Even Keel Thinning Timber Sale

Final Decision and Decision Rationale (DR)

Environmental Assessment (EA) Number DOI-BLM-OR-S040-2010-0005-EA

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BLM
Salem District

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BLM/OR/WA/AE-12/034+1792

1.0 Introduction

The Bureau of Land Management (BLM) has conducted an environmental analysis for the Even Keel Thinning project, which is documented in the *Even Keel Thinning Environmental Assessment (EA) and Finding of No Significant Impact (FONSI)*. This EA is incorporated here by reference in this Final Decision, Decision Rationale, and Finding of No Significant Impact (DR). I signed a draft Finding of No Significant Impact on June 13, 2012 and made the EA available for public review from June 19, 2012 to July 11, 2012 (DR section 6.0). Substantive comments received during the public review period are addressed in DR section 10.0.

2.0 Decision

I have decided to implement the proposed action described in the Even Keel EA (EA pp.18-27) [1]. The following is a summary of the decision, hereafter referred to as the "selected action" in this Decision Rationale (DR). The selected action will:

Commercial Thinning (DR Table 2, DR sections 8.0, 9.0):

- Thin approximately 439 acres. This harvest includes:
  - Thinning 434 acres to a density of 60-150 trees per acre (TPA);
  - Low Density Thinning Patches: Thinning 5 acres to a density of 10-12 TPA.

  Approximately 68 percent (297 acres) of the area will be logged using ground based yarding systems. The remaining 32 percent (142 acres) will be logged with a skyline yarding system.

Road Work (DR Table 3, DR sections 8.0, 9.0):

- Construct approximately 1.25 miles of new road (1.01 on BLM land and 0.24 on private lands) to provide access to the thinning units for logging and hauling. New construction includes clearing trees and vegetation within the road right-of-way (r-o-w) using ground based logging equipment. Clearing widths will average 30 feet or less.
- Renovate approximately 3.15 miles of existing roads. Renovation brings exiting roads up to safe timber haul standard by removing trees growing on the road edges, adding rock, blading, shaping road, cutting roadside brush, cleaning ditches and culverts. These roads have a visible road prism for most of their lengths, but will need trees removed from the shoulder and cut banks for additional road width and for safety reasons. Generally the road prism only has low growing vegetation such as ferns, Oregon grape, and salal growing in the road prism. Brush will be removed where it is growing adjacent to the road prism and branches are encroaching over the road surface. The selected action will replace culverts at 2 stream crossings where undersized culverts are failing or are in danger of failing. All proposed culvert work will take place during the dry season (generally June 1st through September 30th) when most of these streams have very low or no flow.

[1] Acres have changed based on final field work. See Table 2.

- After the completion of project operations, the BLM will block the access to these roads, shape surfaces for drainage, and seed the disturbed soils within the right-of-way with native Wild Blue Ryegrass.
- Maintain approximately 9.85 miles of existing roads along the timber haul route. Road maintenance is the normal, periodic work done to maintain existing, open roads in a useable, safe and environmentally sound condition. Install or replace up to 31 culverts to meet current standards. Of these 31 culverts, 15 culverts to be replaced are ditch relief cross drains to route runoff to stable vegetated slopes. Of the remaining16 culverts, 3 are new installations and 13 are live stream culverts that would be replaced during the in water work period of June 1st through September 30th. The 13 live stream culverts are in addition to the 2 stream culverts described previously under Renovation, for a total 15 live stream culverts.

Fuels Treatment:

- Conduct post-harvest fuels hazard surveys and recommend site-specific treatments.
- Implement treatment strategies in selected areas to reduce the potential for human caused wildfire ignition, to reduce the potential for wildfire to cross property lines between BLM and private land, and to reduce both the intensity and severity of potential wildfires in the long term (after fuels reduction has occurred).

Table 1: Fuels Treatment Methods

Section	Proposed Treatments
11, 13, 23, 25	Machine pile, cover and burn landing piles
13, 25	Machine pile or handpile, cover and burn approximately 5 acres within the low density thinning areas).
13, 23, 25	Fuel reduction corridor (50') along property lines (approximately 10 acres)

Treatments may include:

- Landing pile construction, covering, and burning.
- Machine pile/handpile construction, covering, and burning.
- Fuel reduction corridor construction including: slash pullback, slashing, lopping and scattering, firewood cutting, and biomass removal.

- In lieu of burning, slash at landing areas may be removed to be used as mulch to cover roadbeds during stabilization (see EA section 2.2.2), slash may be offered for firewood, or slash may be removed as biomass for energy production. The total amount of debris expected to be machine piled or hand-piled in the low density thinning areas is estimated to be between 30 and 50 tons.

Landings:

- Require the timber sale operator to construct ground-based and skyline landings according to the approved logging plan. No landings would be placed in the Stream Protection Zones.

Special Forest Products:

- Make permits available for collecting Special Forest Products (SFP) from the harvest units if there is a demand for the products; and collection will not interfere with project operations.

False Brome Pre-Treatments:

- Pre-treat existing false brome with the application of herbicides prior to Even Keel ground disturbing activities to reduce the risk of false brome spread. These treatments follow the direction in BLM Manual 9015 - Integrated Weed Management and the project design features documented in both the Even Keel and the programmatic *2009 Cascades Resource Area Invasive Non-Native Plant Management EA* (#DOI-BLM-OR-S040-2009-0002-EA). Project design features include (Even Keel EA p.26, PDF # 39):
  - False brome pre-treatments would only occur during calm, dry weather conditions; using low pressure spot spray of direct wicking applications;
  - No herbicides would be applied to open water or to plants in standing water.
  - Treatments are described in the (2010-2013 Pesticide Use Proposal (#10-OR080-002)

  The effects of these treatments are documented in the 2009 Invasive /Non-Native Plant Management EA.

Project Design Features (EA Table 4, EA pp. 22-26)

The selected action will implement the project design features (PDF) described in EA section 2.2.3 (EA pp. 22-26). These design features have been incorporated into the timber sale layout and the contract. The BLM contracting officer would ensure PDF are implemented during operations by monitoring the operator's performance in the field. A performance bond associated with the contract holds the purchaser financially liable for implementing the PDF.

3.0 Alternatives Considered

1. No Action (EA p. 27): No commercial timber management actions would occur. Only normal administrative activities and other uses (e.g. road use, programmed road maintenance, harvest of special forest products on public land) would continue on BLM land within the project area.

2. Proposed Action (EA pp. 18-27): The proposed action is described in DR section 2.0. Acre differences with the selected action are shown in DR Table 2.

3. Alternatives Considered But Not Analyzed In Detail (EA pp. 27-28):

   - Treatment of other forest stands within the Riparian Reserve LUA: The IDT evaluated all Riparian Reserve stands adjacent to proposed harvest units to determine whether treatment would contribute to attaining ACS objectives for habitat. Stands proposed for treatment have a simple structure that would benefit from thinning to accelerate development of elements of complex structure for habitat enhancement. Riparian Reserve stands that did not meet this criterion were dropped from further consideration for treatment.

- Other stands proposed for treatment and dropped from the Proposed Action:
  - The IDT had initially considered thinning 50 acres (approximately 30 acres of Matrix and 20 acres of Riparian Reserve) on road 12-1-15.1 in Unit 11A. After evaluating impacts of renovating Hamilton Creek road to access the additional acres in 11A, the team recommended dropping these acres from the proposed action.
  - The IDT had initially considered thinning an additional 115 acres within the project area. After further field work, the team recommended dropping these acres from the proposed action.

- Reserve the stands in the project area for carbon storage: This alternative was not analyzed in detail for the following reasons. This alternative:
  - Does not respond to the purpose for the project (EA section 1.2);
  - Is not in conformance with the RMP which sets the basic policy objectives for the management of the project area, in which Matrix lands are managed primarily for timber production, and Riparian Reserves are managed to help develop late successional habitat conditions in line with the Aquatic Conservation Strategy. The RMP does not include a Land Use Allocation that reserves lands or stands for carbon storage; and
  - Is substantially similar in design to the "no action alternative" which is analyzed in the EA, in that this alternative would leave the stands unaltered and unmanaged just as under the "no action alternative".

4. Selected Action (DR sections 2.0, 8.0, DR Table 3): The selected action is described in DR sections 2.0 and 8.0, DR Table 2).

4.0 Decision Rationale

I used the following factors in selecting the alternative that best meets the purpose and need and decision factors described in the EA. The following is a comparison of the alternatives with regard to the Decision Factors described in EA section 1.2.4 and the project objectives in EA section 1.2.2.

1. Provide timber resources to the market and revenue to the government from the sale of those resources (objectives 1 and 2);
2. Provide for economically efficient short-term and long-term management of public lands in the project area (objectives 2 and 3);
3. Provide for safe, economically efficient and environmentally sound access for logging operations, fire suppression and administration on public lands (objectives 2, 3, and 10)

   The no action alternative does not meet decision factors 1-3 because no timber sale would take place. The selected action meets these factors by providing timber resources to the market and would use commonly used silvicultural, transportation and logging practices that BLM experience with past timber sales has shown to be cost effective, providing revenue with reasonable logging costs (EA sections 2.2.1; 2.2.2; 2.2.3).

4. Provide for increased survival and growth of conifer species while retaining structural and habitat components, such as large trees, snags, and coarse woody debris (objectives 1, 5, and 7, 8, and 9);
5. Provide habitat for special status, SEIS special attention and other terrestrial species associated with a variety of seral stages and forest stand characteristics in the vicinity of the project area (objectives 4, 5, 7, 8, and 9);

The no action alternative partially meets decision factors 4 and 5. Under the no action alternative, stand health and tree growth rates would decline if stands are not thinned. Competition would result in mortality of smaller trees in the stands, resulting in numerous snags and CWD that are too small to meet RMP resource objectives for large snags and CWD (minimum 15 inches diameter for snags, minimum 20 inches diameter for CWD).

Trees would continue to grow slowly until reaching suitable size for large woody debris, snags and late successional habitat. (EA sections 3.2.1, 3.2.5). The no action alternative continues to provide habitat for special status, SEIS special attention and other terrestrial species.

The selected action would meet decision factors 4 and 5. Stand health and tree growth rates would be maintained and are expected to increase as trees are released from competition. The alternative retains the elements described under "no action" on untreated areas of the stands in the project area and encourages development of larger diameter trees and more open stand conditions in treated areas. These conditions add an element of diversity to the landscape on BLM lands which is not provided under the no action alternative. (EA sections 3.2.1, 3.2.5). The selected action will provide habitat for special status, SEIS special attention and other terrestrial species.

6. Provide for aquatic habitat and water quality/quantity by designing new roads and using all roads to avoid increasing the quantity of water and sediment delivered to streams (objectives 3 and 6);

   Both alternatives meet Decision Factor 6. The selected action meets decision factor 6 because roads would be maintained, road renovation at stream crossings would meet ODEQ water quality requirements, and because new road construction would not cause sedimentation (EA sections 2.2.3, 3.2.2 and 3.2.3).

7. Minimize the potential for human sources of wildfire ignition and prevent large scale, intense wildfires in the project area (objectives 3 and 10).

   Both alternatives meet Decision Factor 7. However, under the no action alternative, dense forest stands with high crown densities are more susceptible to a high intensity, stand replacement wildfire that escapes initial attack and could threaten the public and other resources. Under the selected action, managed, thinned forest stands are less prone to catastrophic wildfires. Fires that do start tend to be easier to control in managed stands. Maintaining logging roads provides faster access for suppression forces if a fire does start. (EA sections 2.2.3, 3.2.6).

Considering public comment, the content of the Even Keel Thinning EA, the supporting project record, and the management direction contained in the 1995 RMP, I have decided to implement the selected action as described in DR section 2.0. The following is my rationale for this decision:

1. No Action Alternative: I did not select this alternative because it either does not meet the project objectives described in EA section 1.2 (EA pp.11-14) and the decision factors described above, or delays the achievement of those project objectives / decision factors, compared to the selected action.

2. Proposed /Selected Action: The selected action implements the Even Keel Thinning Timber Sale described in the DR section 2.0. The selected action:
   - Meets the purpose and need of the project as described in the Even Keel Thinning EA section 1.2 (EA pp. 9-12), and all decision factors (EA p. 12) as shown in DR section 4.0;
   - Is consistent with the Salem District Record of Decision and Resource Management Plan (RMP)and related documents which direct and provide the legal framework for management of BLM lands within the Salem District (EA pp. 13-14, 83-85, DR sections 5.0, 7.1);
   - Will not have a significant impact on the affected elements of the environment beyond those already anticipated and addressed in the RMP/EIS (EA, pp. 5-8, DR section 7.1);
   - Is economically viable. This sale will produce revenue for the Federal Government and provide jobs for Oregonians;
   - Addresses the issues raised in EA section 1.4.2 (EA p. 15);.
   - Uses existing roads and the minimum length of new roads for the transportation system to facilitate implementation of the project (DR section 2.0);
   - Meets Aquatic Conservation Strategy Objectives (EA pp. 85-88); and
   - Meets the statutes, authorities and management direction described in EA sections 1.3, 3.2.7 and 3.2.8 (EA pp. 13-14, 83-88). Examples include Clean Water act, Clean Air Act, Endangered Species Act, O&C Act, Matrix and Riparian Reserve Objectives in the RMP, Survey and Manage and Special Status Species direction, Cultural Resources, and Invasive Species.

5.0 Compliance with Direction

The analysis documented in the Even Keel Thinning EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS). The Even Keel Thinning project, which includes the Even Keel Thinning Timber Sale, was designed under the *Salem District Record of Decision and Resource Management Plan***,** May 1995 (1995 RMP) and related documents which direct and provide the legal framework for management of BLM lands within the Salem District (EA pp. 13-14). All of these documents may be reviewed at the Cascades Resource Area office. The project also complies with authorities described in EA sections 1.3.2 and 3.2.7, and the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011).

5.1 Land Use Plan Update

A final judgment was issued on 5/16/2012 concerning the Pacific Rivers Council V. Shepard litigation. The court vacated the Western Oregon Plan Revision (WOPR) Record of Decision, returning the management of the federal lands to the Northwest Forest plan, i.e. 1995 Resource Management Plans that were in place prior to December 30, 2008, as modified (i.e. Salem District RMP). The Northwest Forest Plan was incorporated into the 1995 Salem District RMP.

6.0 Public Involvement/ Consultation/Coordination

6.1 Scoping

The Interdisciplinary Team (IDT) of BLM resource specialists conducted internal scoping through the project planning process which includes record searches, on-site field examinations of the project area by IDT members, professional observation and judgment, literature review and IDT discussion. In the project planning process the IDT considered elements of the environment that are particular to this project as well as elements of the environment that are common to all similar timber management projects.

The BLM conducted external scoping for this project by means of a scoping letter sent out to approximately 56 recipients, including federal, state and municipal government agencies, nearby landowners, tribal authorities, and interested parties on the Cascades Resource Area mailing list on June 4, 2010. The BLM received five comment letters/emails during the scoping period. The scoping comment letters/emails are available for review at the Salem District BLM Office.

6.2 EA Comment Periods and Comments

BLM made the Even Keel Thinning EA and Draft FONSI (Finding of No Significant Impact) available for public review from June 19 – July 11, 2012. Four comment letters/emails were received during the EA comment period. These comments are available for review at the Salem District BLM Office, 1717 Fabry Rd. SE, Salem, Oregon. Response to substantive comments is described in DR section 10.0.

6.3 ESA Section 7 Consultation

1. U.S. Fish and Wildlife Service (USFWS)

The timber sale was submitted for Informal Consultation with U.S. Fish and Wildlife Service (USFWS) as provided in Section 7 of the Endangered Species Act (ESA) of 1973 (16U.S.C. 1536 (a)(2) and (a)(4) as amended) during the FY2011/2012 consultation process. The Biological Assessment of Not Likely to Adversely Affect (NLAA) Projects with the Potential to Modify the Habitat of Northern Spotted Owls Willamette Planning Province - FY2011/2012 (BA), was submitted in March 2010. Using effect determination guidelines, the BA concluded that the Even Keel Project may affect, but is not likely to adversely affect the northern spotted owl due to the modification of dispersal (BA, pp. 28-29).

The Letter of Concurrence Regarding the Effects of Habitat Modification Activities within the Willamette Province, FY2011/2012 (LOC) associated with the Even Keel Thinning project was issued in June 2010 (reference # 13420-2010-I-0092). The LOC concurred that the habitat modification activities described in the BA, including the Even Keel Thinning project, are not likely to adversely affect spotted owls and are not likely to adversely affect spotted owl Critical Habitat (LOC, p. 38). Furthermore, the selected action is not likely to diminish the effectiveness of the conservation program established under the NWFP to protect the spotted owl and its habitat on federal lands within its range including designated spotted owl critical habitat (LOC, p. 38).

The proposed thinning and connected actions described in the Even Keel Thinning EA have incorporated the applicable General Standards that were described in the BA (p. 6- 8) and LOC (LOC, pp. 14-16). This includes a seasonal restriction within disturbance distance of known spotted owl sites during the critical nesting season, and monitoring/reporting on the implementation of this project to the U.S. Fish and Wildlife Service.

2. National Marine Fisheries Administration (NMFS)

Consultation with the National Marine Fisheries Service (NMFS) on effects of the Even Keel Thinning project on Upper Willamette River (UWR) Chinook salmon and UWR winter steelhead trout is not required because the thinning sale would have no effect on these species or on essential fish habitat. Thinning units are > 2.8 miles upstream of UWR steelhead habitat and > 8 miles from UWR Chinook salmon habitat in Hamilton Creek. No-entry buffers of ≥70 feet on perennial streams, and 30 feet on intermittent 1st and 2nd order tributaries are adequate to intercept and infiltrate water carrying sediment preventing its delivery to streams and aquatic habitats.

These stream buffers and retaining >50% canopy closure in the secondary shade zone, would also result in no change in stream temperatures of perennial headwater tributaries to Hamilton Creek.

Large wood (LW) levels in Hamilton Creek would not be affected by the thinning project both because of the distance to listed fish habitat (>2.8 miles) and small size (capability) of tributary channels to move LW. Steelhead trout and salmon habitat would not be impacted by log hauling as the haul route is a paved road where it crosses listed fish habitat in Hamilton Creek. Because the road is paved, no sediment would move to streams as the result of log hauling.

All project sites are located >8 miles upstream of Essential Fish Habitat (EFH) as designated under Magnuson-Stevens Fishery Management Act with no potential to affect these habitats.

Additional project design features for the Even Keel Thinning project (EA section 2.2.3) which result in no effect to listed fish, particularly relative to preventing sediment delivery to listed fish habitat, include:

a. meeting NW Forest Plan standards and guidelines and BMPs for protection of water quality;

b. thinning from below, retaining most of the dominant/co-dominant trees;

c. meeting or exceeding minimum stream protection buffer widths (e.g. >70 feet on perennial and 30 feet on intermittent streams more than 1 mile from listed fish habitat);

d. no felling of trees within the primary shade zone on perennial streams;

e. retaining minimum 50% average canopy closure within the secondary shade zone;

f. using existing landings and skid trails to the maximum extent possible;

g. constructing new roads on stable, relatively flat topography;

h. implementing erosion control measures; and

i. no timber transport on natural surface roads during the wet season.

7.0 Conclusion

7.1 Final Finding of No Significant Impact

I have made a final decision on the Even Keel Thinning Timber Sale project. The selected action is described in DR section 2.0. The Even Keel Thinning Environmental Assessment documents the environmental analysis of the proposed commercial thinning activity. The EA is incorporated by reference in this Finding of No Significant Impact determination. The analysis in this EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS).

The proposed thinning activities have been designed to conform to the Salem District Record of Decision and Resource Management Plan, May 1995 (1995 RMP) and related documents which direct and provide the legal framework for management of BLM lands within the Salem District (EA Section 1.3, DR Section 5.0). The EA and draft FONSI was made available for public review from June 19 to July 11, 2012 (EA section 5.2). I received four comment letters/emails. Response to substantive comments is described in DR section 10.0.

Based upon review of the Even Keel Thinning EA and supporting documents, I have determined that the selected action is not a major federal action; 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, supplemental or additional information to the analysis in the RMP/FEIS in the form of a new environmental impact statement is not needed. This finding is based on the following discussion:

Context [40 CFR 1508.27(a)]***:*** Potential effects resulting from the implementation of the selected action have been analyzed within the context of the project area 7th-field watershed boundaries: Scott Creek, South Fork Scott Creek, Green Mountain Creek and the Upper Hamilton Creek. This project will affect approximately 3 percent of the 13,330 acre combined four 7th field watersheds listed above.

Intensity refers to severity of impact [40 CFR 1508.27(b)]. The following text shows how that the selected action will not have significant impacts with regard to ten considerations for evaluating intensity, as described in 40 CFR 1508.27(b).

1. *[40 CFR 1508.27(b) (1)] – Impacts that may be both beneficial and adverse:* The effects of commercial thinning are unlikely to have significant (beneficial and adverse) impacts (EA section 3.0) for the following reasons:

   - *Project design features* described in EA section 2.2.3 will reduce the risk of effects to affected resources to be within RMP standards and guidelines and to be within the effects described in the RMP/EIS.

   - *Vegetation and Forest Stand Characteristics* (EA section 3.2.1): Effects to this resource are not significant because: 1/ the selected action will retain a forested environment with at least 40 percent canopy cover (see wildlife); 2/ The selected action will not adversely affect BLM Special Status or Survey & Manage Species because no suitable habitat for any species requiring protection will be lost or altered to a degree that may impact these species. Therefore, the project will not contribute to the need to list a species as Threatened or Endangered; and 3/ Invasive Plant Species – Increases in the number of invasive/non-native plants are not expected with the application of Project Design Features. (EA section 2.2.3), and native species will naturally revegetate after thinning activities reducing the suitable habitat for invasive species.

   - *Hydrology; Fisheries and Aquatic Habitat; and Soils* (EA sections 3.2.2-3.2.4): Effects to these resources are not significant because: 1/ The selected action will abide by and meet State of Oregon water quality standards; 2/ Road construction will occur on gentle slopes with stable, vegetated surfaces; 3/ Stream protection zones (minimum of 70 feet on perennial streams, 30 feet on intermittent streams) will maintain current stream temperatures by retaining the current vegetation in the primary shade zone and most of the current levels of shading in the secondary shade zone. Stream protection zones are also expected to prevent sediment as a result of overland flow or surface erosion in logging units from reaching streams during storms of less than a 10 year return interval (EA section 3.2.2); and 4/ Timber haul and road maintenance project design features will prevent sediment delivery to streams in quantities that would exceed Oregon Department of Environmental Quality (ODEQ) requirements.

- *Soil Productivity* (EA section 3.2.4): Effects to this resource are not significant for the following reasons. No measurable reduction in overall growth and yield in the thinning area will be expected because 1/ Soil compaction is limited to no more than 10 percent of each unit's acreage; 2/ Analysis and decades of BLM experience with similar projects demonstrate that soil compaction and road construction will cause little difference in stand level forest site productivity.

- *Wildlife* (EA section 3.2.5): Effects to this resource are not significant because 1/ Stands proposed for thinning are not presently functioning as late-successional old growth habitat; 2/ Existing snags, remnant old growth trees and coarse woody debris (CWD) will be retained. The few (fewer than 10 percent of existing) large (≥ 15 inches diameter and ≥ 15 feet tall) snags that will be felled for safety or knocked over by falling and yarding operations will be retained as CWD; 3/ No suitable habitat type for BLM Special Status Species known or likely to be present will be eliminated. Therefore, the project will not contribute to the need to list any BLM Special Status species; 4/ Thinning will not significantly change species richness (a combination of species diversity and abundance) of the Migratory and Resident Bird community. No species will be extirpated in stands as a result of thinning; 5/ See # 9, for effects to northern spotted owl.

- *Air Quality, Fire Risk and Fuels Management* (EA section 3.2.6): Effects to this resource are not significant because the fine fuels generated by thinning will decay in the project areas within 3 to 5 years reducing the risk of a surface fire to near current levels. The thinning will decrease the risk of a canopy fire by removing ladder fuels. Prescribed burning will lessen the fuel load, and the selected action will comply with the Clean Air Act and State of Oregon Air Quality Standards by adhering to Oregon Smoke Management guidelines.

2. *[40 CFR 1508.27(b) (2)] - The degree to which the proposed action affects public health or safety:* The proposed project will not adversely affect public health or safety because the selected action will not affect a municipal water source, and there is no danger to the public from logging operations due to the project's location behind a locked gate (EA section 3.2.7).

3. *[40 CFR 1508.27(b) (3)] - Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas:* The selected action will not affect historical or cultural resources because no significant historical or cultural resources were found in the project vicinity. The proposed project will not affect parklands, prime farmlands, wild and scenic rivers, wilderness, or ecologically critical areas because these resources are not located within the project area (EA section 3.2.7).

4. *[40 CFR 1508.27(b) (4)] - The degree to which the effects on the quality of the human environment are likely to be highly controversial:* The selected action is not unique or unusual. The BLM has experience implementing similar actions in similar areas without highly controversial effects.

5. *[40 CFR 1508.27(b) (5)] - The degree to which the possible effects on the human environment are highly* uncertain *or involve unique or unknown risks*: The effects associated as a result of the project do not have not uncertain, unique or unknown risks because the BLM has experience implementing similar actions in similar areas without these risks; and project design features incorporated into the selected action will minimize the risks associated with the project (EA section 2.2.3). See # 4, above.

6. *[40 CFR 1508.27(b) (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 selected action will not establish a precedent for future actions nor will it represent a decision in principle about a further consideration for the following reasons: 1/ The project is in the scope of proposed activities document in the RMP EIS; and 2/ the BLM has experience implementing similar actions in similar areas without setting a precedent for future actions or representing a decision about a further consideration. See # 4, 5, above.

7. *[40 CFR 1508.27(b) (7)] - Whether the action is related to other actions with individually insignificant but cumulatively significant impacts:* The Interdisciplinary Team (IDT) evaluated the project area in context of past, present and reasonably foreseeable actions and determined that there is a potential for cumulative effects on water quality and fisheries. The selected action is expected to temporarily increase stream sediment and turbidity as a result of road renovation, road maintenance, and culvert replacement (EA Sections 3.2.2.2).

Cumulatively, the selected action and connected actions will be unlikely to result in any detectable change for water quality on a sixth or seventh field watershed scale and will be unlikely to have any effect on any designated beneficial uses, including fisheries for the following reasons: **1/** Any sediment increase resulting from thinning will be too small to be discernible relative to background sediment yields, are not expected to exceed ODEQ water quality standards, will dissipate within 800 meters downstream, and will decrease quickly over time, returning to current levels within three to five years as vegetation increases (Dissmeyer, 2000); **2/** the limited magnitude (less than 0.2 percent of the 6th field Hamilton Creek watershed sediment supply, an undetectable change) and duration (primarily major storm events during the first year following disturbance) of this effect will likely be insignificant for water quality on the watershed scale and will be unlikely to have any effect on any designated beneficial uses, including fisheries (EA Section 3.2.2, 3.2.3).

8. *[40 CFR 1508.27(b) (8)] - The degree to which the action may adversely affect districts, sites, highways, structures, or 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 project will not affect these resources because there are no properties eligible or listed on the National Register in the project area (EA sections 3.2.7, 5.1.3).

9. *[40 CFR 1508.27(b) (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 (ESA) of 1973:* The selected project is not expected to adversely affect ESA listed species or critical habitat for the following reasons:

   - *ESA Wildlife - Northern spotted owl* (EA Section 3.2.5): Effects to the species are not significant because: The project maintains dispersal habitat, and does not affect suitable owl habitat; habitat conditions are expected to improve as thinned stands mature (>20 years); residual trees will increase in size and be available for recruitment or creation of snags, culls and CWD for prey species and nesting opportunities, particularly in Riparian Reserves. ESA Consultation is described in EA section 5.1.1.

   - *ESA Fish – Upper Willamette River (UWR) Chinook salmon and UWR steelhead trout* (EA Section 3.2.3). Effects to ESA fish are not significant because thinning is not expected to affect these species because: The project is more than 2.8 miles from salmon and steelhead habitat; design features will minimize impacts on stream channels, water quality, and fish habitat; and new road construction will be located in stable locations so it will not contribute to degradation of aquatic habitat. ESA Consultation is described in EA section 5.1.2.

10. *[40 CFR 1508.27(b) (10)] - Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment:* The thinning project is designed to follow Federal, State, and local laws (EA sections 1.3, 3.2.7).

7.2 Administrative Review Opportunities

The decision described in this document is a forest management decision and is subject to protest by the public. In accordance with Forest Management Regulations at 43 CFR 5003, protests of this decision may be made within 15 days of the publication of a notice of decision in a newspaper of general circulation. The notice for this decision will appear in the *Albany Democrat Herald* newspaper on July 25, 2012. The planned sale date is August 22, 2012.

To protest this decision a person must submit a written protest to Cindy Enstrom, Cascades Field Manager, 1717 Fabry Rd. SE, Salem, Oregon 97306 by the close of business (4:30 p.m.) on August 9, 2012. The regulations do not authorize the acceptance of protests in any form other than a signed, written and printed original that is delivered to the physical address of the advertising BLM office.

The protest must clearly and concisely state the reasons why the decision is believed to be in error.

Any objection to the project design or my decision to go forward with this project must be filed at this time in accordance with the protest process outlined above. If a timely protest is received, this decision will be reconsidered in light of the statements of reasons for the protest and other pertinent information available and shall serve a decision in writing on the protesting party (43 CFR 5003.3).

7.3 Implementation Date

If no protest is received within 15 days after publication of the notice of decision, this decision will become final. For additional information, contact Carolyn Sands (503) 315-5973 or Chris Papen (503) 375-5633, Cascades Resource Area, Salem BLM, 1717 Fabry Road SE, Salem, Oregon 97306.

Approved by: ___ Cindy Enstrom _____ Date: __July 12, 2012____

Cindy Enstrom, Cascades Resource Area Field Manager

8.0 Selected Action Compared to EA Proposed Action

Table 2: Unit Acres by LUA and by Yarding Method: Selected Action Compared to EA Proposed Action

Stand Age	EA Proposed Action							Selected Action							
	EA Unit Number	Unit Acres						DR Unit Number	Unit Acres						
		Total		Thinning, including LDT patches					Total	Thinning *				Low density thinning patches **	
				Matrix		Riparian Reserve				Matrix		Riparian Reserve		Matrix	Riparian Reserve
				Ground Based	Skyline	Ground Based	Skyline			Ground Based	Skyline	Ground Based	Skyline		
71	11A	58	70	16	38	4	12	1	58	16	31	4	7	0	0
		12						3	11	0	7	0	4	0	0
67	11B	5		0	5	0	0	2	5	0	5	0	0	0	0
65	13A	21		10	2	1	8	4	20	9	2	2	6	1	0
57	13B	159		129	7	16	7	5	158	126	7	16	6	3	0
75	23A	77	173	82	38	26	27	6	119	75	12	23	9	0	0
48	23B	44													
48	23B	19						7	19	6	9	2	2	0	0
48	23B	25						8	24	0	10	0	14	0	0
75	23A	8						9	8	0	7	0	1	0	0
60	25A	4	17	8	2	5	2	10	4	1	1	0	1	0	1
	25A	13						11	13	7	0	5	1	0	0
Total		445		245	92	52	56		439	240	91	52	51	4	1
								Thinning *	434	240	91	52	51		
								LDT **	5					4	1
Matrix		337		245	92			Matrix	335	240	91			4	
Riparian		108				52	56	Riparian	104			52	51		1
Ground Based		297		245		52		Ground Based	297	240		52		4	1
Skyline		148			92		56	Skyline	142		91		51		

*Thinning will retain 60-150 trees per acre (EA p. 31); **Low Density Thin (LDT) patches will retain 10-12 trees per acre (DR section 2.0). All LDT patches will be logged with ground based yarding.

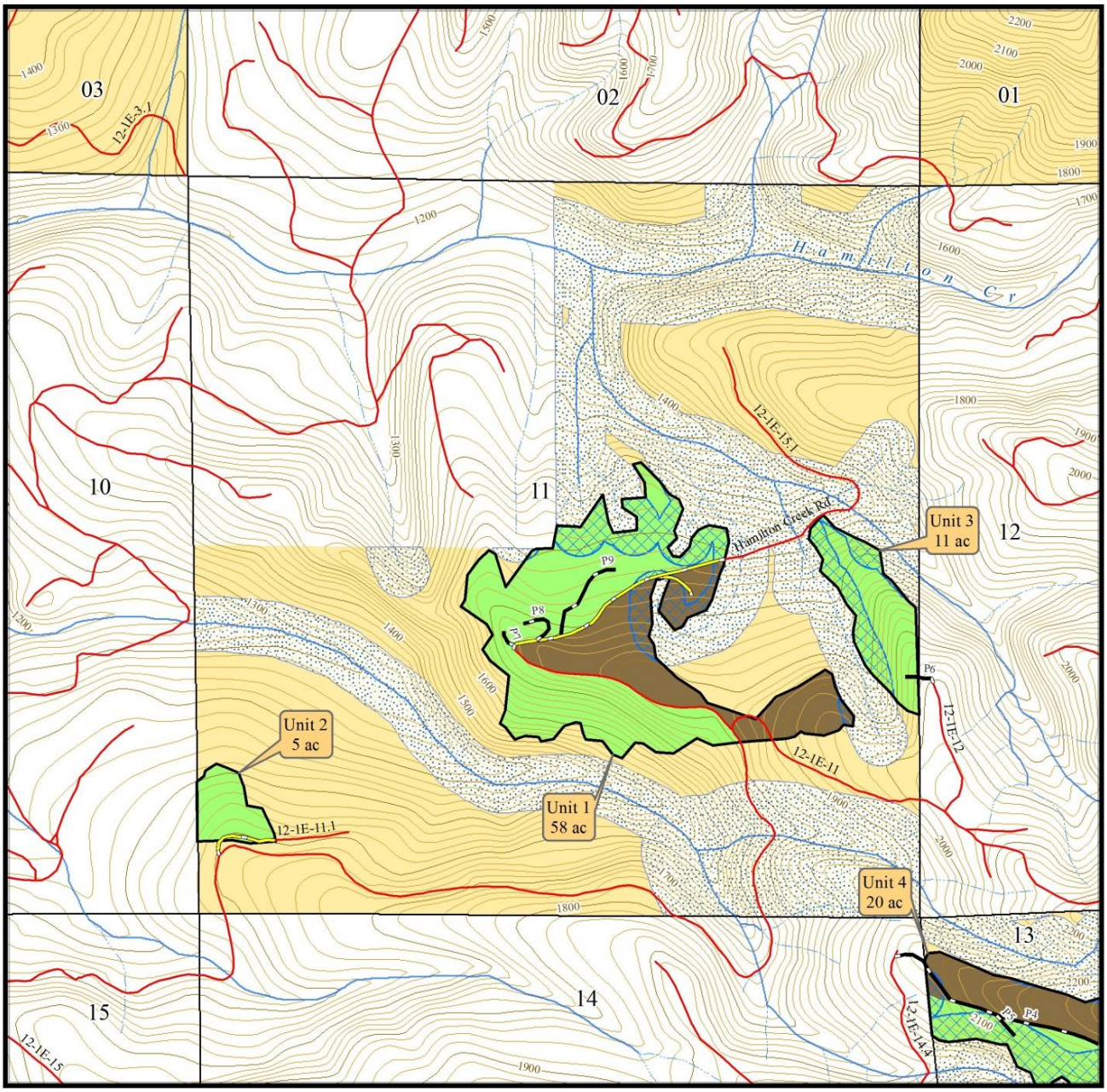
Table 3: Road Work Miles: Selected Action Compared to EA Proposed Action

EA Proposed Action					Selected Action				
Unit No.	Road (Miles)				Unit No.	Road (Miles)			
	Construction			Renovation		Construction			Renovation
	BLM	Private	Total			BLM	Private	Total	
11A	0.24	0.02	0.26	0.27	***1***	0.23	0	0.23	0.27
					3	0.01	0.02	0.03	0
11B	0	0	0	0.24	***2***	0	0	0	0.24
13A	0.31	0.05	0.36	0	***4***	0.31	0.05	0.36	0
13B	0.07	0	0.07	1.71	***5***	0.07	0	0.07	1.71
23	0.39	0	0.39	0.56	***6***	0.20	0	0.20	0.07
					7	0.09	0	0.09	0.08
					8	0.10	0	0.10	0.20
					9	0	0	0	0.21
25A	0	0.17	0.17	0.37	***10***	0	0.17	0.17	0.27
					11	0	0	0	0.10
Total	1.01	0.24	1.25	3.15		1.01	0.24	1.25	3.15

9.0 Maps

Even Keel EA (# S040-2010-0005) Decision Map

T12S-R01E Sec 11



1,000 500 0Feet

Contour Interval: 20'

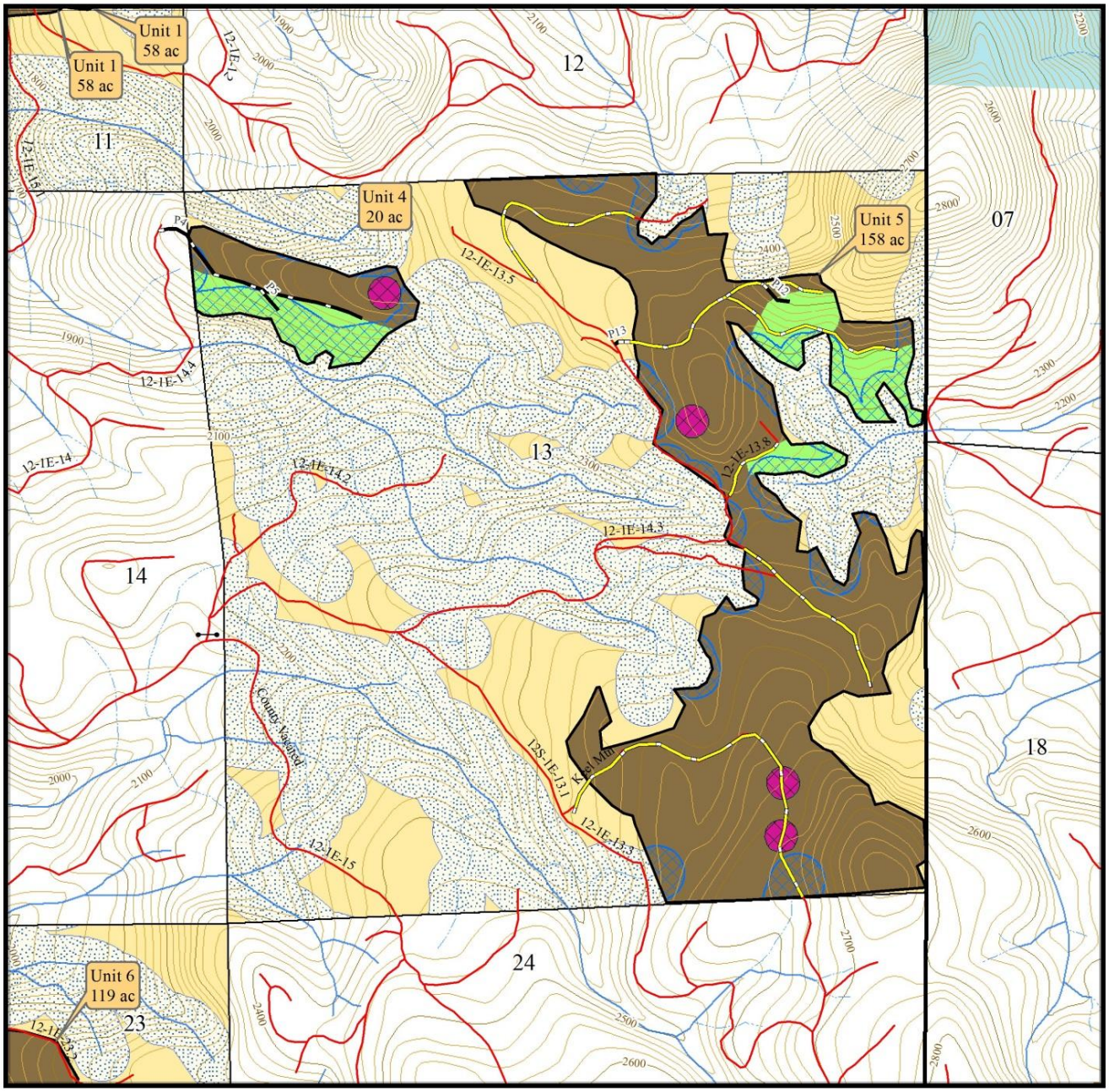
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

- Gate
- Roads
- Intermittent
- Perennial
- New Construction
- Renovation
- 1 Acre LD Thinnings
- Riparian Reserve (No Treatment)
- Riparian Reserve (Treated)
- Thinning Unit Boundary
- Skyline Yarding
- Ground-Based Yarding
- Bureau of Land Management
- U.S. Forest Service
- State
- Private/Unknown

Jul 12, 2012
Bureau Of Land Management
Salem District Office
Cascades Resource Area

Even Keel EA (# S040-2010-0005) Decision Map

T12S-R01E Sec 13



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Jul 12, 2012
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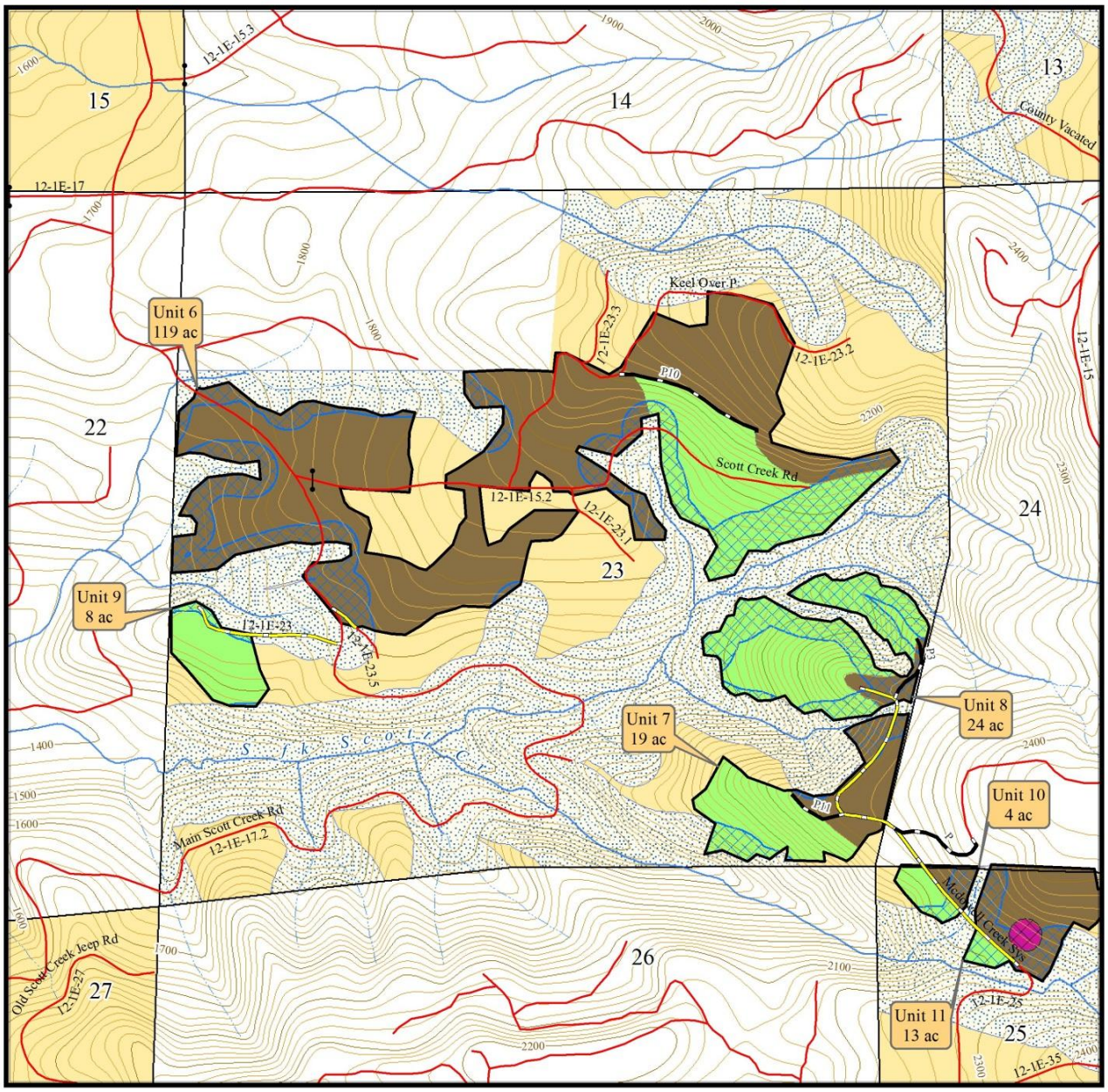
Even Keel EA (# S040-2010-0005) Decision Map

T12S-R01E Sec 23



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- State
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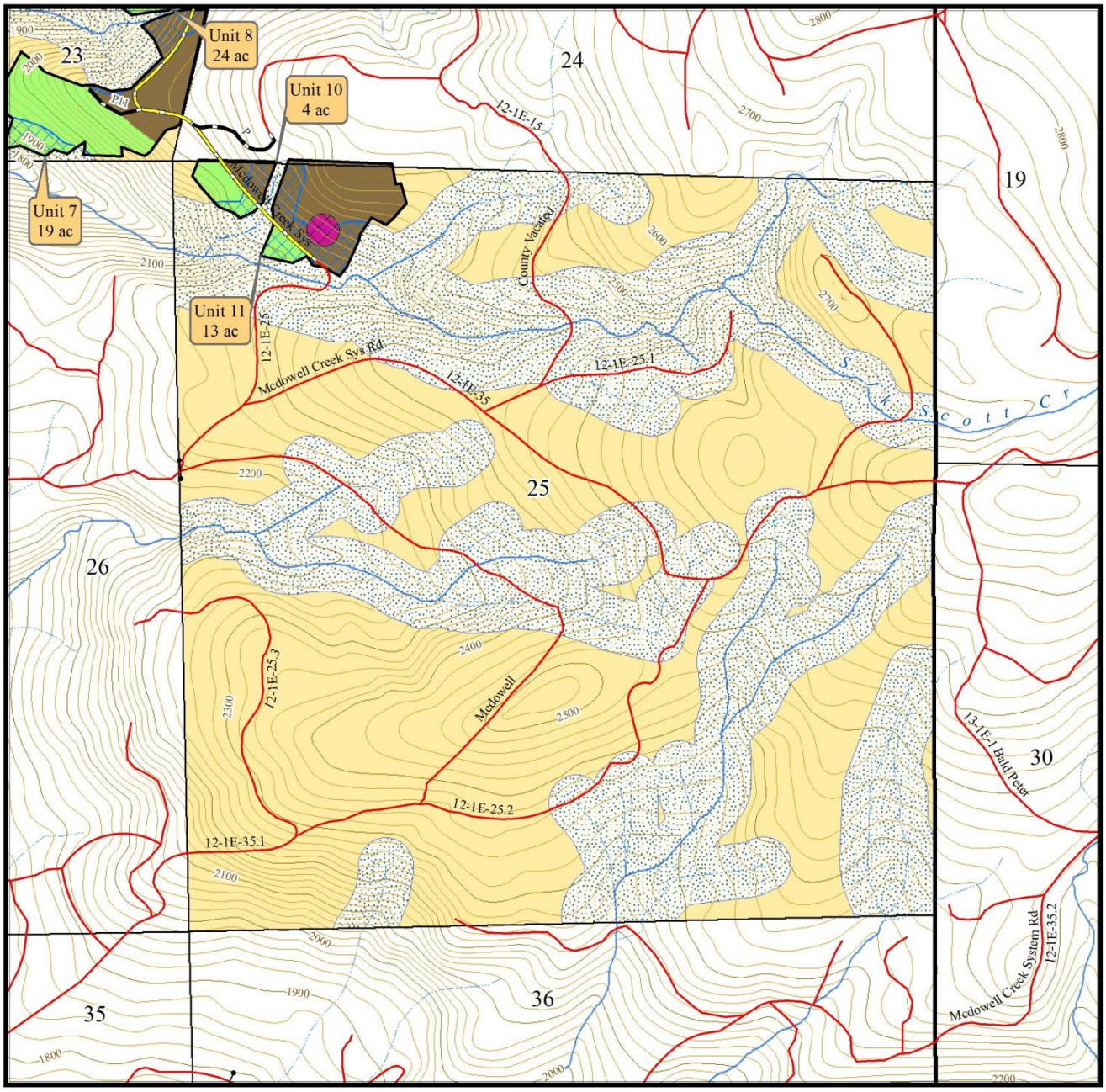
Jul 12, 2012
Bureau Of Land Management
Salem District Office
Cascades Resource Area

Even Keel EA (# S040-2010-0005) Decision Map

T12S-R01E Sec 25



1,000 500 0Feet

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Jul 12, 2012
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10.0 Response to Comments

I received four comment letters (Hampton Tree Farms, Oregon Wild, American Forest Resource Council (AFRC), and from an individual). Having reviewed all of the comments I received during the EA comment period (June 19 – July 11, 2012), I have summarized them into DR Table 4. In addition I have updated my responses to the scoping comments, summarized in Table 5. Comments or summaries of comments are in italics.

Table 4: Response to EA Comments

Response to EA Comments C1=EA comment #1	
#	**Comment**
Category: Economic Viability	
C1.	*AFRC would like to see all timber sales be economically viable. Appropriate harvesting systems should be used to achieve an economically viable sale and increase the revenues to the government. Consistent and steady operation time throughout the year is important for our members not only to supply a steady source of timber for their mills, but also to keep their employees working. We would like to see flexibility in the EA and contract to allow a variety of equipment access to the sale areas during all seasons.* AFRC **Response to #C1:** Economic viability for timber sales is a clear objective for the Resource Area during the planning stage through final implementation (RMP p.20). Our logging systems Foresters are aware of the multitude of options available to remove timber from the sale area. Considerations are taken into effect to allow the most flexible contract language to be used for the Purchaser to present a harvest plan to the BLM for approval and by allowing the Purchaser to provide a mitigation plan along with their harvest plan. The BLM contract stipulation then allows for the BLM Timber Sale Administrator (TSA) to work closely with the Purchaser and operator to understand the requirements and expectations for each setting and stand type. If at this time the operator has alternate equipment available to achieve the desired results on the ground, the TSA will provide relief of the restricted stipulation for continued operations. See response to #S10 and #S11 in DR Table 5.
Category: Thinning Prescription	
C2.	*The need to thin overstocked stands is a valid one, for reasons stated in the EA.However, it is very important to preserve remnant mature/old growth trees since the stands are young and the surrounding private forest lands do not provide this type of forest habitat.* Individual Commenter **Response to #C2:** The selected action retains old growth trees, as stated in the EA, p. 25 PDF 32: "Retain remnant old growth trees and protect them from logging damage that would impact tree health or function."
C3.	*1/We appreciate that BLM continues to focus on thinning dense young stands.* Oregon Wild
C4.	**Thinning:** *2/ The EA discusses from the perspective of extractive forestry instead of forest ecology. 3/The EA does not clearly disclose the effects of wood export from riparian reserves. There are net negative consequences at the stand level but these impacts are glossed over because the EA focuses on the subset of trees that are retained, ignoring the trees that are exported.* Oregon Wild

Response to EA Comments C1=EA comment #1	
#	**Comment**
	Response to #C4: Tree harvest in Riparian Reserves is addressed in EA Sections 3.2.1 and 3.2.5. Ecological effects are described including the effects on carbon storage, crown closure of retained trees, understory layers, ground cover, snags and CWD. Table 7 shows current trees per acre and diameters, and post treatment trees per acre and diameters. It also shows tree diameters in twenty years, if no treatment is implemented.
C5.	**Riparian:** *4/ We urge BLM to allow natural development of riparian stands averaging greater than 20" dbh, i.e., units 11 A, 23 A, 23B. Trees in these stands provide valuable large wood. Removal of trees will retard attainment of ACS objectives related to recruitment of large wood. If BLM feels that they need to open these stands to recruit understory diversity, trees can be non-commercially killed and retained on site to provide aquatic and terrestrial wildlife habitat values for which the riparian reserves were allocated.* Oregon Wild **Response to #C5:** The proposed thinning will not retard the attainment of ACS objectives The IDT evaluated all Riparian Reserve stands adjacent to proposed harvest units to determine whether treatment would contribute to attaining ACS objectives for habitat. Stands proposed for treatment have a simple structure that would benefit from thinning to accelerate development of elements of complex structure for habitat enhancement. Riparian Reserve stands that did not meet this criterion were dropped from further consideration for treatment. (EA p. 27). Based on stand exams and field reconnaissance and the IDT determined that units proposed for thinning in the Riparian Reserve LUA meet the above criterion. In sections 11 and 23, the selected action will not treat the majority of the stands within the Riparian Reserves LUA that average greater than 20"; and will leave these stands to develop naturally. These stands include portions of the Riparian Reserves LUA in the north end of section 23 and the east side of section 11.
C6.	*5/The EA says the stands are "single storied" "except as described in the following paragraphs" but we were not sure which paragraphs were being referenced. Thus, we could not clearly determine from the EA whether the stands in this project are truly even-aged or two-aged. If there is an overstory of older trees in the stands to be thinned, these stands do not qualify as being younger than 80 years old and BLM should conduct surveys for red tree vole and other special status species.* Oregon Wild **Response to #C6:** All stands proposed for thinning are less than 80 years old. Based on final field reconnaissance, the Silviculturist has determined that all of the proposed thinning stands are even age stands (single storied).
C7.	*6/ The EA does not take into account that some stands already have average diameters above 15 and 20 inches; that thinned stands have fewer stems available for recruitment and the increased growth is on far fewer stems so the total wood recruited from thinned stands is less than from unthinned stands; that unthinned stands have more stems available for recruitment and unthinned stands continue to grow; and that unthinned stands recruit more dead wood, both large and small, in both the near-term and the long-term. See Heiken, D. 2010. Dead Wood Response to Thinning: Some Examples from Modeling Work.* http://dl.dropbox.com/u/47741/dead_wood_slides_2.pdf Oregon Wild **Response to #C7:** Snag recruitment is addressed **in** EA Sections 3.2.1 and 3.2.5. The analysis applies to all stands proposed for thinning, including those which have diameters averaging 15 to 20 inches dbh. Current and future trees per acre and average tree diameters are shown in Table 7. There are more stems per acre in unthinned stands; with smaller average diameters. Thinned stands would have fewer trees per acre; however, with larger average diameters.

Response to EA Comments C1=EA comment #1	
#	**Comment**
C8.	*8/ The EA could do a better job portraying the trade-offs associated with thinning. The EA sounds like thinning has only positive effects. The EA does not describe the negative effects of thinning.* Oregon Wild **Response to #C8:** The EA acknowledges that direct impacts to snags/CWD, the loss of smaller diameter snags/CWD, canopy cover reduction would occur due to thinning. Addressed in EA Sections 3.2.1 and 3.2.5.
C9.	*9/ The EA was not clear to what extent untreated "skips" are being incorporated into this project.* Oregon Wild **Response to #C9:** Most of the BLM ownership in section 11, 13, 23, and 25 would be left untreated (EA p. 27, DR section 9.0) In addition, the selected action will not thin stands within stream protection zones; and density management treatments for the purposes of research have been implemented in section 13 during the recent past, with varying buffer widths, skips, gaps and control areas.
Category: Wildlife/Fisheries	
C10.	*10/ The EA continues to rely on the "potential population" methodology to describe effects of logging on species associated with dead wood. It is misleading to tell the public that logging will meet RMP objectives and maintain populations of wildlife when the science is no longer valid. It is well known that much greater numbers of snags (and green trees for recruitment) are needed to maintain wildlife populations. See Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 in Wildlife-Habitat Relationships in Oregon and Washington (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001)* Oregon Wild *http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf*
	Response to #C10: The method is consistent with the direction in the current RMP. Until a new RMP is developed, or the current RMP is amended, this methodology is still referred to when describing potential populations. The EA (p. 35) states that "Snag habitat does not meet the current RMP objective (RMP p.21) for population densities". Most of the snags that are present in the treatment areas are small (less than 20" diameter) and/or highly decayed. The EA further states that stands throughout the project areas are in a condition in which there is a near-term (less than three decades) snag deficit (RMP, p. 21).
C11.	**Flying Squirrels**: *11/ The EA should have discussed the effects of logging on flying squirrels which are an important prey item for Northern Spotted Owls in all parts of the owl's range. Given the importance of flying squirrels to the diet of the spotted owl, managers must ensure that thinning does not significantly reduce the flying squirrel population, but recent evidence shows that thinning does in fact lead to a multi-decade decline in the number of flying squirrels. The agencies must leave significant untreated skips in order to mitigate for this significant adverse effect.* *The finding that thinning reduces, for a couple decades at least, populations of flying squirrels, an important prey for spotted owls throughout their range, reinforces the importance of finding the optimal mix of thinned and unthinned areas within stands and across the landscape (not just for flying squirrels but also for dead wood recruitment and other ecological values). The agencies' current approach does provide a mix, but NEPA analyses do not seek or find the optimum mix.* Oregon Wild

Response to EA Comments C1=EA comment #1	
#	**Comment**
	Response to #C11: BLM acknowledges the recent research findings that thinning could adversely affect Northern flying squirrels. Most of the BLM ownership in sections 11, 13, 23, and 25 would be left unthinned (EA p. 27), providing refugia for flying squirrels. See response to #C5.
C12.	*7/ The EA admits that thinning can adversely effect snag recruitment, but this effect is not carried through to the ACS analysis. "Thinning these stands would reduce the number of small diameter (less than 15 inches DBH) snags over the next 20 years ..." The value of instream wood is related to the size of the wood and the size and gradient of the stream. In many cases small wood can provide valuable functions, so BLM cannot say that small wood has no value to stream function. Rosenfeld & Huato (2003) found that large wood formed pools more reliably than small wood. Wood >24" dbh formed pools 42% of the time, while wood 6-12" dbh formed pools 6% of the time. However, from this one can conclude that the cumulative influence of several pieces of small wood can approach the pool-forming function of large wood. For instance, seven pieces of small wood are just as likely to form a channel-spanning pool as a large piece of wood. Rosenfeld, J. S ., and Huato, L. 2003. Relationship between LWD characteristics and pool formation in small coastal British Columbia streams. North American Journal of Fisheries Management 23:928–938. http://www3.telus.net/jordanrosenfeld/Home%20Page/Publications/Rosenfeld%20and%20Huato%202003.pdf. Similarly, Bilby and Ward (1989) surveyed characteristics of large wood in western Washington streams and found that size of stable pieces of large wood increases with stream size. Their values suggest that streams under 5 m in width require trees of about 30–35 cm in diameter to be useful as fish habitat and to be able to persist as stable LWM in the channel. Streams of about 10 m in width require larger trees of about 45 cm (1.5 ft) in diameter. Bilby, R. E.; Ward, J. W. 1989. Changes in characteristics and function of woody debris with increasing size of streams in western Washington. Transactions of the American Fisheries Society 118: 368-378. These publications show the direct and cumulative value of small wood (which is often captured and exported by logging). This means that the agency cannot ignore or discount the value of small wood recruitment to streams. In sum, NEPA analyses must account for the effects of logging on both the quantity and quality of wood.* Oregon Wild **Response to #C12:** McDade et al. (1990) found 90% of LWD (>10 cm diam. and >1m long) in streams in mature conifer forests (80-200 years old) in western Oregon came from within 25 m (~80 ft.) of the channel, and 100% of LWD in streams in mature hardwood forests came from within 25m of the channel. In old growth conifer forests (>200 years of age), about 85% of LWD in streams came from within 30 m (~ 100 ft.) of the channel. LWD was delivered from longer distances to streams in old growth stands because of the greater height of the old-aged trees (McDade 1990). Thus, thinning shorter trees in young conifer and hardwood stands (averaging 67 years of age, range 45 to 75) coupled with the use of ≥23 m wide no-entry buffers on perennial streams would likely result in no change in the availability of small diameter LWD, and thus no change to the quantity of small diameter LWD in stream channels. With thinning at distances >23 m from channels, trees will grow faster and reach larger diameter classes of LWD more quickly than without thinning. These larger-sized trees have a greater functionality for pool formation, gravel retention, and fish habitat (Rosenfeld and Huato 2003, Bilby and Ward 1989) and can contribute LWD to channels from a greater distance because of their greater height (McDade et al. 1990). McDade, M.H., F.J. Swanson, W.A. McKee, J.F. Franklin, and J.V. Sickle. 1990. Source distances for coarse woody debris entering small streams in western Oregon and Washington. Canadian Journal Forestry Research 20:326-330.
C13.	**Snags/ CWD:** *The cumulative effects analysis does not take into account the fact that creating larger trees sooner does not translate into creating large snags/CWD sooner, as there is a concomitant decrease in mortality*. Individual Commenter

Response to EA Comments C1=EA comment #1	
#	**Comment**
	Response to #C13: Addressed in EA Sections 3.2.1 and 3.2.5. As a result of implementing the project, larger trees would be available for recruitment as larger snags/CWD in future stands. Thinning these stands would reduce the number of smaller diameter snags in the thinning units because thinning from below removes the smaller suppressed and intermediate trees that would be most likely to die from suppression mortality and become snags in the short term. The EA (p. 86) acknowledges that unthinned stands (including the small tree component and smaller snags) contribute to diversity, retaining the smaller tree component in adjacent unthinned stands and stream protection zones within sections 11, 13, 23, and 25 (EA p. 27, DR section 2.0).
Category: Other Comments	
C14.	**Carbon:** *Having read the three previous EAs which do analyze carbon storage/emissions in detail, the summary provided here is adequate. The graphs are very nice, but obscure the fact that thinning projects do cause a slight increase in carbon emissions immediately thereafter.* Individual Commenter **Response to #C14:** EA p. 16 acknowledges that there is an slight increase in carbon emissions as a result of thinning projects, including Even Keel.
C15.	**Fuels:** *With respect to Fuels Treatment Methods, I prefer the non-burning alternatives such as firewood cutting, biomass removal, and/or mulch to cover road beds. Will biomass or firewood removal have any impact on the remaining fuel load?* (Individual Commenter **Response to #C15:** The EA states in Section 2.2.2 that in lieu of burning, slash at landing areas may be removed to be used as mulch to cover roadbeds during stabilization, slash may be offered for firewood or may be removed as biomass for energy production. These options will be available to the timber sale purchaser and/or the BLM during and following harvest. The project area covers approximately 439 acres. Pre-harvest fuel loads total approximately 22 tons per/acre. Post-harvest fuel loading will increase from 22 tons to approximately 38 tons per/acre. The small amount of slash that will be consumed at landings and in the low density thinning areas will remove approximately 2 tons per/acre, leaving 36 tons of slash per/acre spread across the project areas. The small amount of slash that would potentially be removed for biomass or firewood would not significantly reduce the fuel load across the entire project area. Utilization of small diameter slash for firewood or energy production from biomass would be incorporated where appropriate. If biomass removal occurs in lieu of prescribed burning within commercial thinning ground based harvest areas; only logging debris accessible from existing roads and landings would be available for removal. If biomass removal occurs in lieu of prescribed burning in commercial thinning cable yarding areas, only logging debris less than 6 inches in diameter that has been pulled to landings would be available for removal. As with prescribed burning, the intent of the treatments is to reduce the fire risk in high hazard areas accessible to the public, such as at landings, and along property lines.
C16.	**Invasive species:** *Even though the eradication of scotch broom is not practical, it is a highly visible noxious weed which BLM should take every effort to prevent within the project area boundaries, strictly enforcing existing protocol for the timber contractor as well.* Individual Commenter

Response to EA Comments C1=EA comment #1	
#	**Comment**
	Response to #C16: The Selected Action will implement the following project design features to address weeds (including scotch broom) (EA p. 26): • PDF 37: Seed and mulch disturbed soil in roads and landings using certified weed free native plant species seed and sterile mulch, in order to stabilize the soil and prevent establishing invasive/non-native plant species on disturbed soil in the project area. • PDF 38: Clean all ground-disturbing logging and road construction equipment to be free of off-site soil, plant parts and seed prior to entering the project area to prevent introducing invasive and non-native plants into the project area.
C17.	**Landings**: *Landings should be kept entirely out of Riparian Reserves; the maps indicate that this is feasible. Allowing landings in Riparian Reserves would also violate the prescription of retaining 50% canopy cover in the reserves.* Individual Commenter **Response to #C17:** All logging/harvest plans (including the placement of landings) are submitted by the Purchaser to the BLM for review prior to approval. The BLM would require the timber sale operator to construct ground-based and skyline landings according to the approved logging plan. No landings would be placed in the Stream Protection Zones. In general, all attempts are made regarding layout design to minimize landing within the Riparian Reserve LUA. The ability to retain average 50% canopy cover would not be compromised by a minor number of landings in the Riparian Reserve LUA. These landings would generally be established in an existing opening along a haul route.
C18.	**Logging Systems:** *BLM should carefully review and later monitor implementation of the logging contractor's operating plan since ground-based yarding is the predominant harvest method.* Individual Commenter **Response to #C18:** All logging/harvest plans are submitted by the Purchaser to the BLM for review prior to approval. Best management practices are followed according to the Salem District RMP (Appendix C-1, C-2) regarding both ground based and cable harvest. During the implementation phase of the Timber Sale Contract, a BLM Timber Sale Administrator is in charge of the immediate monitoring of the activities on the ground. All activities are noted in a contract diary for the life of the sale period. Post-harvest monitoring is performed by Resource Area Specialists.
C19.	**Methodology:** *With respect to "Methodology", the 1994 RMP/FEIS may provide general resource information, but since that information is almost 20 years old (as is the Hamilton Creek watershed analysis), field reconnaissance and resource specific field surveys are necessary to accurately describe the affected environment and project impacts*. Individual Commenter **Response to #C19:** As stated in the EA (p. 28-29) BLM resource specialists incorporate research publications, Geographic Information System (GIS) data, aerial photographs and satellite imagery, BLM's Forest Operations Inventory (FOI) records, stand exam data, resource specific field surveys, and field reconnaissance into their analysis.
C20.	**No Action Alternative:** *With respect to the No Action Alternative, why is wind damage more likely to occur in an "overstocked" forest overstory?* Individual Commenter

Response to EA Comments C1=EA comment #1	
#	**Comment**
	Response to #C20: In an over stocked stand trees develop high height to diameter ratios. Tall skinny trees tend to blow over or break in wind storms. The EA p. 38 states that under the no action alternative, "the dense stands would not increase in vigor and may decline in vigor, making them more susceptible to disease, insects, windthrow and fire." BLM observations of similar stands show that healthier trees are less susceptible to disease, insects, windthrow and fire. Trees in thinned stands over time develop larger diameters and become more wind resistant.
C21.	**Project Design Features:** *The Project Design Features, standard as they are, serve to make several aspects of these projects (such as road building) more acceptable to me. The objectives listed at the bottom of page 22 are excellent. Although all of the design features are important, those which I would like to emphasize for this project are*: *(a) Limit landing size (#4), (b) Project SPZs by directional falling and CWD retention (#7), (c) Reuse existing skid trails (#9), (d) Do not pile woody debris more than 6" and keep burn piles away from green trees (#17, 18), (e) Allow but regulate use of slash for biomass/firewood (#23), (f) Restrict new road construction and maintenance (#25, #26, #29, #31, and #32), (g) Retain old growth, large snags, CWD, minor and hardwood tree species (#32, #33, #34, #35, and #36), (h) Restrict use of herbicides for false brome pre-treatments (#39)* Individual Commenter **Response to #C21:** The selected action includes the project design features outlined in the EA (pp. 22-26), including the PDF recommended in this comment.
C22.	**Soils:** *In the soils effects analysis, the section titled "Harvest" was confusing, and I could not get the figures to add up*. Individual Commenter **Response to #C22**: EA page 60 concerns soil compaction/disturbance due to logging. The hydrologist recalculated the acres and found that everything was correct except the final total acres disturbed (paragraph 5, page 61): which should read: "… a low of 19 acres to a high of 43 acres representing 4-9.7% of the treatment acres." This is within the 10% standard (PDF #1, EA p. 23).
C23.	**Stream Channels:** *With respect to "Stream Channels", the description here ("All of these channels have ample supplies of large wood") seems to be at odds with the Fisheries section, which describes a lack of LWD.* Individual Commenter **Response to #C23:** Different specialists may field review different portions of the existing stream network in the project area depending on the resource. These views are not necessarily at odds or in conflict but simply reflect variability across the landscape. In particular, the fishery biologist noted lower LWD levels on reaches of two 3rd order streams supporting fish populations, whereas the hydrologist examined primarily headwater tributary streams. Reports of low wood counts in lower Hamilton Creek are outside of and downstream of the project area and do not represent conditions in project streams at the project site.
C24.	**Timber Sale:** *Hampton Tree Farms, Inc. strongly encourages the BLM to proceed with the Even Keel Thinning project. Additional public timber is needed to preserve both manufacturing and contract logging infrastructure. Given that Oregon's family-owned forest manufacturing sector and the communities in which it operates is struggling, and the need for revenue flow by the counties, we cannot afford to delay implementation of the Even Keel Thinning proposed action.* Hampton Tree Farms

Table 5: Updated Response to Even Keel Scoping Comments

Updated Response to Even Keel Scoping Comments (Table xx of the Even Keel EA)	
#	**Comment** S3 = Scoping Comment # 3
Category: Alternatives - Carbon	
S3.	*18/ Develop an alternative that addresses carbon and climate by (a) deferring harvest of older forests to store carbon and provide biodiversity and connectivity and (b) thin younger stands to increase forest resilience and diversity and connectivity. Recognize that there is a carbon cost associated with thinning.* Oregon Wild **Response to #S3:** Addressed in text, EA sections 1.4.3 and 2.5
Aquatic and Aquatic Conservation Strategy – Watershed Restoration	
S2.	*Project design and operational features should preserve the hydrological integrity of the South Santiam watershed, especially with respect to domestic water supplies, fisheries resources, and aquatic recreational use.* Individual Commenter **Response to #S2:** The selected action will protect aquatic resources. Addressed in text, EA sections 2.2.3, 3.2.2 and 3.2.3
S1.	*1/ When conducting commercial thinning projects take the opportunity to implement other critical aspects of watershed restoration especially pre-commercial thinning, restoring fish passage, reducing the impacts of the road system, and treating invasive weeds.* Oregon Wild **Response to # S1:** The selected action includes reducing impacts of the road system and treating invasive weeds. Addressed in text, EA sections 2.2.2 and 3.2.8
Early Seral Habitat	
S4.	*To increase early seral stage vegetation in the thinning area we recommend reducing crown closure to 40% in order to allow necessary sun light for early seral vegetation species to become established.* Rocky Mountain Elk Foundation (RMEF) **Response to #S4:** The selected action retains 40% canopy cover in the Matrix land use allocation. Addressed in text, EA section 2.2.1
S5.	*We would like to see gaps created that are at least two acres in size, free of conifers. Gaps should be located away from open roads, on slope of less that 28%. In the gaps, consider planting native shrubs which produce fruit, nuts and or browse for wildlife.* RMEF **Response to #S5:** The selected action includes 5 one-acre gaps**.** Addressed in text, EA section 2.2.1
S6.	*Re-vegetate disturbed soils - skid trails, landings, cut banks – using a native forage seed mix of species of high food value for deer and elk.* RMEF

Updated Response to Even Keel Scoping Comments (Table xx of the Even Keel EA)	
#	**Comment** S3 = Scoping Comment # 3
	Response to # S6: The selected action includes using native seed for revegetation of disturbed soils. Addressed in text, EA section 2.2.3
S7.	*We suggests that the Salem District BLM consider creating multiple small patch cuts (1-3 acres in size) in the thinning units to provide early successional habitat for species such as Columbian black-tailed deer (Odocoileus hemionus columbianus) and Roosevelt elk (Cervus elaphus roosevelti).* American Forest Resource Council AFRC **Response to #S7:** See response to #S5. Addressed in text, EA section 2.2.1
Economics	
S8.	*AFRC is hopeful that the thinning units in the Even Keel Timber Sale Project harvest adequate volumes. Light thinning of 4 -8 mbf /acre makes units difficult to economically log. Purchasers need more trees to cut per acre, including some of the larger distressed dominants and co-dominants. The cutting costs for these types of units are more expensive adding to the high cost of logging.* AFRC **Response to #S8:** All units in Even Keel were marked to a target Curtis Relative Density (RD) of 35-39 (EA Table 7). The Salem District RMP recommends thinning our Matrix lands to a Curtis RD of 40. Based on our current management direction, it is hard to justify thinning Matrix lands to a Curtis RD lower than 35.
S9.	*AFRC also would like to voice support for thinning treatments in the riparian areas of the Even Keel Timber Sale Project. By prescribing small no cut buffers (25-50 feet) to be left to maintain stream temperatures and thinning the remaining acres inside the riparian areas you can achieve the management objectives of moving them into late seral habitat faster. By reducing the no cut buffers to 25-50 feet and thinning down to that distance, the forest also harvests more volume during the sale thus reducing unit cost.* AFRC
	Response to #S9: Thinning is proposed within the Riparian Reserve Land Use Allocation. Addressed in Text, EA section 2.2.1 With regard to no cut buffers, the Total Maximum Daily Load (TMDL) agreement with the State of Oregon requires the recovery or maintenance of full potential shade along all perennial streams in the Willamette basin. As part of the TMDL, the BLM submitted the Salem and Eugene District Water Quality Restoration Plan (WQRP) for the Willamette Basin which details how the BLM would implement the TMDL on federal lands. The plan was approved by the ODEQ on July 18, 2008. The recommended design features of this plan have been incorporated into the Even Keel project. These project design features include no cut buffers are at least 30 feet on intermittent streams and 70 feet on perennial streams. Addressed in Text, EA section 3.2.2
S10.	*AFRC would like to see all timber sales be economically viable. Appropriate harvesting systems should be used to achieve an economically viable sale and increase the revenues to the government and O&C Counties.* AFRC **Response to # S10:** The selected action has been designed to be economically viable. Addressed in text, EA sections 1.2, 1.4.3, 2.2

Updated Response to Even Keel Scoping Comments (Table xx of the Even Keel EA)	
#	**Comment** S3 = Scoping Comment # 3
S11.	*We would also like to encourage the BLM to take a hard look at allowing mechanical harvesting and pre-bunching of processed logs where possible (slopes less than 34% in EA)* AFRC **Response to #S11:** We include only standard skyline and ground-based stipulations in the contract and the EA sets resource protection objectives and operational side-boards. The operator submits a proposal to the Authorized Officer for review. Processors have often been used very effectively on our timber sales where they have done an excellent job in preventing soil damage and minimizing damage to standing trees. They can often work an extended operating season, as long as effects stay within those effects described in the EA.
S12.	*AFRC cannot support the decommissioning of any permanent roads that improve access for fuels reduction treatments and early initial response to wildfires.* AFRC **Response to #S12:** New road construction will be blocked and stabilized after harvest operations. Addressed in text, EA section 2.2.2
Fuels Treatments	
S13.	*AFRC would like to see the BLM fuels treatments prescriptions 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.* AFRC **Response to #S13:** The *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP) identifies the broad resource objectives that Fuels Managers must incorporate to meet the requirements of the Plan. The EA allows for a wide range of potential fuels treatments depending on post-harvest surveys. Addressed in Text, EA section 2.2.2
S14.	*12/ If using whole tree yarding or yarding with tops attached to control fuels, the agency should top a portion of the trees and leave the greens in the forest in order to retain nutrients on site.* Oregon Wild **Response to #S14:** Site specific fuel treatments have not yet been finalized. However, it is unlikely that the majority of the 439 acres would be harvested in this manner. If some small areas were whole tree yarded there should still be no lack of residue remaining on site to provide nutrients. Total fuel loading post-harvest should amount to approximately 17,000 tons or 38 tons per acre. It is estimated that following fuels treatments there would be approximately 15,000 total tons of fuel on site or 34 tons per acre. (See EA Section 3.2.6).
Category: Other Comments	

Updated Response to Even Keel Scoping Comments (Table xx of the Even Keel EA)	
#	**Comment** S3 = Scoping Comment # 3
S15	**Invasive Species:** *14/ Take proactive steps to avoid the spread of weeds. Use canopy cover to suppress weeds. Avoid soil disturbance and road construction.* Oregon Wild **Response to #S15:** The selected action takes proactive steps to control weeds by pre-treating false brome, minimizing soil disturbance and road construction, equipment washing, and seeding with native species. Addressed in text, EA sections 2.2.2, 2.2.3
S16	**Monitoring:** *2/ Use projects as an opportunity to learn by conducting monitoring and research on the effects of thinning. There are many information gaps that need filling. Every project should generate useful information to inform future projects.* Oregon Wild **Response to #S16:** Implementation monitoring for BMPs is conducted regularly throughout the project. Effectiveness monitoring is conducted through the Aquatic and Riparian Effectiveness Monitoring Plan (AREMP) see http://www.reo.gov/monitoring/watershed-overview.shtml
S17	**Project Objectives***: We support for the timber sale and have confidence that the project will protect natural resources*. Frank Lumber
S18	**Recreation**: *The project will occur near popular recreational hiking trails, lakes and scenic drives. Project design and operational features should take this into account.* Individual Commenter **Response to #S18:** Recreation activities within the project area are dispersed behind locked gates only. McDowell Creek County Park is approximately 3 miles to the southwest, Foster Reservoir over 5 miles to the south, and Roaring River Hatchery, County Park, and Larwood County Park are over 6 miles to the northwest of the project area. No recreation trails are on record near the project area.
S19	**Retain Habitat:** *Both commercial thinning and variable density management should preserve any minor tree species and special habitats.* Individual Commenter **Response to #S19:** The selected action will maintain minor tree species and any special habitats that are within the proposed units. Addressed in text, EA sections 2.2.3, 3.2.5
S20	**Retain NE corner of Section 11:** AFRC would like to see the unit in the NE corner of sec. 11 stay in this timber sale. We believe the access issue could be solved at a relatively low cost. The large stream crossing on the east side of section 11 could be crossed with a temporary bridge crossing or a spur could be extended from Weyerhaeuser's property to the east. AFRC **Response to #S20:** Addressed in text, EA section 2.5

Updated Response to Even Keel Scoping Comments (Table xx of the Even Keel EA)	
#	**Comment** S3 = Scoping Comment # 3
S23	**Seasonal Restrictions:** *Seasonal and wildlife restrictions often make timber sales extremely difficult to complete within the contract timelines. Fire season restrictions on top of seasonal and wildlife restrictions can often limit workdays to 4-5 hours. All these restrictions have a cost to the purchaser and results in a lower bid for the stumpage. We strongly suggest that the BLM carefully examine sale restrictions and minimize those restrictions where possible.* AFRC **Response to #S23:** Each sale, and often each harvest unit, has its own set of environmental and operational concerns and the BLM operates under various laws, policies and plans that direct us. We seek to allow the greatest possible flexibility in logging systems and seasons within those constraints.
S24	**Stream Protection Zones** *15/ Buffer streams from the effects of heavy equipment and loss of bank trees and trees that shade streams. Mitigate for the loss of LWD input by retaining extra snags and wood in riparian areas.* Oregon Wild **Response to #S24**: Addressed in text, EA section 2.2. Stream protection zones (SPZ) have been established on all perennial and intermittent streams. No harvest or direct disturbance will take place within the SPZ, except road renovation/maintenance at stream crossings (culvert replacements) within the road right-of-way. The SPZ would have a minimum width of 70 feet each side of perennial streams and 30 feet each side on intermittent streams (EA p. 19).
Road Construction	
S21	*No new roads should be constructed in Riparian Reserves. Existing roads should be decommissioned, if possible; at the very least, the numerous stream crossings should be improved upon with better culverts or by other means*. Individual Commenter **Response to #S21:** Addressed in text, EA sections 2.2.3, 3.2.2, 3.2., 3.2.8
S22	*16/ Avoid road construction. Where road building is necessary, ensure that the realized restoration benefits far outweigh the adverse impacts of the road. Carefully consider the effects of roads on connectivity, especially at road/stream crossings, across ridge tops, and midslope hydrological processes (such as large wood delivery routes). Avoid log hauling during the wet season.* Oregon Wild **Response to #S22:** Most of the road network utilized for the sale is already in place. New road construction is already avoided due to cost and potential impacts and is developed when necessary for project implementation. Addressed in text, EA sections 2.2, 3.2.2, 3.2.3, 3.2.8
Category: Thinning Prescriptions (Rx)	

Updated Response to Even Keel Scoping Comments (Table xx of the Even Keel EA)	
#	**Comment** S3 = Scoping Comment # 3
S25	*Variable density management in the Riparian Reserves should preserve any large trees of those which meet particular habitat needs for sensitive species. Pre-disturbance surveys should be done for former Survey and Manage Species which have been incorporated into management plans for listed species. I am particularly concerned about species with little or no mobility, such as amphibians, mollusks, and epiphytes.* Individual Commenter **Response to #S25:** Addressed in EA Sections 2.2.1; Retain largest trees, thin from below); 3.2.1, 3.2.5 (special status species); 2.2.3 3.2.5; (Retain old-growth remnants). The selected action will thin from below, generally retain the largest trees, protect special status species, and retain old growth remnants. Surveys have been conducted in compliance with current survey protocols.
S26	*4/ Focus on treating the youngest stands that are most "plastic" and amenable to restoration.* Oregon Wild **Response to #S26:** This comment is out of the scope of this project. See EA section 1.2.
S27	*5/ Generally retain all the largest trees, then "free thin from below" retaining some smaller trees in all age-size classes*. Oregon Wild **Response to #S27:** The selected action thins from below. Smaller trees will be retained as a result of spacing variations in the thinning prescription. Addressed in text, EA section 2.2, 3.2.1, 3.2.5
S28	*6/ Retain and protect under-represented conifer and non-conifer trees and shrubs*. Oregon Wild **Response to #S28:** The selected action retains minor conifer species (EA p. 35) and will retain hardwood species, any existing minor hardwood species (black cottonwood, golden chinquapin), big-leaf maples greater than 20 inches in diameter (PDF#36). Addressed in text, EA section 2.2.3
S29	9/ *Retain abundant snags and coarse wood both distributed and in clumps. Retention of dead wood should generally be proportional to the intensity of the thinning, Retain wildlife trees such as hollows, forked tops, broken tops, leaning trees, etc.* Oregon Wild
	Response to #S29: Addressed in EA section 2.2.3, 3.2.1- (Pre/post treatment trees per acre, retaining wildlife trees).

Updated Response to Even Keel Scoping Comments (Table xx of the Even Keel EA)	
#	**Comment** S3 = Scoping Comment # 3
S30	*7/ Strive for a variable density outcome. Use your creativity to establish diversity and complexity both within and between stands. Use skips and gaps within units to help achieve diversity. Gaps should be small, while skips should be a little larger, but even small clumps and patches of trees are desirable. Gaps should not be clearcut but rather should retain some residual structure in the form of live or dead trees.* Oregon Wild *8/ The scale of patches in variable density thinning regimes is important. Ideally variability should be implemented at numerous scales ranging from small to large.* Oregon Wild **Response to #S30:** The selected action will have a variable density outcome by thinning to 40% canopy cover in Matrix, 50% canopy cover in Riparian, thinning 5 one-acre patches to 10-12 trees per acre, leaving unthinned stream protection zones within the unit, and leaving unthinned Riparian Reserves adjacent to the units and within the sections in the project area that contain the units.
S31	*10/ Think not only about existing snags but more importantly about the processes the recruit snags, including: a large pool of green trees from which to recruit snags and the existence of competition and other mortality processes. Logging will significantly harm both of these snag recruitment factors. Green tree retention, including generous unthinned "skips" where density dependent mortality will play out, is necessary to support this process.* *Thinning both reduces and delays recruitment of snags, first by removing trees that would otherwise suffer suppression mortality, and second by increasing stand vigor and postponing overall mortality. The implications are that heavy thinning should be used sparingly and generous unthinned patches should be retained WITHIN thinned stands in order to continue the snag recruitment process and mitigate for captured mortality.* *To inform the decision, please conduct a stand simulation model to fully disclose the adverse effects of logging on dead wood, especially large snags >20" dbh, and then mitigate for these adverse effects by identifying areas within treated stands and across the landscape that will remain permanently untreated so they can recruit adequate large snags and dead wood to meet DecAID 50-80% tolerance levels as soon as possible and over the long-term.* Oregon Wild **Response to #S31:** Addressed in EA section 2.2.1, 2.3, 3.2.1 (untreated areas). An examination of current photos & maps reveals there are numerous unthinned skips in the project area. The Keel Mountain Density Management site in Sec. 13 has many leave islands varying in size from ¼-to1 acre. Addressed in EA sections 2.2.3, 3.2.1 and 3.2.5. The Even Keel project does not propose heavy thinning. These prescriptions meet the US Fish and Wildlife's definition of light to moderate thinning used in ESA consultation. The Field Manager disagrees that the BLM needs to run the requested stand stimulation model to make an informed decision about the effect of the project on snags and down wood for the following reasons. The proposed thinning would retain 90% of the snags larger than 15 inches. Any large snags that need to be felled for safety reasons, would be retained as CWD. Thinning would retain green tree capital for green tree retention requirements at final harvest in the matrix, and future snag recruitment in the Riparian Reserve Land Use Allocation. These stands are currently lacking large snags and coarse woody debris so these habitat components would be protected to the greatest extent possible.

Updated Response to Even Keel Scoping Comments (Table xx of the Even Keel EA)	
#	**Comment** S3 = Scoping Comment # 3
S32	*11/ Thin heavy enough to stimulate development of understory vegetation, but don't thin too heavy. Recognize that thinning captures mortality and that plantation stands are already lacking critical values from dead wood due to the unnatural stand history of all clearcut and planted stands.* Oregon Wild **Response to #S32:** Addressed in text, EA section 3.2.1, 3.2.5, 3.2.8, 3.2.9.
Wildlife	
S33	*3/ Consider the effects of thinning on adjacent mature & old-growth habitat which may provide habitat for spotted owls, marbled murrelets, and other species. Spotted owls may use young stands for dispersal, foraging, and security from predators. The agency should also consider adjusting both the location and timing of thinning to minimize the cumulative effects of widespread thinning on the sensitive and listed species.* Oregon Wild **Response to #S33:** Addressed in EA Section 3.2.5; (spotted owl/late successional old-growth/suitable habitat). No late successional/old-growth is proposed for thinning. There is one late successional stand 12S-1E-23 outside of the proposed thinning unit. The rest of the proposed units are located adjacent to early/other mid seral stands.
S34	*13/ Avoid impacts to raptor nests and enhance habitat for diverse prey species. Train marking crews and cutting crews to look up and avoid cutting trees with nests of any sort and trees with defects.* Oregon Wild **Response to # S34:** No known raptor nests are found in the project area. Prey species-red tree vole addressed in EA Section 3.2.5. None of the other prey species have any Bureau or Survey & Manage status.
S35	*19/If the stand is younger than 80 years, the agency may rely on the Pechman exemption and not complete surveys for rare and uncommon species. However, this exemption is intended to apply to even-aged stands, and the agency should apply the survey protocol in any portion of units with two or more predominant trees per acre. See Red Tree Vole Survey Protocol Version 2.1.* Oregon Wild **Response to# S35:** Addressed in EA Section 3.2.5 (red tree vole).