not receiving treatment would also serve as refugia in proposed harvest units. Activities occurring during active nesting periods could cause some nests to fail. However, seasonal restrictions (Section 2.3.4.7) would protect most nests from disturbance during project activities. Treatments occurring during the critical nesting periods for most species may cause some nests to fail. However, the failure of a nest during one nesting season would not be expected to reduce the persistence of any bird species in the watershed because sufficient habitat of all types would be retained throughout the Planning Area to support the wide diversity of bird species in the area. Additionally, a Memorandum of Understanding (MOU) was signed between the USFWS and the BLM in April, 2010, which identified strategies to avoid or minimize adverse impacts on migratory birds. The East West Junction Project would follow these guidelines where feasible to reduce the impacts to migratory birds. For example, many of the PDFs listed to mitigate effects to some species, such as seasonal restrictions, would also benefit migratory birds.

Summary and Conclusions

Partners in Flight support the ecoregional scale, as appropriate, for analyzing bird populations (<http://www.partnersinflight.org/description.cfm>). The potential failure or loss of some nests would not be measurable at the regional scale because of the small scope of the project in relationship to the regional scale. Therefore, under both action alternatives, populations in the region would be unaffected. Breeding bird surveys in the Southern Pacific Rainforest Physiographic Region (which includes western Oregon) indicate that songbirds are declining. The exact cause of these declines is still unclear, but issues associated with their winter grounds (Central and South America) are suspected to be an important factor (Sauer et al. 2004; Alexander 2005, personal communication).

Table A7-1. Birds of Conservation Concern and Game Birds Below Desired Condition in the East West Junction Planning Area				
SPECIES	STATUS	Project within RANGE (Y/N)	Project Status 1/ Not Present 2/ Not Affected 3/ Affected	Comments Regarding Status
American peregrine falcon	BOCC	Y	Not Affected	No nesting habitat in the Planning Area, but they could forage in the Planning Area. Project activities would not affect this species at the landscape scale.
Bald eagle	BOCC	Y	Not Affected	No known Bald eagle nest trees are located in the Planning Area. Therefore, no direct negative effects are anticipated. If a nest is located prior to implementing the project, it would be protected under the 1995 RMP guidelines and the Bald and Golden Eagle Protection Act. Even though all of the alternatives would remove some potential nest/roost trees, bald eagles would not be precluded from nesting and foraging within the watershed due to retention of larger suitable nest trees in areas set aside for “no treatment.”
Band tailed pigeon	GBBDC	Y	Not Affected	Adequate potential habitat exists within and adjacent to the Project Area. Beneficial effects from the creation of additional openings through Variable Retention Harvest treatments and small gap openings in Variable Density Thinning. Proposed activities impacts are inconsequential to individuals and/or habitat at the Planning Area scale.
Mourning dove	GBBDC	Y	Not Affected	Adequate potential habitat exists within and adjacent to the Project Area. Ground disturbance from treatment activities and prescribed fire would stimulate growth of shrubs and herbaceous plants. Proposed activities impacts are inconsequential to individuals and/or habitat at the Planning Area scale.
Olive sided flycatcher	BOCC	Y	Not Affected	Adequate levels of snags would be retained. Adequate potential habitat exists within and adjacent to the Project Area. Beneficial effects from the creation of additional openings through Variable Retention Harvest treatments and small gap openings in Variable Density Thinning because they forage in open areas. Proposed activities impacts are inconsequential to individuals and/or habitat at the Planning Area scale.
Purple finch	BOCC	Y	Not Affected	Adequate potential habitat exists within and adjacent to the Project Area.

Table A7-1. Birds of Conservation Concern and Game Birds Below Desired Condition in the East West Junction Planning Area				
SPECIES	STATUS	Project within RANGE (Y/N)	Project Status 1/ Not Present 2/ Not Affected 3/ Affected	Comments Regarding Status
				Proposed activities impacts are inconsequential to individuals and/or habitat at the Planning Area scale.
Rufous Hummingbird	BOCC	Y	Not Affected	Untreated areas would be left. Ground disturbance from treatment activities and prescribed fire would stimulate growth of shrubs and herbaceous plants. Adequate potential habitat exists within and adjacent to the Project Area. Proposed activities impacts are inconsequential to individuals and/or habitat at the Planning Area scale.

BOCC – Birds of Conservation Concern

GBBDC – Game Birds Below Desired Condition

APPENDIX 8 – WILDLIFE SPECIAL STATUS SPECIES

Specialist Report Memo

On February 7, 2008 a new Special Status Species list went into Effect (IM No. OR-2008-038). This new list has two categories, Sensitive and Strategic. According to BLM Special Status Species Management (6840), only Sensitive species are required to be addressed in NEPA documents. All Sensitive species were considered and evaluated for this project, and only those that could be impacted by the action alternatives are discussed in more detail in the EA.

The table below lists the Bureau Sensitive species that are documented or Suspected on lands within the Grants Pass Resource Area.

Table A8-1. Special Status Species - East West Junction Project Area				
SPECIES	2/07/08 STATUS	Project within RANGE (Y/N)	Project Status 1/ Not Present 2/ Not Affected 3/ Affected	Comments Regarding Status
Birds: Bureau Sensitive & Federally Threatened				
American peregrine falcon	BSEN	Y	Not Affected	No nesting habitat in the Planning Area, but they could forage in the Planning Area. Project activities would not affect this species at the landscape scale.
Bald eagle	BSEN	Y	Not Affected	No known Bald eagle nest trees are located in the Planning Area. Therefore, no direct negative effects are anticipated. If a nest is located prior to implementing the project, it would be protected under the 1995 RMP guidelines and the Bald and Golden Eagle Protection Act. Even though all of the alternatives would remove some potential nest/roost trees, bald eagles would not be precluded from nesting and foraging in the watersheds due to retention of larger suitable nest trees in areas not proposed for treatment.

SPECIES	2/07/08 STATUS	Project within RANGE (Y/N)	Project Status 1/ Not Present 2/ Not Affected 3/ Affected	Comments Regarding Status
Birds: Bureau Sensitive & Federally Threatened				
Lewis' woodpecker	BSEN	Y	Not Present	N/A
Marbled murrelet	FT	N	Not Present	N/A
Northern spotted owl	FT	Y	Affected	<i>Refer to Section 3.6 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
Purple martin	BSEN	Y	Not Affected	Possible migrant in Josephine County. No detectable effects from the action alternatives.
Tri-colored Blackbird	BSEN	Y	Not Affected	No habitat in the Planning Area.
White-headed woodpecker	BSEN	Y	Not Affected	Adequate potential habitat exists in and adjacent to the Planning Area. Project activities would not adversely affect this species at the landscape scale as adequate levels of snags would be retained (PDF Ch. 2) post treatment.
White-tailed kite	BSEN	Y	Not Affected	No anticipated effects.
Amphibians: Bureau Sensitive				
Black salamander	BSEN	Y	Not Affected	Adequate potential habitat exists within and adjacent to the Planning Area. No known sites located in project units. Primary habitat (rocky talus in open oak meadows) would remain untreated.
Foothill yellow-legged Frog	BSEN	Y	Not Affected	Project activities would not affect this species if present in the Planning Area.
Reptiles: Bureau Sensitive				
Northwestern pond turtle	BSEN	Y	Not Affected	Located in the watershed at large water sources, but not expected to occur in or adjacent to project units. No anticipated effects.

SPECIES	2/07/08 STATUS	Project within RANGE (Y/N)	Project Status 1/ Not Present 2/ Not Affected 3/ Affected	Comments Regarding Status
Mammals: Bureau Sensitive and Federal Candidate				
Fisher	FC	Y	Affected	<i>Refer to Section 3.6 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
Fringed myotis Pacific pallid bat	BSEN	Y	Not Affected	The fringed myotis and pallid bat, are associated with late-successional habitat, and suspected to occur in the Planning Area. Some loss of potential roosting sites, such as snags and large mature trees, important to other bat species is expected from harvest activities. However, adequate amounts of roosting habitat would be retained through green tree and snag retention as listed in the PDFs, which would help minimize potential effects. Additionally, some beneficial effects are anticipated, since the treatment of dense stand conditions existing thin the project would improve bat habitat by reducing echolocation interference, cluttered flight paths, and access to snags (personal communication, J. Hayes 2003).
Townsend's big-eared bat	BSEN	Y	Not Affected	Townsend's big-eared bats hibernate in caves and mines during winter (Sherwin 1998). There are no mine adits in the Planning Area with historic Townsend's big-eared bat observations. Therefore, no effects are anticipated.
Invertebrates: Bureau Sensitive				
Chase sideband snail	BSEN	N	Not Present	N/A
Coronis Fritillary	BSEN	Y	Not Affected	No habitat present in units proposed for treatment. Known sites occur in the Planning Area, but would not be treated.
Franklin's Bumblebee	BSEN	N	Not Present	N/A

SPECIES	2/07/08 STATUS	Project within RANGE (Y/N)	Project Status 1/ Not Present 2/ Not Affected 3/ Affected	Comments Regarding Status
Invertebrates: Bureau Sensitive				
Johnson's Hairstreak	BSEN	N	Not Present	N/A
Mardon skipper butterfly	FC	N	Not Present	N/A
Oregon Shoulderband snail	BSEN	Y	Not Affected	See Wildlife Effects Section in Appendix 2 regarding effects to mollusks.
Travelling sideband snail	BSEN	Y	Not Affected	See Wildlife Effects Section in Appendix 2 regarding effects to mollusks.

Status:

FT - USFW Threatened - likely to become endangered species within the foreseeable future

FC - USFW Candidate - proposed and being reviewed for listing as threatened or endangered

BSEN - Bureau Sensitive (BLM) - Generally these species are restricted in range and have natural or human caused threats to their survival.

APPENDIX 9 – PORT ORFORD CEDAR RISK KEY ANALYSIS FOR THE EAST WEST JUNCTION PROJECT

Risk Key is from Alternative 2 of the FSEIS for Management of Port Orford Cedar in Southwest Oregon 1/2004

QUESTION		UNIT															
		7N-1	7N-2	7N-3	7N-4	7N-8	7N-9	7N-10	8-2	8-3	17-1	17-1D	17-2	17-4	17-4A	17-10	18-1
1a.	Are there uninfected POC within, near ¹ , or downstream of the activity area whose ecological, Tribal, or product use or function measurably contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
1b.	Are there uninfected POC within, near ¹ , or downstream of the activity area that, were they to become infected, would likely spread infections to trees whose ecological, Tribal, or product use or function measurable contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
1c.	Is the activity area within an uninfested 7 th field watershed ² as defined in Alternative 6	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
		<i>If the answer to all three questions, 1a, 1b, and 1c, is no, then risk is low and no POC management practices would be required.</i>															
		<i>If the answer to any of the three questions is yes, continue.</i>															
2.	Will the proposed project introduce appreciable additional risk ³ of infection to these uninfested POC?	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

		<i>If no, then risk is low and no POC management practices are required.</i>																
	<i>If yes, apply management practices from the list below [within FSEIS] to reduce the risk to the point it is no longer appreciable, or meet the disease control objectives by other means, such as redesigning the project so that uninfected POC are no longer near or downstream of the activity area. If the risk cannot be reduced to the point it is no longer appreciable through practicable and cost-effective treatments or design changes, the project may proceed if the analysis supports a finding that the value or need for the proposed activity outweighs the additional risk to POC created by the project.</i>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

1 - In questions 1a and 1b, "near" generally means within 25 to 50 feet downslope or 25 feet upslope from management activity areas, access roads, or haul routs; farther for drainage features; 100 to 200 feet in streams.

2 - Uninfested 7th field watersheds are listed on Table A12-2 [of FSEIS] as those with at least 100 acres of POC stands, are at least 50% federal ownership, and are free of PL except within the lowermost 2 acres of the drainage.

3 - Appreciable additional risk does not mean "any risk." It means that a reasonable person would recognize risk, additional to existing uncontrollable risk, to believe mitigation is warranted and would make a cost-effective or important difference (see Risk Key Definitions and Examples for further discussion.)

QUESTION		UNIT														
		18-4	19-1	19-3	20-1	20-1A	20-2	20-3	20-4	21-6	13-3A	13-3B	13-6B	13-14	13-16A	13-16B
1a.	Are there uninfected POC within, near ¹ , or downstream of the activity area whose ecological, Tribal, or product use or function measurably contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
1b.	Are there uninfected POC within, near ¹ , or downstream of the activity area that, were they to become infected, would likely spread infections to trees whose ecological, Tribal, or product use or function measurable contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
1c.	Is the activity area within an uninfested 7 th field watershed ² as defined in Alternative 6	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
		<i>If the answer to all three questions, 1a, 1b, and 1c, is no, then risk is low and no POC management practices would be required.</i>														
		<i>If the answer to any of the three questions is yes, continue.</i>														
2.	Will the proposed project introduce appreciable additional risk ³ of infection to these uninfected POC?	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		<i>If no, then risk is low and no POC management practices are required.</i>														

<p><i>If yes, apply management practices from the list below [within FSEIS] to reduce the risk to the point it is no longer appreciable, or meet the disease control objectives by other means, such as redesigning the project so that uninfected POC are no longer near or downstream of the activity area. If the risk cannot be reduced to the point it is no longer appreciable through practicable and cost-effective treatments or design changes, the project may proceed if the analysis supports a finding that the value or need for the proposed activity outweighs the additional risk to POC created by the project.</i></p>		n/a																
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1 - In questions 1a and 1b, "near" generally means within 25 to 50 feet downslope or 25 feet upslope from management activity areas, access roads, or haul routes; farther for drainage features; 100 to 200 feet in streams.

2 - Uninfested 7th field watersheds are listed on Table A12-2 [of FSEIS] as those with at least 100 acres of POC stands, are at least 50% federal ownership, and are free of PL except within the lowermost 2 acres of the drainage.

3 - Appreciable additional risk does not mean "any risk." It means that a reasonable person would recognize risk, additional to existing uncontrollable risk, to believe mitigation is warranted and would make a cost-effective or important difference (see Risk Key Definitions and Examples for further discussion.)

QUESTION		UNIT													
		29-1	29-2	29-3	29-4	29-8	29-9	29-11	29-12A	29-B	29-13	29-15	29-17	29-18	33-5
1a.	Are there uninfected POC within, near ¹ , or downstream of the activity area whose ecological, Tribal, or product use or function measurably contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	no	no	no
1b.	Are there uninfected POC within, near ¹ , or downstream of the activity area that, were they to become infected, would likely spread infections to trees whose ecological, Tribal, or product use or function measurable contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	no	no	no
1c.	Is the activity area within an uninfested 7 th field watershed ² as defined in Alternative 6	no	no	no	no	no	no	no	no	no	no	no	no	no	no
		<i>If the answer to all three questions, 1a, 1b, and 1c, is no, then risk is low and no POC management practices would be required.</i>													
		<i>If the answer to any of the three questions is yes, continue.</i>													
2.	Will the proposed project introduce appreciable additional risk ³ of infection to these uninfected POC?	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		<i>If no, then risk is low and no POC management practices are required.</i>													

<p><i>If yes, apply management practices from the list below [within FSEIS] to reduce the risk to the point it is no longer appreciable, or meet the disease control objectives by other means, such as redesigning the project so that uninfected POC are no longer near or downstream of the activity area. If the risk cannot be reduced to the point it is no longer appreciable through practicable and cost-effective treatments or design changes, the project may proceed if the analysis supports a finding that the value or need for the proposed activity outweighs the additional risk to POC created by the project.</i></p>		n/a													
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1 - In questions 1a and 1b, "near" generally means within 25 to 50 feet downslope or 25 feet upslope from management activity areas, access roads, or haul routes; farther for drainage features; 100 to 200 feet in streams.

2 - Uninfested 7th field watersheds are listed on Table A12-2 [of FSEIS] as those with at least 100 acres of POC stands, are at least 50% federal ownership, and are free of PL except within the lowermost 2 acres of the drainage.

3 - Appreciable additional risk does not mean "any risk." It means that a reasonable person would recognize risk, additional to existing uncontrollable risk, to believe mitigation is warranted and would make a cost-effective or important difference (see Risk Key Definitions and Examples for further discussion.)

QUESTION		UNIT													
		34-1	34-2	3-3	3-4	5-1	5-9	7S-2	7S-3	7S-6	7S-6A	7S-8	9-8	9-9	9-12
1a.	Are there uninfected POC within, near ¹ , or downstream of the activity area whose ecological, Tribal, or product use or function measurably contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	yes	no	no
1b.	Are there uninfected POC within, near ¹ , or downstream of the activity area that, were they to become infected, would likely spread infections to trees whose ecological, Tribal, or product use or function measurable contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	Yes Planted POC	no	no
1c.	Is the activity area within an uninfested 7 th field watershed ² as defined in Alternative 6	no	no	no	no	no	no	no	no	no	no	no	no	no	no
		<i>If the answer to all three questions, 1a, 1b, and 1c, is no, then risk is low and no POC management practices would be required.</i>													
<i>If the answer to any of the three questions is yes, continue.</i>															
2.	Will the proposed project introduce appreciable additional risk ³ of infection to these uninfected POC?	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	No. Public accessible	n/a	n/a
		<i>If no, then risk is low and no POC management practices are required.</i>													

<p><i>If yes, apply management practices from the list below [within FSEIS] to reduce the risk to the point it is no longer appreciable, or meet the disease control objectives by other means, such as redesigning the project so that uninfected POC are no longer near or downstream of the activity area. If the risk cannot be reduced to the point it is no longer appreciable through practicable and cost-effective treatments or design changes, the project may proceed if the analysis supports a finding that the value or need for the proposed activity outweighs the additional risk to POC created by the project.</i></p>		n/a	<p>Not required:</p> <p>1) May schedule project in dry season only OR 2) Wash vehicles before entry.</p>	n/a	n/a										
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1 - In questions 1a and 1b, "near" generally means within 25 to 50 feet downslope or 25 feet upslope from management activity areas, access roads, or haul routes; farther for drainage features; 100 to 200 feet in streams.

2 - Uninfested 7th field watersheds are listed on Table A12-2 [of FSEIS] as those with at least 100 acres of POC stands, are at least 50% federal ownership, and are free of PL except within the lowermost 2 acres of the drainage.

3 - Appreciable additional risk does not mean "any risk." It means that a reasonable person would recognize risk, additional to existing uncontrollable risk, to believe mitigation is warranted and would make a cost-effective or important difference (see Risk Key Definitions and Examples for further discussion.)

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QUESTION		Roads / Road Systems (operations and use including temporary route construction and road reconstruction (including associated decommissioning), road renovation/improvement, road maintenance, and log hauling)															
		into Units 3-3 and 3-4	into Unit 5-1	into Units 7S-2	into Unit 8-2	into Units 29-15 and 29-16	into Unit 34-2	into Unit 20-2	into Units 7N-3 and 7N-4	into Unit 29-2	into Unit 29-4	39-7-7	39-7-8.00A	39-7-8.00B	39-7-8.00C	39-7-8.00D	39-7-8.00E
1a.	Are there uninfected POC within, near ¹ , or downstream of the activity area whose ecological, Tribal, or product use or function measurably contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
1b.	Are there uninfected POC within, near ¹ , or downstream of the activity area that, were they to become infected, would likely spread infections to trees whose ecological, Tribal, or product use or function measurable contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
1c.	Is the activity area within an uninfested 7 th field watershed ² as defined in Alternative 6	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
		<i>If the answer to all three questions, 1a, 1b, and 1c, is no, then risk is low and no POC management practices would be required.</i>															
		<i>If the answer to any of the three questions is yes, continue.</i>															
2.	Will the proposed project introduce appreciable additional risk ³ of infection to these uninfected POC?	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

	<i>If no, then risk is low and no POC management practices are required.</i>																
<p><i>If yes, apply management practices from the list below [within FSEIS] to reduce the risk to the point it is no longer appreciable, or meet the disease control objectives by other means, such as redesigning the project so that uninfected POC are no longer near or downstream of the activity area. If the risk cannot be reduced to the point it is no longer appreciable through practicable and cost-effective treatments or design changes, the project may proceed if the analysis supports a finding that the value or need for the proposed activity outweighs the additional risk to POC created by the project.</i></p>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

1 - In questions 1a and 1b, "near" generally means within 25 to 50 feet downslope or 25 feet upslope from management activity areas, access roads, or haul routes; farther for drainage features; 100 to 200 feet in streams.

2 - Uninfested 7th field watersheds are listed on Table A12-2 [of FSEIS] as those with at least 100 acres of POC stands, are at least 50% federal ownership, and are free of PL except within the lowermost 2 acres of the drainage.

3 - Appreciable additional risk does not mean "any risk." It means that a reasonable person would recognize risk, additional to existing uncontrollable risk, to believe mitigation is warranted and would make a cost-effective or important difference (see Risk Key Definitions and Examples for further discussion.)

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1/2004

QUESTION		Roads / Road Systems (operations and use including temporary route construction and road reconstruction (including associated decommissioning), road renovation/improvement, road maintenance, and log hauling)															
		39-7-8.02A	39-7-8.02B	39-7-17A	39-7-17B	39-7-17.01	39-7-17.02	39-7-17.03	39-7-18.02	39-7-18.03	39-7-18.04	39-7-19A	39-7-19.02	39-8-13.01	39-8-13.02	39-8-13.03	39-8-13.04
1a.	Are there uninfected POC within, near ¹ , or downstream of the activity area whose ecological, Tribal, or product use or function measurably contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
1b.	Are there uninfected POC within, near ¹ , or downstream of the activity area that, were they to become infected, would likely spread infections to trees whose ecological, Tribal, or product use or function measurable contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
1c.	Is the activity area within an uninfested 7 th field watershed ² as defined in Alternative 6	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
		<i>If the answer to all three questions, 1a, 1b, and 1c, is no, then risk is low and no POC management practices would be required.</i>															
	<i>If the answer to any of the three questions is yes, continue.</i>																

2.	Will the proposed project introduce appreciable additional risk ³ of infection to these uninfected POC?		n/a														
		<i>If no, then risk is low and no POC management practices are required.</i>															
	<i>If yes, apply management practices from the list below [within FSEIS] to reduce the risk to the point it is no longer appreciable, or meet the disease control objectives by other means, such as redesigning the project so that uninfected POC are no longer near or downstream of the activity area. If the risk cannot be reduced to the point it is no longer appreciable through practicable and cost-effective treatments or design changes, the project may proceed if the analysis supports a finding that the value or need for the proposed activity outweighs the additional risk to POC created by the project.</i>		n/a														

1 - In questions 1a and 1b, "near" generally means within 25 to 50 feet downslope or 25 feet upslope from management activity areas, access roads, or haul routes; farther for drainage features; 100 to 200 feet in streams.

2 - Uninfested 7th field watersheds are listed on Table A12-2 [of FSEIS] as those with at least 100 acres of POC stands, are at least 50% federal ownership, and are free of PL except within the lowermost 2 acres of the drainage.

3 - Appreciable additional risk does not mean "any risk." It means that a reasonable person would recognize risk, additional to existing uncontrollable risk, to believe mitigation is warranted and would make a cost-effective or important difference (see Risk Key Definitions and Examples for further discussion.)

Risk Key is from Alternative 2 of the FSEIS for Management of Port Orford Cedar in Southwest Oregon
1/2004

QUESTION		Roads / Road Systems (operations and use including temporary route construction and road reconstruction (including associated decommissioning), road renovation/improvement, road maintenance, and log hauling)																	
		39-8-13.05	39-7-21.01	39-8-29	39-8-29.01	39-8-29.03	39-8-29.04	39-8-29.05	39-8-33	39-8-34.00	39-8-34.01	39-8-34.02	40-8-3	40-8-4.00A	40-8-5.00A	40-8-5.00B	39-7-7	40-8-9.01	
1a.	Are there uninfected POC within, near ¹ , or downstream of the activity area whose ecological, Tribal, or product use or function measurably contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	yes
1b.	Are there uninfected POC within, near ¹ , or downstream of the activity area that, were they to become infected, would likely spread infections to trees whose ecological, Tribal, or product use or function measurable contributes to meeting land and resource management plan objectives?	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	yes
1c.	Is the activity area within an uninfested 7 th field watershed ² as defined in Alternative 6	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
		<i>If the answer to all three questions, 1a, 1b, and 1c, is no, then risk is low and no POC management practices would be required.</i>																	
		<i>If the answer to any of the three questions is yes, continue.</i>																	
2.	Will the proposed project introduce appreciable additional risk ³ of infection to	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	no

these uninfected POC?																					
	<i>If no, then risk is low and no POC management practices are required.</i>																				
<i>If yes, apply management practices from the list below [within FSEIS] to reduce the risk to the point it is no longer appreciable, or meet the disease control objectives by other means, such as redesigning the project so that uninfected POC are no longer near or downstream of the activity area. If the risk cannot be reduced to the point it is no longer appreciable through practicable and cost-effective treatments or design changes, the project may proceed if the analysis supports a finding that the value or need for the proposed activity outweighs the additional risk to POC created by the project.</i>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>no</td> </tr> </table>	n/a	no																		
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	no		

1 - In questions 1a and 1b, "near" generally means within 25 to 50 feet downslope or 25 feet upslope from management activity areas, access roads, or haul routes; farther for drainage features; 100 to 200 feet in streams.

2 - Uninfested 7th field watersheds are listed on Table A12-2 [of FSEIS] as those with at least 100 acres of POC stands, are at least 50% federal ownership, and are free of PL except within the lowermost 2 acres of the drainage.

3 - Appreciable additional risk does not mean "any risk." It means that a reasonable person would recognize risk, additional to existing uncontrollable risk, to believe mitigation is warranted and would make a cost-effective or important difference (see Risk Key Definitions and Examples for further discussion.)

Conclusion: No measures or mitigation for Port-Orford-cedar are required.

APPENDIX 10 – VISUAL RESOURCE MANAGEMENT AND WILD AND SCENIC RIVERS

The East West Junction Project Planning Area has an eligible Wild and Scenic River segment of the West Fork Illinois River. This river segment is eligible for a suitability study to determine its inclusion into the National Wild & Scenic River System for the Outstandingly Remarkable Value of scenery, under the 2008 Medford District Resource Management Plan. One proposed treatment unit (5-9) and small portions of four other treatment units (29-4, 29-8, 29-17, and 29-18) are located in this eligible Wild & Scenic corridor.

Wild and Scenic Rivers Act:

A. Federal Register/ Vol. 47, No. 173 / September 7, 1982: Classification:

- 2) Scenic river areas-Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
 - b. Shorelines or watersheds still largely primitive. To qualify for scenic classification, the rivers segment's shorelines and immediate environment should not show substantial evidence of human activity. The portion of the watershed within the boundary of the scenic river may have some discernible existing development. "Largely primitive means that the shorelines and the immediate river environment still present an overall natural character, but that in places land may be developed for agricultural purposes. Row crops would be considered as meeting the test of "largely primitive," as would timber harvest and other resource use, providing such activity is accomplished without a substantial adverse effect on the natural appearance of the river or its immediate environment.

2008 Medford District Resource Management Plan (RMP)

The 2008 RMP manages the eligible segments of the West Fork Illinois River under Visual Resource Management (VRM), Class II. Under this management plan, all of the remaining proposed treatment units for the East West Junction Project are located within VRM Class IV management. The management guidance for these VRM Classes are as follows:

VRM Class II objectives are to retain the existing character of the landscape. Management activities may be seen, but should not attract the attention of the casual observer. Changes are to repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.

VRM Class IV objectives are to manage lands for high levels of change. Management activities may dominate the view and be the major focus of viewer attention.

1995 Medford District RMP

Under the 1995 Medford District Resource Management Plan, there are no designated, suitable, or eligible Wild & Scenic Rivers in the East West Junction Project Area. As such, the 1995 RMP VRM Classes for the East West Junction Project are VRM III and VRM IV. Though the management guidelines for VRM IV is similar to VRM IV described in the 2008 RMP, there are a few distinctions. The management guidance for these VRM Classes (1995 RMP) are as follows:

VRM Class III objectives are to manage lands for moderate levels of change to the characteristic landscape. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.

VRM Class IV objectives are to manage lands for moderate levels of change to the characteristic landscape. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the effect of these activities through careful location, minimal disturbance, and should repeat the basic elements of form, line, color, and texture.

Visual Contrast Rating for VRM

The Visual Contrast Rating Worksheet was completed from Key Observation Points (KOPs) as a field tool to assess if the proposed activities would change the natural characteristic of the landscape.

KOPs

KOPs were selected to identify potential effects to the visual resources (see Table A10-1). For this project, the points were selected along the West Fork Illinois River since this river is designated as VRM Class II under the 2008 RMP, and from the trail head of the Illinois State Park since it is the only *designated* recreation site under the 1995 or 2008 RMP that has a viewpoint into the East West Junction Project proposed activities. The Illinois State Park under the 1995 RMP is also designated as VRM Class III. The Illinois Valley Visitor Center is the other *designated* recreation site under the 1995 and 2008 RMP; however, the proposed East West Junction Project activities would not be viewable from the visitor center. The West Fork Illinois River was assessed to see if the existing visual character of the landscape and Outstandingly Remarkable Value of scenery would be potentially impacted by the East West Junction Project's action alternatives. The trailhead of the Illinois State Park was assessed to see if this view would be within moderate levels of change to the characteristic landscape and would retain the basic elements of form, line, color, texture, and scale found in the predominant natural features

of the characteristic landscape after project implementation. To meet the guidance of VRM Class III of the 1995 RMP, changes may attract the attention, but should not dominate the view of the casual observer.

The visual assessment from these locations considered the season of use, light conditions, angle of observation, number of viewers, and length of time the project is in view as recommended in the BLM VRM Manual 8431.

Findings and Recommendations:

The proposed units 5-9, 29-4, 29-8, 29-17, and 29-18 and the temporary route re-construction in unit 29-4 had the potential of being viewed from the West Fork Illinois River, during initial VRM evaluation. After field review, it was determined that these units and the temporary route re-construction were not visible from the West Fork Illinois River due to how these units are positioned on the landscape, and the existing vegetation screens the line of sight into the units (the proposed temporary route construction is located within the boundary of unit 29-4). The vegetation screening the view into the unit, would not be altered by the proposed activities of the East West Junction Project. The proposed road renovation/improvement for two units would not change the view of the landscape since this work is limited to restoring or improving an existing road.

Therefore, the specific unit prescriptions for the action alternatives (Alt 2 and Alt 3) would meet the management guidelines for VRM II and would not affect the scenic quality from the river or this river segment's eligibility for scenery. No further Project Design Features are recommended, beyond those identified in Section 2.3.4 of this EA.

The proposed units 29-1, 29-2, 29-3, 29-4, 29-8, 29-9, 29-11, 29-12A, 29-12B, 29-13, 29-15, 29-16, and 29-17, and two segments of temporary route construction and re-construction had the potential of being viewed from the Illinois State Park trailhead, during initial VRM evaluation. After field review, it was determined that these units and the temporary route construction and re-construction were not visible from this park's trailhead due to the dense vegetation within the riparian zone and the geographic formations in sections 21 & 29. The proposed temporary route construction and re-construction are located within the boundaries of proposed units. The proposed road renovation/improvement for one unit would not change the view of the landscape since this work is limited to restoring or improving an existing road.

The specific unit prescriptions for the action alternatives (Alt 2 and Alt 3) would meet the management guidelines for VRM III and would result in moderate levels of change to the characteristic landscape. Since the purpose and need for this project is to implement forest management activities that would contribute to continuous timber production while restoring dry and moist forest characteristics and reducing wildfire danger, the unit prescriptions for these units have been developed to repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape and would not dominant the casual view of the observer. No further Project Design Features are recommended, beyond those identified in Section 2.3.4 of this EA.

Table A-10. Key Observation Points for Visual Resource Management - East West Junction Project

Key Observation Point (KOP)	Location of KOP Township Range Section	Visual Resource Management (VRM) Class Designation (2008 and 1995 RMPs)	Alternative 2 Prescription	Alternative 3 Prescription	Current Characteristic Landscape	Analysis	Conclusions and Recommendations
I. On River within River Corridor looking northeast towards unit.	T40S, R8W, Sec 5	II-2008 RMP III- 1995 RMP	Units: 5-9, 29-4, 29-8, 29-17 = Variable Density Thinning-No Gaps (Tanoak Series) 29-18 = Density Management/ Hazardous Fuel Reduction Road renovation/ improvement	Units: 5-9, 29-4, 29-8, 29-17= Commercial Thin / Pre-commercial Thinning retain $\geq 60\%$ canopy cover. 29-18 = Density Management/ Hazardous Fuel Reduction Road renovation/ improvement	Foreground view shed is continual dense vegetation, even aged conifers, and mixed hardwoods. Unit cannot be seen from the river.	Angle of observation: On River's edge within River Corridor looking northeast towards unit. Number of viewers: medium recreational river users. Length of time project is in view: Project is not in view shed from this KOP. Unit is well screened with vegetation from River's edge. Recreationist on the River or at the Rivers' edge would not be able to see management activities within the unit.	Alternative 2 & 3: Both action alternatives meet the VRM II & III objectives. Persons recreating within or alongside the River cannot see the unit. The unit is well buffered with natural vegetation from this view point.

Key Observation Point (KOP)	Location of KOP Township Range Section	Visual Resource Management (VRM) Class Designation (2008 and 1995 RMPs)	Alternative 2 Prescription	Alternative 3 Prescription	Current Characteristic Landscape	Analysis	Conclusions and Recommendations
<p>2. From Illinois State Park trail head looking directly towards units, as well as along the entrance driveway to the State Park.</p>	<p>T39S, R8W, Sec 29.</p>	<p>IV- 2008 RMP III – 1995 RMP</p>	<p>Units: 29-1, 29-2, 29-4, 29-8, 29-11, 29-12B, 29-13, 29-16, 29-17= Variable Density Thinning (Douglas Fir Series)/Pre-commercial Thinning 29-9, 29-12A, 29-18= Density Management/ Hazardous Fuel Reduction 29-3= Hazardous Fuel Reduction 29-15= Variable Density Thinning (Douglas Fir Series)</p>	<p>Units: 29-1, 29-2, 29-13= Density Management; Hazardous Fuel Reduction $\geq 60\%$ 29-3= Hazardous Fuel Reduction 29-4, 29-8, 29-11= Commercial Thin/Pre-commercial Thinning $\geq 60\%$ 29-12A, 29-12B, 29-18= Density Management/ Hazardous Fuel Reduction 29-15= Commercial Thinning $\geq 40\%$</p>	<p>The characteristic landscape is dense conifer forests with scattered hardwoods with maple and alder trees lining the rivers edges. Colors are predominately green with seasonal changes of reds and yellows. The river is in the forefront, with deep blues and green colors along with boulders and rock of gray. Surrounding area is mixture of developed parkland with large green grass areas, picnic structures, paved parking lots, open meadows, and outbuildings.</p>	<p>Angle of observation: Observation point from the State Park trail head, looking south, west, and north into area of units, looking east into developed park areas, and driving along the entrance road into the Park. Number of viewers: High Length of time project is in view: None Sec. 29 units cannot be seen from the trail head, picnic and parking areas within the State Park boundaries, or along the driveway into the Park due to the dense vegetation within the riparian zone and the geographic formations in sections 21 & 29.</p>	<p>Alternative 2 & 3: The proposed treatments would meet VRM III & IV objectives, because the treatment would not dominate the viewshed and treatments cannot be seen from these KOPs.</p>
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Key Observation Point (KOP)	Location of KOP Township Range Section	Visual Resource Management (VRM) Class Designation (2008 and 1995 RMPs)	Alternative 2 Prescription	Alternative 3 Prescription	Current Characteristic Landscape	Analysis	Conclusions and Recommendations
<p>3. From Illinois State Park trail head looking directly towards units, as well as along the entrance driveway to the State Park.</p>	<p>T39S, R8W, Sec 29.</p>	<p>IV- 2008 RMP III – 1995 RMP</p>	<p>Temporary route construction and temporary route reconstruction to be decommissioned after harvest and fuels treated</p>	<p>Temporary route construction and temporary route reconstruction to be decommissioned after harvest and fuels treated</p>	<p>The characteristic landscape is dense conifer forests with scattered hardwoods with maple and alder trees lining the rivers edges. Colors are predominately green with seasonal changes of reds and yellows. The river is in the forefront, with deep blues and green colors along with boulders and rock of gray. Surrounding area is mixture of developed parkland with large green grass areas, picnic structures, paved parking lots, open meadows, and outbuildings.</p>	<p>Angle of observation: Observation point from the State Park trail head, looking south, west, and north into area of units, looking east into developed park areas, and driving along the entrance road into the Park.</p> <p>Number of viewers: High</p> <p>Length of time project is in view: None</p> <p>Sec. 29 units cannot be seen from the trail head, picnic and parking areas within the State Park boundaries, or along the driveway into the Park due to the dense vegetation within the riparian zone and the geographic formations in sections 21 & 29.</p>	<p>Alternative 2 & 3: The road work would meet VRM III & IV objectives, because the road work would not dominate the view shed and treatments cannot be seen from these KOPs.</p>

APPENDIX 11 – WATER QUALITY: PEAK FLOW SPECIALIST REPORT

Affected Environment

The Upper Illinois River watershed has a Mediterranean climate with cool, wet winters and warm dry summers. Annual precipitation in the project area is variable, ranging from approximately 52 to 91 inches, with an increase in precipitation moving from east to west. The watershed is predominately rain-dominated. However, at elevations above 3,000 feet on the east end of the watershed, rain-on-snow events can generate high peak flows, and melting snow pack may result in extended stream flows in the late spring/early summer. The East-West Junction project area is located at the lower rain-dominated elevations.

From 1955 to 1985, the estimated mean peak flow of the West Fork Illinois River (near O'Brien) during the wet season (November–March) was approximately 5,720 cubic feet of water per second (cfs). From 1929 to 1991, the estimated mean peak flow of the East Fork Illinois River (near Takilma) was approximately 4,600 cfs. Due to the dominance of serpentine soils, streamflows are particularly “flashy” (i.e., rapidly rising and falling with the onset and cessation of rainfall) in the western area of the Lower West Fork Illinois River 6th field, the central portion of the Lower East Fork Illinois 6th field and especially in the Rough and Ready Creek subwatershed. Non-serpentine soils are typically deeper and have a greater vegetative cover, thus streamflows are not as responsive to precipitation.

While there have been numerous studies in the Pacific Northwest examining the effects of timber harvest on peak flows, the results vary widely depending on a number of factors including the type of event (rain; rain-on-snow; snow melt), the watersheds' characteristics, and the location of roads and clearcuts (Church et al. 2001). Increases in streamflow have been shown to be proportional to the amount of cover removed with clearcutting, yielding larger increases than partial cutting (Rothacher 1971). Research (Beschta et al. 2000; Harr et al. 1979; Harr et al. 1976; Jones 2000, Thomas and Megahan 1998, Ziemer 1981) has found that consistent detectable changes to stream flow from timber harvest occurred only when greater than 25 to 30% of the watershed was in clear-cut condition. Most of these studies included watersheds with substantial Transient Snow Zone (TSZ) openings. Partial cutting reduces, but does not stop transpiration, as residual plant root systems grow and respond to increased available soil moisture; therefore, evapotranspiration increases with time (Rothacher 1971).

Figure A11-1 below is a compilation of results from several field studies. This graph is relevant because the East West Junction Project Planning Area is “rain-dominated” with minimal TSZ. Note the results are scattered and the patterns that emerge are not exact. The gray shading shows the limit of detection. This graph shows that 29% openings (“percentage harvested”) is a very conservative beginning level for rain dominated systems to show any increase in peak flows. The first measured data point is actually at greater than 40% openings and the mean change for all data (dashed line) becomes

detectable at 45% openings. Note that there are seven points at or near zero peak-flow-change at all different levels of percentage harvest.

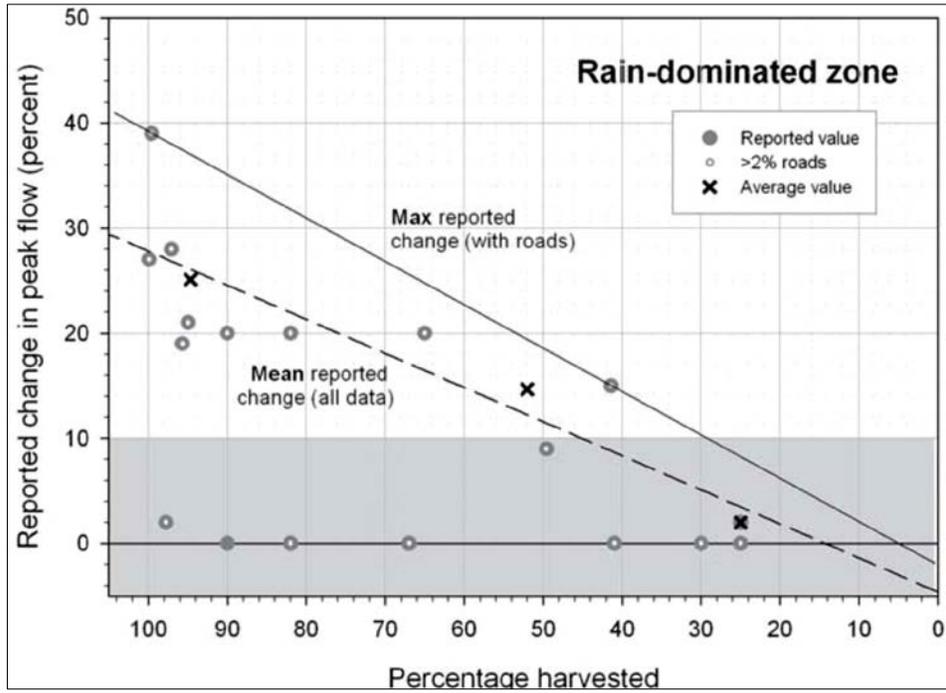


Figure A11-1. Peak Flow increases in heavily harvested rain-dominated forests (Grant et al. 2008)

Table A11-1. Percent 7th Field Drainage Areas in Harvested and Wildfire Openings

6 th Field Subwatershed	7 th Field Drainage Areas	Opening % (acres)	Openings < 25 years old
Lower East Fork Illinois River (171003110303) 30,952 acres	0339, Kelly Creek (2,749 ac)	2.8% (55 ac)	0.0% (0 ac)
	0342, Tycer Creek (2,392 ac)	7.1% (170 ac)	0.54 % (13 ac)
	0348, Chapman Creek (2,539 ac)	6.6% (167 ac)	0.93% (23.5 ac)
	0351, East Fork Illinois R below Chapman Cr, above Unnamed Tributary 0354 (1,217 ac)	0.86% (10.5 ac)	0.38% (4.7 ac)
	0354, Unnamed East Fork Illinois River Tributary (1,464 ac)	3.3% (48.4 ac)	3.3% (48.4 ac)
	0357, East Fork Illinois River below Unnamed Tributary 0354, above West Fork Illinois River confluence (1,056 ac)	0.85% (9 ac)	0.85% (9 ac)
Lower West Fork Illinois River (171003110405) 12,340 acres	0503, West Fork Illinois River below Rough & Ready Cr, above Deep Gravel Cut (176 ac)	46% (81 ac)	1.14% (2 ac)
	0506, Deep Gravel Cut (1,151 ac)	14% (160 ac)	10.3% (119 ac)

6th Field Subwatershed	7th Field Drainage Areas	Opening % (acres)	Openings < 25 years old
Lower West Fork Illinois River (171003110405) 12,340 acres	0509, West Fork Illinois River below Deep Gravel Cut, above Logan Cut (826 ac)	17.6% (145 ac)	1.5% (12 ac)
	0512, Logan Cut (953 ac)	10.7% (102 ac)	4.4% (42 ac)
	0515, West Fork Illinois River below Logan Cut, above Mendenhall Cr (1,874 ac)	0.81% (15.2 ac)	0.81% (15.2 ac)
	0518, Mendenhall Creek (2,482 ac)	1.1% (28 ac)	1.1% (28 ac)
	0521, West Fork Illinois River below Mendenhall Cr, above Woodcock Cr (211 ac)	0.0% (0 ac)	0.0% (0 ac)
	0524, Woodcock Creek (1,295 ac)	0.0% (0 ac)	0.0% (0 ac)
	0527, West Fork Illinois River below Woodcock Cr, above Unnamed Trib 0530 (504 ac)	1.1% (5.7 ac)	1.1% (5.7 ac)
	0530, Unnamed West Fork Illinois River Tributary (1,390 ac)	0.36% (5 ac)	0.36% (5 ac)
	0533, West Fork Illinois River below Unnamed Trib 0530, above East Fork Illinois River confluence (1,469 ac)	0.34% (5 ac)	0.34% (5 ac)
Rough and Ready Creek (171003110404) 23,744 ac	0448, Rough and Ready Creek below North/South Forks confluence, above West Fork Illinois River confluence (5,280 ac)	0.59% (31.2 ac)	0.59% (31.2 ac)
Lower Sucker Creek (171003110204) 13,605 ac	0430, Bear Creek (2,481 ac)	7.0% (174 ac)	3.5% (88 ac)

*Includes openings created fire

Table A11-1 displays the percentages based on Change Detection analysis of accumulated openings for the drainages that are in the East West Junction Project. (The percent openings only include areas that are forested, not natural openings. It also excludes areas that have been developed for more than 25 years as the watershed adapts to accommodate these increased flows.)

In order to pass through the screen to be further analyzed, the cumulative opening threshold is conservatively set at 25% or more for rain dominated precipitation. The only 7th field drainage area that does not pass through the screen is 0503, West Fork Illinois River below Rough & Ready Cr, above Deep Gravel Cut. Of the 46%, less than 2% has occurred in the past 25 years. It is generally accepted that watersheds exhibit almost complete hydrologic recovery 25 years after harvest activities have concluded. Thus, we are most concerned with the amount of openings in a watershed that were created less

than 25 years ago. Though the drainage area lies in this Project Area, the action alternatives would not add openings to a degree that would affect change in peak flows. Therefore further analysis is not needed. There are no proposed activities in drainage areas 0345, 0348, 0351, 0357, 0503, 0509, 0524 and 0527.

Moore et al. (2005) concluded that the magnitude of peak flow increases declined with increasing event magnitude in most cases, with the greatest increases typically associated with autumn rain events on relatively dry catchments. These events resulted in small peak flows with little hydraulic consequence. Others found peak flow increases for flow events with a return interval of 5 years or greater were either small or there was no increase (Beschta et al. 2000). In the steep gradient cascade and step-pool type streams, peak flow increases would have no effect on stream channels, as the flows critical for initiating morphological change are far beyond five year events (Grant et al. 1990). However, this does not address meandering alluvial streams (Rosgen Type C). Post-treatment recovery rates varied among studies.

Roads

The three primary effects of roads on hydrologic processes (peak flows) are: 1) they intercept rainfall directly on the road surface and cutbanks, and affect subsurface water moving down the hillslope; 2) they concentrate flow either on the surface or in an adjacent ditch or channel; and 3) they divert or reroute water from paths it otherwise would take were the road not present (Gucinski et al. 2001). Roads connected to stream channels through ditch lines effectively extend the stream channel network, changing runoff timing and ultimately increasing the magnitude of peak flows (Wemple et al. 1996). The effect of roads on peak streamflows depends strongly on the size of the watershed and the percentage of the watershed in roaded condition. For example, capture and rerouting of water can remove water from one small stream while causing major channel adjustments in another stream receiving the additional water (Gucinski et al. 2001). Roads have relatively insignificant effects on peak flow in large watersheds where they constitute a small proportion of the land surface; they do not seem to change annual water yields, and no studies have evaluated their effect on low flows (Gucinski et al. 2001).

Roads on steeply-sloped ground intercept surface and subsurface water, routing it to a draw or other natural drainage way within the stream system. This routing of water may cause drainage water to reach streams more quickly than the natural rate, increasing the magnitude of flows and alter the timing of runoff. Proper road design that includes outsloping so that water flowing on the road surface is directed to the fill slope mitigates this process by returning surface flow and intercepted subsurface flow back to its natural flow direction.

There are 233 miles of roads in the East West Junction Project Planning Area, which equals approximately 423 acres or about 1.2% (4.3 mi/mi²). This is above the 3 mi/mi² threshold for “not properly functioning” for aquatic species by the National Marine Fisheries Service (NMFS) (USFWS/NOAA Fisheries Table of Population and Habitat

Indicators, USDA et al. 2004b). However, the towns of Takilma and Cave Junction maintain the highest road densities and are a combination of paved, gravel and natural surface roads, many of which have been present for more than 25 years and thus the watershed has adapted to their presence. By this we mean that the roads that are permanent have become part of the baseline conditions. Natural surface roads that are hydrologically connected may be adding sediment to creeks; all roads are impacting runoff direction and timing as they intercept surface and subsurface flow that would otherwise be following natural flowpaths. Consequently the streams have adjusted laterally and horizontally to accommodate any increases in sediment loads and discharge. Research indicates that changes in runoff timing may occur when roads occupy 3-4% of the watershed (WPN, 1999). At the 1.2% road levels, elevated peak flows are very unlikely. For comparison, (Jones and Grant 1996, Jones 2000) found no statistically significant increases in peak flows attributed to roads when roads occupied 6% of the basin. Similarly, Wright (1990) and Ziemer (1981), found no changes to the hydrograph when roads occupied 5% of the basin. Road effects on peak flows were detectable when 12% of the watershed was roaded (Harr et al. 1975). (Roads are included in the Change Detection graph above titled “*Peak Flow increases in heavily harvested Rain-Dominated Forests*”.) Evaluation of stream gauging statistics on the EF Illinois indicates no increase peak flows or annual yield.

Environmental Consequences

Alternative 2 (Proposed Action)

A variety of forest management treatments are proposed under Alternative 2 that would create varying levels of canopy openings and reductions. For Alternative 2, Proposed Variable Density Thinning on 200 acres would create ¼ to 1 acre disconnected openings in each unit ($\pm 15\%$ of stand, limiting 1 acre openings to every 6 or 7 acres), which total 38 acres of openings would spread throughout the Project Area (See Chapter 2 for visual representations). Proposed Variable Retention Harvest (32 acres) involves untreated portions of various sizes from ¼ to 2 acres (20% of area) to reduce the stand density to establish an understory conifer component, which would result in an additional 26 acres of discontinuous openings. The oldest trees and 20-30% of stand would be retained with 10% as individual trees of strong dominants and trees generally older than 150 years including legacy trees. The 317 acres of Density Management/Hazardous Fuel Reduction and 640 acres of Hazardous Fuel Reduction would reduce the risk of high severity crown fire by thinning from below, targeting ladder fuels and creating space between the crowns of overstory trees. This treatment would reduce stocking levels throughout the stand and promote growth and structural development of residual trees. The area of openings would be dispersed for the Density Management and no canopy openings would be created for the Hazardous Fuel Reduction treatments. Pre-commercial thinning and Pre-commercial/Hardwood Control are generally used with this treatment, which may be completed in conjunction with Hazardous Fuel Reduction, although this treatment type will also be used in commercial units. Commercial trees less than 8 inches would be removed while still retaining target canopy; no additional openings would be created.

All proposed openings, including the area of temporary route construction for each 7th field drainage, were added to the existing openings (as determined by change detection). As increases in peak flows cannot be detected in small watersheds with logged or wildfire openings totaling less than 29% of the area, there would be no detectable increases in peak flows for any of the action alternatives. The increased growth of the remaining trees would absorb any minor, undetectable increase in peak flows.

Alternative 3

The proposed activities for Alternative 3 are Commercial Thinning, Density Management/Hazardous Fuel Reduction, Hazardous Fuel Reduction, and the road work described for Alternative 2. Commercial Thinning would be largely applied uniformly across the unit so no canopy openings between ¼ acre to 1 acre would occur for this treatment. The effects regarding peak flows would be as those described in Alternative 2 for the Density Management/Hazardous Fuel Reduction and Hazardous Fuel Reduction.

APPENDIX 12 - AIR QUALITY

Specialist Report

To: Katrina Symons, Field Manager, Glendale Resource Area
From: Yanu Gallimore, Fire and Fuels Specialist, Glendale Resource Area
Re: 'Not Affected' rationale regarding the burning of Polyethylene Plastic Sheeting used to Cover Slash Piles
Date: February 27, 2012

Analysis of Proposed Action Effects of Burning Polyethylene Plastic Sheeting used to Cover Slash Piles for the Revised Wolf Pup Project Environmental Analysis

Compliance with the Clean Air Act and the Oregon Department of Forestry Smoke Management Plan

The Oregon Department of Forestry Smoke Management Plan addresses the issue of using plastic to cover piles. OAR 629-048-0210(2), Best Burn Practices; Emission Reduction Techniques, states, “. . .best burn practices involve methods that ensure the most rapid and complete combustion of forest fuels . . .” Covering of hand piles is a “Best Burn Practice.” OAR 629-048-0210(4) states, “When covers will not be removed and thus will be burned along with the piled forest fuels, the covers must not consist of materials prohibited under OAR 340-264-0060(3), except that polyethylene sheeting that complies with the following may be used: a) Only polyethylene may be used. All other plastics are prohibited.” Air quality concerns have led to prohibitions on the open burning of household plastics in many areas of the country. “Inasmuch as regions in Oregon where silvicultural burning occurs are exposed to significant amounts of precipitation, there is an overall emissions reduction benefit from covering silvicultural piles. Polyethylene does not include chlorinated compounds or significant amounts of other chemicals likely to form uniquely toxic emissions, nor have these been demonstrated in the literature” (Wrobel and Reinhart, 2003).

An addendum to the original Wrobel and Reinhart literature review (2003) on the use of polyethylene sheeting to enhance combustion efficiency, discusses the rules affecting polyethylene (PE) burning. Oregon has addressed the issue based on the findings reported by Wrobel and Reinhart (2003). “The available literature does not support a contention that burning polyethylene (PE) sheeting would produce unique chemicals or classes of chemicals that are not also found in emissions from burning wood debris” (Wrobel and Reinhart 2003).

Oregon Department of Environmental Quality and the Oregon Department of Forestry Memorandum of Understanding for Use of Polyethylene Plastic

The Oregon Department of Environmental Quality and the Oregon Department of Forestry developed an MOU for PE, adopted in 2005. The MOU suggests the plastic material should be removed prior to burning when practicable. Adequate debris or slash is placed over the plastic sheeting to ensure the plastic remains covering the piles until the piles are burned. Due to the difficulty of removing the plastic cover from below the

debris, especially after long-term exposure to the elements, it would be operationally impractical to remove the plastic prior to burning for this proposed action. Therefore, the plastic would be left in place and burned in the pile.

Evaluation of Alternative Materials to Cover Slash Piles

Alternative coverings, such as kraft paper, are used in other parts of the country to cover burn piles in place of PE. Combustion studies involving lignocellulosic materials suggest that uncoated kraft paper may produce some of the same substances as polyethylene (Garcia et al. 2003). The study also states that from an operational standpoint, kraft paper is a more expensive, less durable, and less effective means of minimizing moisture intrusion into the pile because of its tendency to degrade more rapidly than PE. In turn, fuel moisture is increased, combustion efficiency is reduced, and more accelerants may be needed for pile ignition. Additionally, the weight and means of packaging kraft paper contributes to decreased production and increased per unit cost of covering piles. Kraft paper averages 55 pounds per square bundle compared to 12 pounds per roll for polyethylene use. It takes 3 bundles of kraft paper (165 pounds) to cover the same amount of piles that one roll of PE (12 pounds) will cover. Kraft paper bundles are 4-foot by 4-foot square and are awkward to pack into a unit compared to a roll of polyethylene that can be easily packed into the unit. The size and shape of kraft paper bundles combined with increased weight could also contribute to increased potential for worker injuries (e.g. knee, back, and ankle sprains) during operations. Kraft paper has been utilized to cover slash piles on various projects in southern Oregon. My operational experience utilizing the kraft paper during wet conditions resulted in the kraft paper and the piles to be saturated, and the pile burn had to be halted since the majority of the piles would not burn or consumption of the piled material was inadequate to meet the prescribed burn plan objectives.

Weather Conditions during Hand Pile Burning

Pollutant concentrations are reduced by atmospheric mixing, which depends on weather conditions such as temperature, wind speed, amount of sunlight, and the movement of high and low pressure systems and their interaction with the local topography, for example, mountains and valleys. Normally, temperature decreases with altitude. But when a colder layer of air settles under a warm layer, producing a temperature inversion, atmospheric mixing is impeded and pollutants may accumulate near the ground. Inversions can become sustained under a stationary weather system coupled with low wind speeds. The BLM would schedule hand pile burning primarily from October to May during unstable atmospheric conditions (e.g., rain, snow, or storm events) when atmospheric mixing is occurring. Wet season conditions minimize the amount of smoke emissions by burning when duff and dead woody fuel have the highest moisture content, which reduces the amount of material actually burned. All piles would be covered with 4 mil polyethylene plastic sheeting to facilitate rapid ignition and consumption of fuels to minimize residual smoke.

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. If residual smoke

impacts exceed limits set by the Oregon Smoke Management Plan, additional burning would be suspended until given the notice to proceed by the ODF Forester.

Conclusion

The use of polyethylene plastic sheeting would follow guidance from DEQ and Oregon Department of Forestry Smoke Management Plan. OAR 629-048-0210 (a) “Only polyethylene may be used. All other plastics are prohibited; (b) the size of each polyethylene cover must not exceed 100 square feet. For small piles, covering only an area necessary to achieve rapid ignition and combustion, instead of the entire pile, is encouraged; (c) the thickness of the polyethylene cover must not exceed 4 mil”. On hand pile units the 4 mil polyethylene sheeting typically covers 90% of the surface of the pile, with a maximum of 100 square feet of coverage. Burning would occur after coordination with ODF on the smoke management forecast and instructions to minimize the likelihood of public health effects and visibility impairment. The literature suggests that the emissions to the atmosphere contributed by the sheet of PE covering are chemically similar to the emissions from the underlying pile of silvicultural debris. For many of these emissions, such as CO, CO₂ and particulate matter, the amount emitted from the woody debris will of course overwhelm the contribution from the PE. The available literature does not support a contention that burning PE sheeting would produce unique chemicals or classes of chemicals that are not also found in emissions from burning wood debris (Worbel & Reinhardt, 2003).

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GLOSSARY

Activity Fuels – slash created from timber and vegetative cutting. To reduce the full loading, activity slash within units may be machine or handpile/burned, chipped, or lopped and scattered based on a post-logging assessment of fuel loading.

Air Quality - Refers to standards for various classes of land as designated by the Clean Air Act, P.L. 88-206, Jan. 1978.

Authorized Officer – BLM employee delegated the authority to oversee timber sale contract administration.

Best Management Practices (BMP) - Practices determined by the resource professional to be the most effective and practicable means of preventing or reducing the amount of water pollution generated by non-point sources; used to meet water quality goals (See Appendix D in RMP (USDI BLM 1995)).

Biological Assessment (BA) - Document prepared by or under the direction of BLM concerning listed and proposed species and designated and proposed critical habitat that may be present in a project area(s) and contains the BLM's determination of potential effects of the action on such species and habitat. Biological assessments are required for formal consultations and conferences on "major construction projects." They are recommended for all formal consultations and formal conferences and many informal consultations where a written evaluation of the effects of an action on listed or proposed species and on designated or proposed critical habitat is needed.

Biomass Removal/Utilization - Removes slashed wood or woody fiber by-products that result from forest and woodland restoration, thinning activities, and fuel treatments to be applied towards bio-energy use and/or products manufactured from material such as posts, poles, and firewood.

Cable yarding - Removes logs by use of wire cable(s) and tower for full or partial suspension log removal from harvest units.

Canopy - More or less continuous cover of branches and foliage formed collectively by adjacent trees and other woody species in a forest stand in the overstory.

Climate Change – Any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from:

- natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- natural processes within the climate system (e.g. changes in ocean circulation);

- human activities that change the atmosphere's composition (e.g. through burning fossil fuels) and the land surface (e.g. deforestation, reforestation, urbanization, desertification, etc.) (EPA 2010).

Coarse Woody Debris - Portion of trees that have fallen or been cut and left in the woods. Usually refers to pieces at least 20 inches in diameter.

Compaction - Refers to soil becoming consolidated by the effects of surface pressure often from heavy machinery or vehicle and pedestrian traffic.

Critical Habitat Unit - Under the Endangered Species Act, (1) the specific areas within the geographic area occupied by a federally listed species on which are found physical and biological features essential to the conservation of the species, and that may require special management considerations or protection; and (2) specific areas outside the geographic area occupied by a listed species when it is determined that such areas are essential for the conservation of the species. For further information see ([Federal Register \(57\):1796-1838](#)) for the 1992 CHU designation and [Federal Register \(73\): 47326-47522](#) for the 2008 CHU designation.

Cultural Resources - A cultural resource is any definite location or object of past human activity, occupation, or use identifiable through inventory, historical documentation, or oral evidence. Cultural resources can be divided into archaeological, building and structural, and traditional resources.

Cumulative Effect - The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can also result from individually minor, but collectively significant actions taking place over a period of time.

Deferred Timber Management Area – Under the 2008 Medford District Resource Management Plan, BLM lands under this category are not to be harvested for the purpose of timber rotation to maintain substantially all of the existing levels of older and more structurally complex multi-layered conifer forests until the year 2023. However, the following activities are permissible for this temporary land use allocation between 2008 - 2023:

- hazardous fuel reduction that does not remove material greater than 8 inches dbh
- hazard tree removal
- creation of yarding corridors for adjacent or nearby harvest units
- road construction, road improvements, and road maintenance

Diameter at Breast Height (dbh) - The diameter of a tree 4.5 feet above the ground on the uphill side of the tree.

Dispersal Habitat - Forested habitat greater than 40 years old, with canopy closure at least 40%, with average diameters greater than 11 inches and that has flying space for

owls in the understory. It provides temporary shelter for owls moving through the area between suitable habitat and may offer some opportunities for owls to find prey, but does not provide all of the requirements to support an owl throughout its life. This habitat type has adequate cover to facilitate movement between blocks of suitable NRF habitat.

Drainage - In this document the term refers to the entire area that contributes water to a drainage system or stream at the seventh-field watershed scale (HUC 7).

Effects (or Impacts) - Environmental consequences as a result of a proposed action. Effects provide the scientific and analytical basis for comparison of alternatives. Effects might be either direct (caused by the action and occur at the same time and place) or indirect (occurring later in time or at a different location, but are reasonably foreseeable or cumulative results of the action).

Effects and impacts as used in this EA are synonymous. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic quality, historic, cultural, economic, social, or healthy effects, whether direct, indirect, or cumulative. Effects might also include those resulting from actions that might have both beneficial and detrimental effects, even if on the balance it appears that the effects would be beneficial.

Endangered Species - Any species defined through the Endangered Species Act of 1973 as amended, as being in danger of extinction throughout all or a significant portion of its range and published in the Federal Register.

Environmental Assessment (EA) - A statement of the environmental effects of a proposed action and alternatives to it. It is required for major federal actions under Section 102 of NEPA and is released to the public and other agencies for comment and review. It is a formal document that must follow the requirements of NEPA, CEQ guidelines, and directives of the agency responsible for the project proposal.

Erosion - Detachment or movement of soil or rock fragments by water, wind, ice, or gravity. Accelerated erosion is more rapid than normal, natural, or geologic erosion, primarily resulting from the activities of people, animals, or natural catastrophes.

Evolutionary Significant Unit - The National Marine Fisheries Service (NMFS, NOAA Fisheries) definition is as follows: a population must satisfy two criteria to be considered an ESU: (1) it must be substantially reproductively isolated from other conspecific population units; and (2) it must represent an important component in the evolutionary legacy of a species. 69 Fed. Reg. at 31355

Fire Hazard - The ability of a fire to spread once ignition has occurred. Hazard is rated using a numerical point system for each of the following factors: slope, aspect, position on slope, adjacent fuel model, ladder fuels, and estimated fuel loading. A point summary is then calculated and a rating of high, moderate or low is assigned.

Fire Risk - The probability of ignition. A rating of high, moderate or low is assigned based on the concentration and/or frequency of human presence and on historic lightning occurrence.

Flame length - Distance measured from the tip of the flame to the middle of the flaming zone at the base of the fire. It is measured on a slant when the flames are tilted due to effects of wind and slope (NWCG, 1994).

Floodplain - The lowland and relatively flat area adjoining inland and coastal waters, including, at a minimum, areas that are subject to a 1% or greater chance of flooding in any given year.

Forage - All browse and non-woody plants that are available to livestock or game animals and used for grazing or harvested for feeding.

Forest canopy - Stratum containing the crowns of the tallest vegetation present in the stand, usually above 20 feet in height (NWCG, 1994).

Forb - Any herb other than grass.

Fuels - Combustible wildland vegetative materials present in the forest which potentially contribute to a significant fire hazard.

Fuel Load - Measure of the amount of fuel in a given area, generally expressed in tons per acre (NWCG, 1994).

Fuels Management - Manipulation or reduction of fuels to meet Forest protection and management objectives while preserving and enhancing environmental quality.

Handpile/burning - Prescribed fire used to remove man-made or natural collections of concentrated woody debris. Generally the fire is hotter than in broadcast burning or underburning.

Historic Property - According to the National Historic Preservation Act, an Historic Property is any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places. Historic Properties may include artifacts, records, or traditional cultural properties (TCPs).

Impacts - A spatial or temporal change in the environment caused by human activity. See effects.

Indirect Attack - Method of fire suppression in which the fireline is located a considerable distance away from the fire's active edge. Generally employed in the case of fast moving or high intensity fire. The fuel between the control line and the fire's edge is usually backfired, but occasionally the main fire is allowed to burn up to the fireline, depending on conditions (NWCG, 2005).

Indirect effects - Secondary effects which occur in locations other than the initial action or significantly later in time.

Intermittent Stream - Any nonpermanent flowing drainage feature having a definable channel and evidence of scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two criteria.

Lop & Scatter - scattering of tree limbs and small diameter logs to facilitate its decomposition.

Matrix - Designated under the 1995 Medford District Resource Management Plan, Matrix lands were identified as areas where timber harvesting would occur and comprise approximately 20% of the total 24 million acres of federal lands identified in the Northwest Forest Plan. There are additional management restrictions, such as for Riparian Reserves that overlap Matrix lands and retaining at least 15% of the watershed in late successional forest patches. The desired condition in Matrix lands on the Medford Bureau of Land Management is a patchwork of different aged forests created by thinning younger forest stands to assure high levels of volume production and regeneration harvesting older forest stands on an approximate 100 year rotation length.

National Environmental Policy Act of 1969 (NEPA) - This law requires the preparation of environmental impact statements for every major Federal Action which causes a significant effect on the quality of the human environment.

Nesting, Roosting, & Foraging Habitat (NRF) – Habitat used by owls for nesting, roosting and foraging and is frequently referred to as “suitable habitat”. NRF also functions as dispersal habitat. Suitable habitat in SW Oregon is typified by mixed-conifer habitats, recurrent fire history, patchy habitat components, and has a higher incidence of wood rats, which is a high quality spotted owl prey species. Suitable habitat in southwest Oregon varies greatly. It may consist of somewhat smaller trees and tree species are more diverse within each stand than owl habitat in the northern west-side Oregon BLM districts and national forests. Generally this habitat is at least 80-years of age (depending on stand type and structural condition), includes a moderate to high canopy, is multi-storied and has sufficient snags and down wood to provide for nesting, roosting and foraging owls, and for prey species habitat. The best quality suitable habitat has large old trees (greater than 30 inches in diameter) with cavities, a high incidence of larger trees with various deformities, including mistletoe, large snags, large accumulations of fallen trees and wood on the ground; and flying space (Thomas et al. 1990).

No-Action Alternative - The No-Action alternative is required by regulations implementing the National Environmental Policy Act (NEPA) (40 CFR 1502.14). The No-Action alternative provides a baseline for estimating the effects of other alternatives. When a proposed activity is being evaluated, the No-Action alternative discusses conditions under which current management direction would continue unchanged.

Non-attainment - Failure of a geographical area to attain or maintain compliance with ambient air quality standards.

Noxious Weeds - Rapidly spreading plants that can cause a variety of major ecological or economic impacts to both agriculture and wildland.

Peak Flow - The highest amount of stream or river flow occurring in a year or from a single storm event.

Perennial Streams - Streams that flow continuously throughout the year.

Prescribed Burning - The intentional application of fire to wildland fuels in either their natural or altered state. Burning is conducted under such conditions as to allow the fire to be confined to a predetermined area and to produce an intensity of heat and rate of spread required to meet planned objectives (e.g., silvicultural, wildlife management, reduction of fuel hazard, etc.).

Recovery Action 32 (RA 32) - The U.S. Fish and Wildlife Service issued a Recovery Plan for the Northern Spotted Owl (NSO) in 2008. Included in the recovery plan are numerous *Recovery Actions*. Recovery Actions are recommendations to guide the activities needed to accomplish the recovery objectives and ultimately lead to delisting of the species. Recovery Action 32 recommends implementation agencies maintain substantially all of the older and more structurally complex multi-layered conifer forests on Federal lands in the Olympic Peninsula, Western Washington Cascades, Western Oregon Cascades, Oregon Coast Range, Oregon and California Klamath, and California Coast Provinces, allowing for other threats, such as fire and insects, to be addressed by restoration management actions. These forests are characterized as having large diameter trees, high amounts of canopy cover, and decadence components such as broken topped live trees, mistletoe, cavities, large snags, and fallen trees.

Resource Management Plan (RMP) - A land use plan prepared by the BLM under current regulations in accordance with the Federal Land Policy and Management Act. (See USDI, BLM 1995). The East West Junction Project is consistent with the Medford District's 1995 RMP and the 2008 ROD/RMP. For more details see Section 1.5 of the EA.

Riparian Management Area (RMA) – Designated under the 2008 Medford District Resource Management Plan, this land use allocation consists of the stream, the area of the active stream channel and ranges from both sides of the edge of the stream channel as measured from the ordinary high water line. Riparian widths vary from 35 ft for intermittent non-fish-bearing streams and 60 ft for perennial and intermittent fish-bearing streams and perennial non-fish bearing streams.

Riparian Reserves - Designated under the 1995 Medford District Resource Management Plan, this land use allocation consists of the stream, the area of the active stream channel,

the width of the 100-year floodplain, and the outer edges of the riparian vegetation. Riparian widths vary from one site-potential tree length (at least 100 ft) for seasonal or intermittent streams or up to two site-potential tree lengths (at least 300 ft) for fish bearing streams. **For the management purposes of the East West Junction Project, Riparian Reserves would be applied.**

Sediment - Any material carried in suspension by water, which would ultimately settle to the bottom. Sediment has two main sources: from the water channel itself and from disturbed upland sites.

Slash - The residue on the ground following felling and other silvicultural operations and/or accumulating there as a result of a storm, fire girdling, or poisoning of trees.

Snag - A standing dead tree usually without merchantable value for timber products, but having characteristics of benefit to cavity nesting wildlife species.

Soil Compaction - An increase in bulk density (weight per unit volume) and a decrease in soil porosity resulting from applied loads, vibration, or pressure.

Soil Productivity - Capacity or suitability of a soil for establishment and growth of a specified crop or plant species, primarily through nutrient availability.

Sub-watershed - In this document the term refers to the entire area that contributes water to a drainage system or stream at the sixth-field watershed scale (HUC 6). There are three sixth field watersheds in the Farout Project Planning Area which are Gold Mountain (16,382 acres), Elk Valley (14,654 acres), and Bear Creek (13,856 acres) of the West Fork Cow Creek fifth field watershed and Twelve Miles Creek (24,032 acres) of the Middle Fork Coquille fifth field watershed.

Surface Erosion - The detachment and transport of soil particles by wind, water, or gravity. Surface erosion can occur as the loss of soil in a uniform layer (sheet erosion), in many rills or dry rattle.

Timber Management Area (TMA)- Designated under the 2008 Medford District Resource Management Plan, TMA lands were identified as areas where commercial timber harvesting would occur for continuous timber production that could be sustained through a balance of growth and harvest.

Threatened Species - Any species of plant or animal which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range, and which has been designated in the Federal Register as such. In addition, some states have declared certain species in their jurisdiction as threatened or endangered.

Tractor yarding – Removes logs from harvest units by use of tracted equipment utilizing full or partial suspension. Tractor equipment can travel by way of rubber tires or tracks.

Traditional Cultural Property - An area that is eligible for inclusion in the National Register of Historic Places because of its association with cultural practices or beliefs of a living community. Traditional Cultural Properties (TCPs) are rooted in that community's history and are important in maintaining the continuing cultural identity of the community.

Understory - Vegetation (trees or shrubs) growing under the canopy formed by taller trees.

Underburning - The use of prescribed fire, most often below an overstory canopy to remove excess forest fuels. Generally conducted in the spring months and a cooler fire than broadcast burning.

Water Quality - The chemical, physical and biological characteristics of water.

Watershed - Entire area that contributes water to a drainage system or stream. The term refers to the fifth-field scale (HUC 5) in this document. The Farout Project Planning Area is contained within a portion of the West Fork Cow Creek fifth field watershed.

Water Yield - The total volume of surface runoff, measured as stream discharge that leaves a sub-watershed area. Increased water yield is primarily a result of reduced evapotranspiration and interception within the watershed, and can persist for one to two decades following harvest activity depending on the rate of vegetative recovery. As forests regenerate, water yields generally decrease to pre-treatment levels within two to three decades.

Map 1 East West Junction Project Environmental Assessment Vicinity Map

Legend

Project Boundary

Project Units



Ownership

BLM

USFS

State Dept. of Forestry

Private

Stream

Perennial

Intermittent

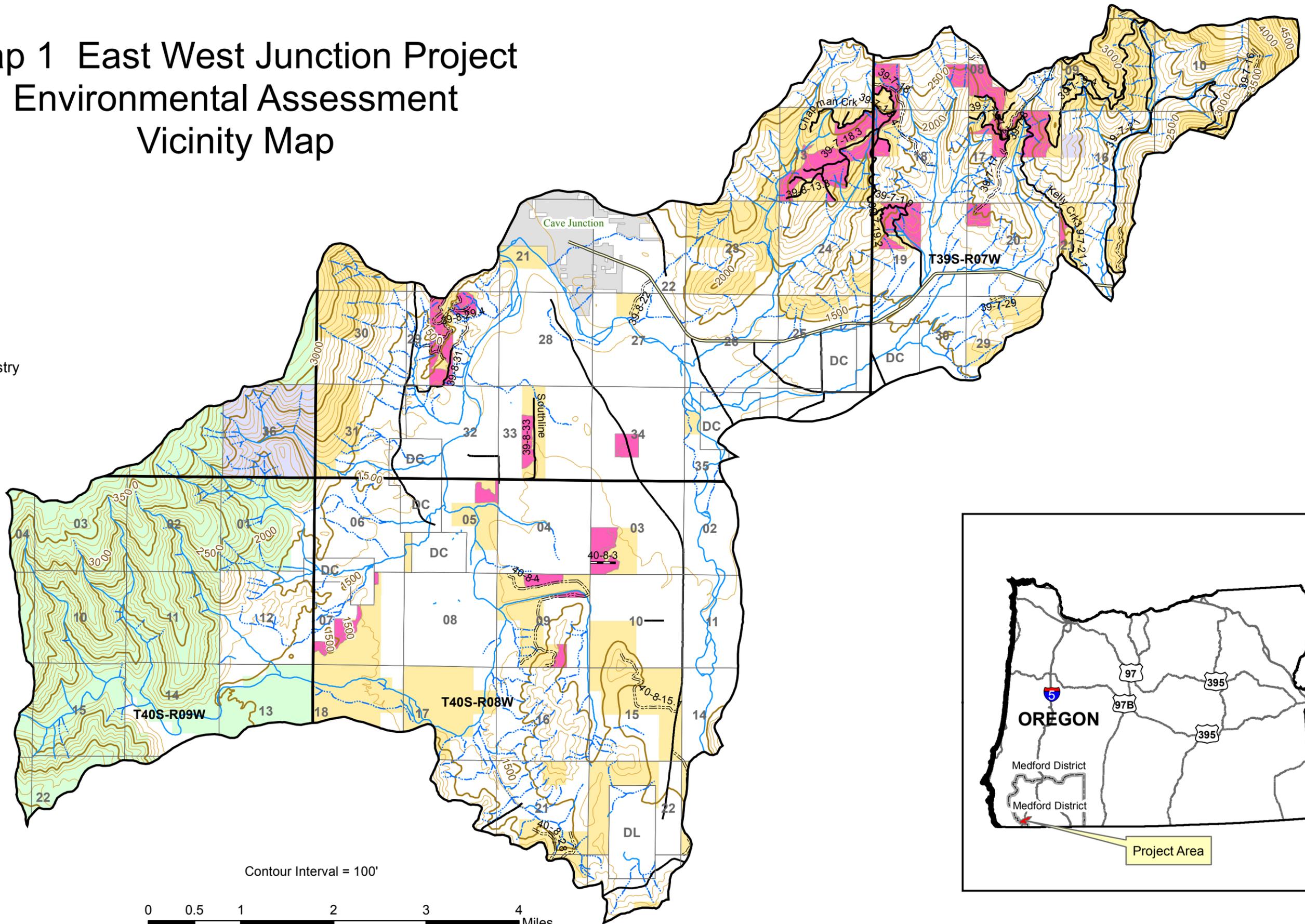
Road

Paved

Rocked

Natural Surface

State Highway

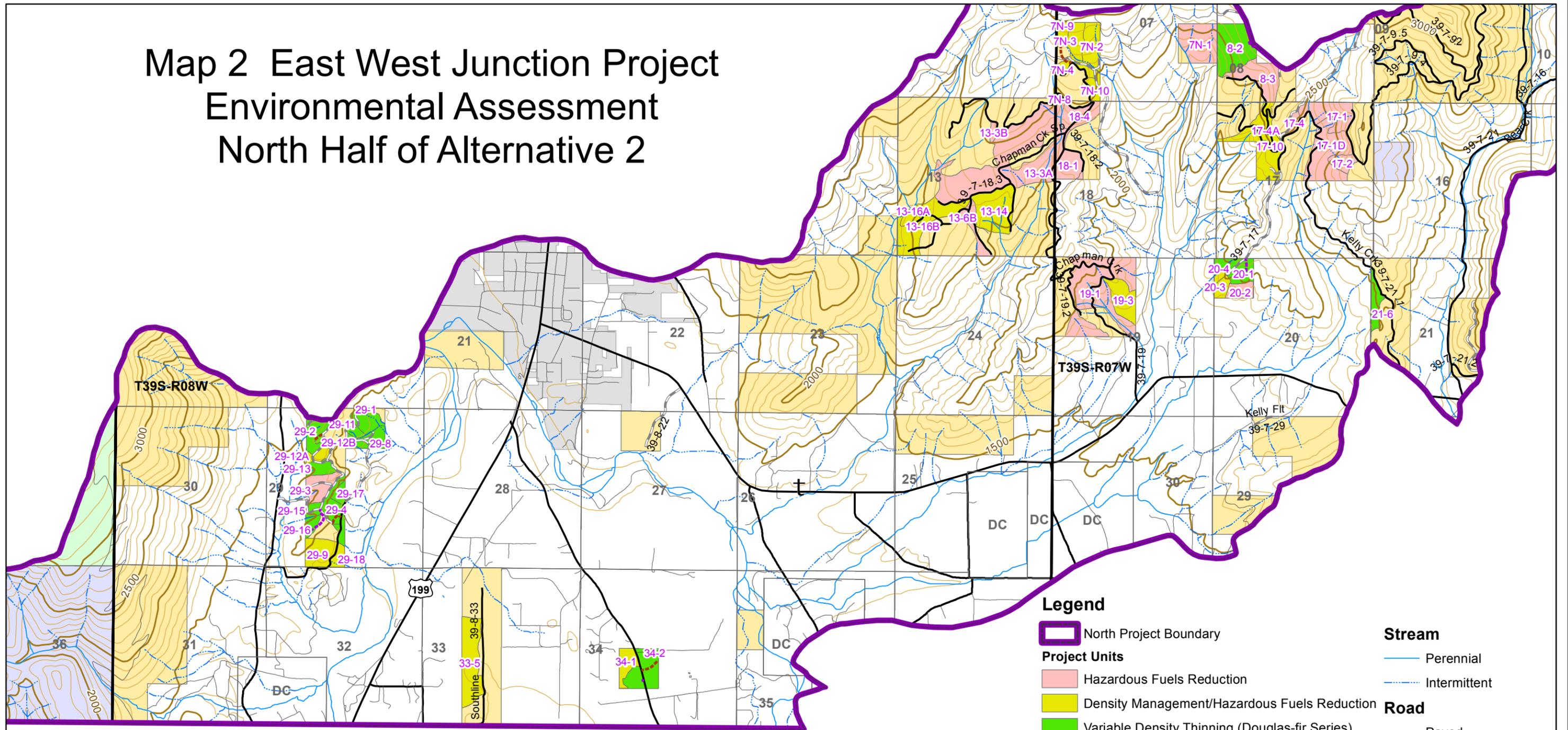


Contour Interval = 100'



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Map 2 East West Junction Project Environmental Assessment North Half of Alternative 2



Legend

- North Project Boundary
- Project Units**
 - Hazardous Fuels Reduction
 - Density Management/Hazardous Fuels Reduction
 - Variable Density Thinning (Douglas-fir Series)
 - Variable Density Thinning (Tanoak Series)
 - Variable Retention Harvest
- Ownership**
 - BLM
 - USFS
 - State Dept. of Forestry
 - Private
- Stream**
 - Perennial
 - Intermittent
- Road**
 - Paved
 - Rocked
 - Natural Surface
 - Not Known
- Road Construction**
 - RoadRenovationImp
 - TempRtConst
 - TempRtReConst



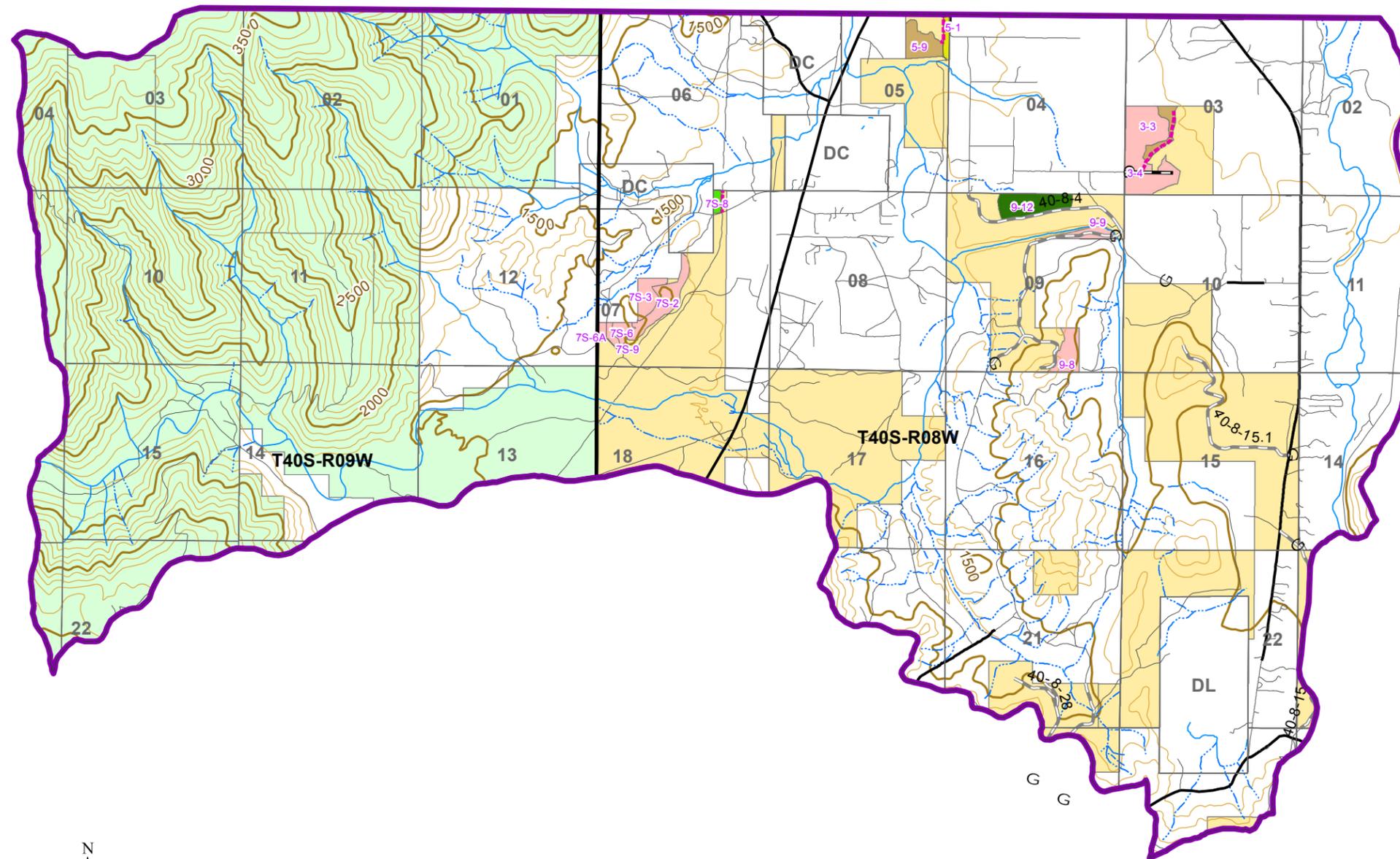
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Map 3 East West Junction Project Environmental Assessment South Half of Alternative 2



Legend

- South Project Boundary
- Project Units**
 - Hazardous Fuels Reduction
 - Density Management/Hazardous Fuels Reduction
 - Variable Density Thinning (Douglas-fir Series)
 - Variable Density Thinning (Tanoak Series)
 - Variable Retention Harvest
- Ownership**
 - BLM
 - USFS
 - State Dept. of Forestry
 - Private
- Stream**
 - Perennial
 - Intermittent
- Road**
 - Paved
 - Rocked
 - Natural Surface
 - Not Known
- Road Construction**
 - RoadRenovationImp
 - TempRtConst
 - TempRtReConst



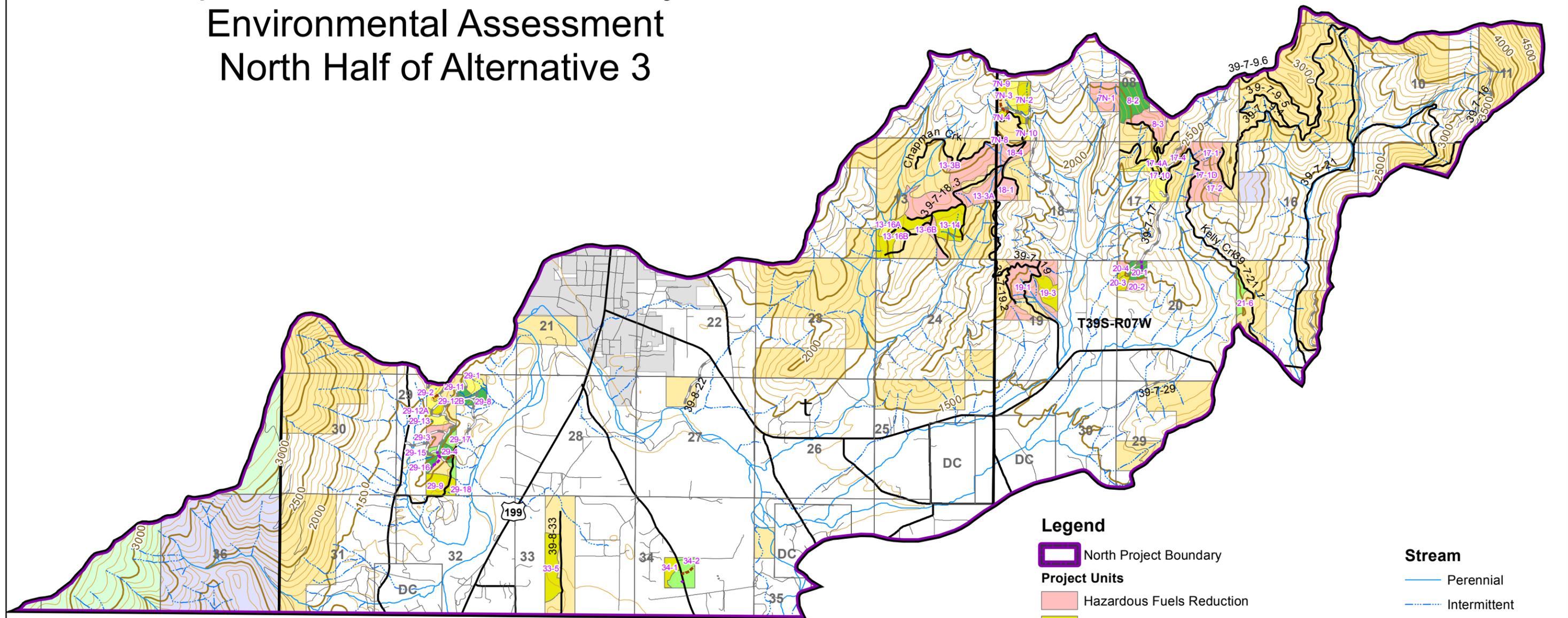
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Map 4 East West Junction Project Environmental Assessment North Half of Alternative 3



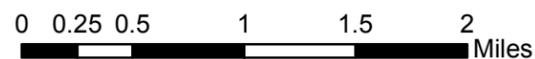
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Legend

- North Project Boundary
- Project Units**
 - Hazardous Fuels Reduction
 - Density Management/Hazardous Fuels Reduction 40
 - Density Management/Hazardous Fuels Reduction 60
 - Commercial Thin 40
 - Commercial Thin 60
- Ownership**
 - BLM
 - USFS
 - State Dept. of Forestry
 - Private
- Stream**
 - Perennial
 - Intermittent
- Road**
 - Paved
 - Rocked
 - Natural Surface
 - Not Known
- Road Construction**
 - RoadRenovationImp
 - TempRtConst
 - TempRtReConst



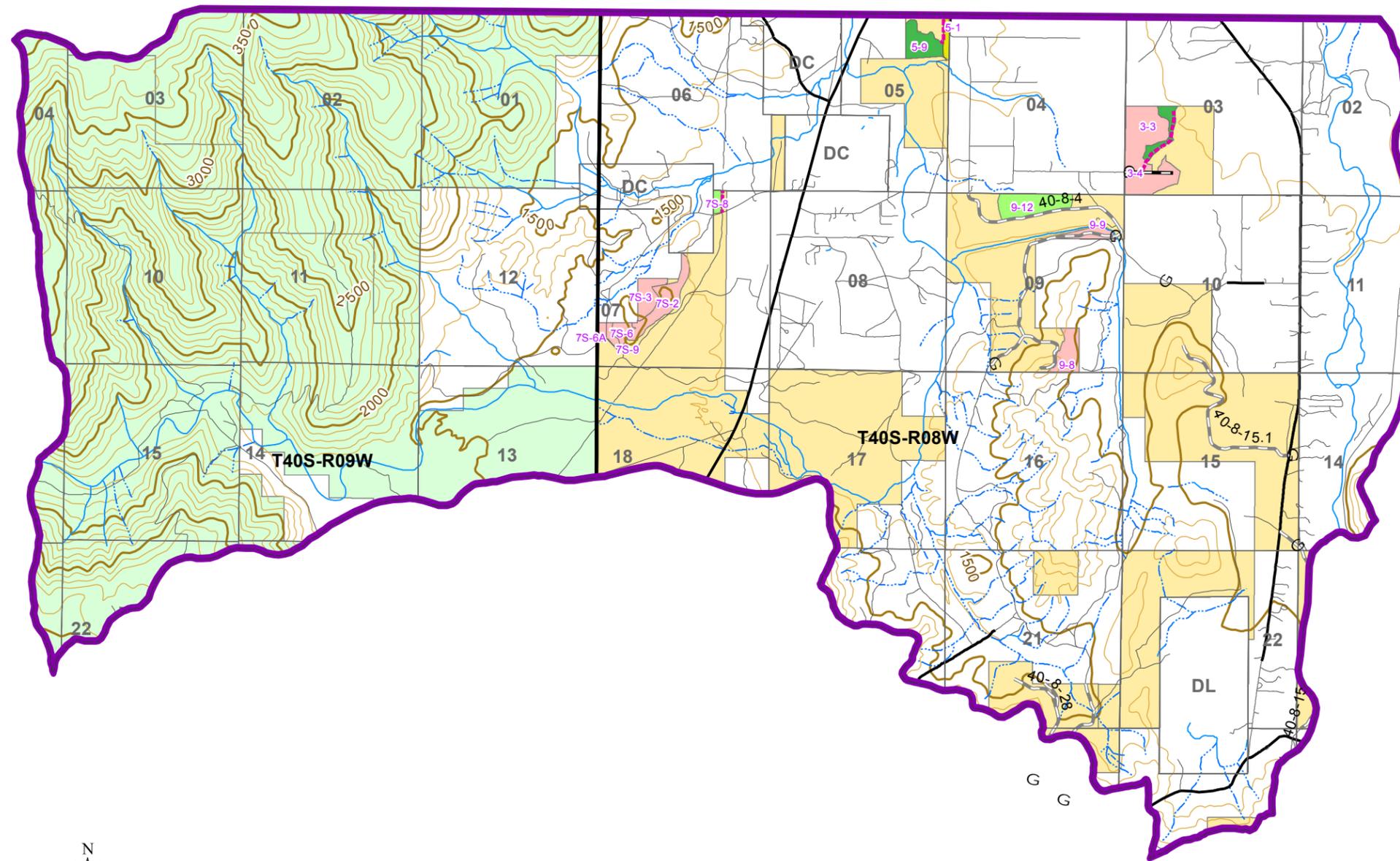
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Map 5 East West Junction Project Environmental Assessment South Half of Alternative 3

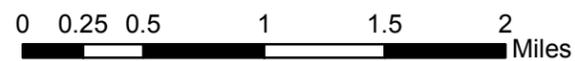


Legend

- South Project Boundary
- Project Units**
 - Hazardous Fuels Reduction
 - Density Management/Hazardous Fuels Reduction 40
 - Density Management/Hazardous Fuels Reduction 60
 - Commercial Thin 40
 - Commercial Thin 60
- Ownership**
 - BLM
 - USFS
 - State Dept. of Forestry
 - Private
- Stream**
 - Perennial
 - Intermittent
- Road**
 - Paved
 - Rocked
 - Natural Surface
 - Not Known
- Road Construction**
 - RoadRenovationImp
 - TempRtConst
 - TempRtReConst



Contour Interval = 100'



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