

Decision Notice and Finding of No Significant Impact

Ball Park Thin Project

USDA Forest Service

McKenzie River Ranger District

Willamette National Forest

Lane and Linn Counties, Oregon

Legal Location: T14S, R5E, Sec. 24; T.14S, R.6E, Sec. 17-21, 28-30, 31-33; T.15S, R.6E,
Sec. 3-6, 7-11, 14-18, 20-23; Willamette Meridian; Lane and Linn Counties, Oregon.

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I. INTRODUCTION

The Ball Park Thin Project area is within the Deer Creek Subwatershed (6th field) of the Upper McKenzie Watershed (5th field) on the McKenzie River Ranger District. The project area consists of 14,508 acres located northwest of the McKenzie River, east of the HJ Andrews Experimental Forest, and south of the District boundary that is adjacent to the Sweet Home District. Major drainages include Deer Creek, Budworm Creek, Fritz Creek, and Carpenter Creek.

II. PURPOSE and NEED

The purpose and need for this project is to improve stand conditions in terms of species composition, density, and structure over the long term in previously managed stands less than 80 years of age. The amended Willamette Forest Plan includes goals and objectives for managing stands with silvicultural techniques to maintain stand health and vigor and provide multiple use benefits, moving the project area toward the desired condition.

Actions Are Needed To →
• Restore structural diversity in stem exclusion stands to enhance wildlife habitat;
• Accelerate restoration of late-successional conditions for stands within Riparian Reserves;
• Protect and maintain aquatic resources;
• Restore degraded roads infrastructure;
• Restore meadows where fire was historically present;
• Reduce hazardous fuels and return the role of fire to the ecosystem as a natural disturbance process.
• Provide a sustainable supply of wood in support of the local and regional economy.

III. PUBLIC PARTICIPATION

Scoping began on the Ball Park Thin Project under the current proposed action on May 24, 2007. The McKenzie River Ranger District sent a public scoping letter with preliminary information about this EA to a project mailing list of 43 interested individuals, agencies, tribal governments, and elected representatives. The scoping letter described the proposed action, a purpose and need for action, a brief summary of preliminary issues, and alternative actions. The Ball Park Thin Project was listed in the Forest Focus – the quarterly schedule of proposed actions (SOPA) for the Willamette National Forest, on February 23, 2007. The interdisciplinary team (IDT) developed the significant issues (EA, pages 13-14) to address in the environmental assessment from public, other agencies, organizations, and Forest Service resource specialists. The original comments received are located in the project file.

On July 29, 2008, the Ball Park Thin Environmental Assessment (EA) was made available to the public and other agencies for a 30-day public review and comment period in accordance with 36 CFR 215. There were 4 individual comment letters/phone calls received. All comments were reviewed and discussed by appropriate resource specialists and officials. A limited summary of these comments and the Forest Service responses to parts of those comments are presented in the attached Appendix H.

IV. DECISION

Per a review of public comment; consultation with District and Forest specialists; and a thorough review of the analysis, applicable laws and the WNF Plan, I have decided to implement Alternative B modified. In brief, this includes the activities listed in Table 1. The modification to Alternative B includes incorporating thinning to as low as 30% canopy closure on 217 acres that were to be thinned to as low as 40% canopy closure in the original Alternative B. This action was analyzed as part of Alternative C.

Table 1. Activities to be Implemented.

Timber Harvest		
Canopy Thinning (40%)^a	in acres	447
Canopy Thinning (30%)^a	in acres	217
Group Selection	in acres	129
Riparian Thinning	in acres	122
Logging Systems		
Ground-Based	in acres	606
Skyline	in acres	459
Fuels Treatments		
Underburn or Pile Burn	in acres	1,065
Underburn Buffer	in acres	42
Natural Fuels Underburn	in acres	49
Transportation System		

Road Decommissioning	in miles	0.53
Road Maintenance ^b	in miles	43.9
Temporary Roads	in miles	3.0
Post Harvest Activities		
Post-Harvest Planting ^c	in acres	Indeterminate
Subsoiling ^d	in acres	Indeterminate

^a: Modifications from original Alternative B

^b: Road maintenance activities would include felling danger trees, clearing and grubbing, replacing drainage structures, removing slides, repairing holes in the roadbed, reconstructing ditches, and placement of aggregate surfacing. The replacement of 95 culverts and installation of 9 new culverts are also part of road maintenance.

^c: Will be conducted in gaps created by root rot pockets, the number of acres to be planted are not currently known.

^d: Will be conducted when operations produce soil compaction within units or landings, the number of acres to be subsoiled are not currently known.

V. DECISION RATIONALE

I have carefully read and considered the effects discussed in the environmental assessment and the comments received during scoping and the 30-day comment period. I also considered applicable laws, the WNF Plan, and how well each alternative met the purpose and need for the project. The project record shows a thorough review of the relevant scientific information, a consideration of responsible opposing views, and the acknowledgment of incomplete or unavailable information, scientific uncertainty, and risk. I am selecting Alternative B modified to actively move toward the desired condition in the WNF Forest Plan, to meet the identified purpose and need, to better address the significant issues identified during scoping, and to incorporate input from the public and other agencies.

Overall, Alternative B modified responds to the following elements defined in the purpose and need for Ball Park Thin Project:

- **Restore Structural Diversity in Stem Exclusion Stands to Enhance Wildlife Habitat**

This will be accomplished through harvest techniques such as variable density thinning with skips and gaps.

- **Accelerate Restoration of Late-Successional Conditions for Stands within Riparian Reserves**

This will be accomplished through riparian thinning 122 acres, which can accelerate development of large trees and multi-storied stands.

- **Protect and Maintain Aquatic Resources**

Approximately 44 miles of road maintenance will be accomplished, as well as the decommissioning of 0.53 miles of road. The maintenance of roads in poor condition, including the installation of 9 new culverts and the replacement of 95 other, will help protect and maintain aquatic resources in the project area.

- **Restore Degraded Roads Infrastructure**

The project will provide for 43.9 miles of road maintenance, providing access areas for management with minimum impact to other resources.

- **Reduce hazardous fuels and return the role of fire to the ecosystem as a natural disturbance process**

Underburning or pile burning of activity generated fuels will occur on approximately 1,065 acres, and 49 acres of natural fuels underburning will occur in the project area.

- **Provide a Sustainable Supply of Wood In Support of the Local and Regional Economy**

The selected alternative will provide and estimated 12-13 MMBF of timber product in support of the local and regional economy.

Significant Issues

Alternative B modified responds to the Significant Issues of Water Quality/Aquatic Resources and Distribution and Amount of Diverse Early Seral Habitat for Wildlife as follows (EA, pages 13 and 14)

Water Quality/Aquatic Resources:

Alternative B modified includes 19 specific Best Management Practices (BMPs) that provide for the protection of soil, water, and fisheries resources, as required project mitigation. The riparian reserve strategy provides for retention of stream shading vegetation and adequate levels of large wood in riparian reserves. This alternative will commercially thin 122 acres within riparian reserves, which is expected to create stand conditions that favor the accelerated development of future large wood and other late successional stand characteristics. This alternative will also provide greater immediate diversity of patches and openings, and will create conditions that result in greater plant species richness in the riparian reserves. This alternative will also stabilize a significant amount of sediment, through the installation/replacement of culverts, which benefits aquatic wildlife species (EA, pages 58 and 69-71)

Amount of Diverse Early Seral Habitat for Wildlife:

Alternative B modified will create 129 one-acre gaps within the project units. Six units located in the high emphasis elk area and one unit within a moderate elk emphasis area will be thinned to a 30% canopy closure, while the remaining stands will be thinned to a 40% canopy closure. The gaps and reduced canopy closure will increase forage quality and make the project area more suitable to a wider range of wildlife species, when compared to the current dense closed canopy condition (EA, pages 58 and 80-90).

VI. OTHER ALTERNATIVES CONSIDERED

The significant issues influencing the development of alternatives to the proposed action are described in Chapter 1 of the EA (pages 13-14). In addition to the selected alternative, I considered one other action alternative (Alternatives C) in detail. A comparison of the alternatives considered in detail can be found in the EA on pages 57-58. The following discussions explain why alternatives A and C were not selected.

Alternative A (No Action) Rationale for Non-Selection

The no action alternative is required by the National Environmental Policy Act. This alternative provides a baseline upon which to compare the effects of the action alternatives. Under this alternative current management plans would continue to guide management of the project area. Only those management activities planned and implemented under previous decisions would continue in the project area. I did not select this alternative because it did not fully meet any of the purpose and need items for the project. More specifically, Alternative A would not:

• Restore Structural Diversity in Stem Exclusion Stands to Enhance Wildlife Habitat
• Accelerate Restoration of Late-Successional Conditions for Stands within Riparian Reserves
• Protect and Maintain Aquatic Resources
• Restore Degraded Roads Infrastructure
• Reduce hazardous fuels and return the role of fire to the ecosystem as a natural disturbance process
• Provide a Sustainable Supply of Wood In Support of the Local and Regional Economy

Alternative C Rationale for Non-Selection

This alternative was developed in response to public comments on the proposed action. It was designed to increase the amount of diverse early seral habitat for wildlife, through increasing gap size (1-3 acres) and including a canopy thinning (30% canopy closure) on 217 acres that were planned for a lighter canopy thinning (40% canopy closure) in the original Alternative B.

Alternative B modified includes the 217 acres of increased canopy thinning (30% canopy closure) analyzed as part of Alternative C, as a means to increase forage quality and make the project area more suitable to a wider range of wildlife species.

Alternative C differs from Alternative B modified in the inclusion of gaps that range from 1-3 acres in size versus the 1 acre gaps. This equates to 22 acres less of gaps in Alternative B modified.

However, the additional 22 acres of gaps in Alternative C reduces the amount of thinning that can occur over the remainder of the unit because the canopy closure percentage of 30% or 40% that must be maintained is an average over the entire unit. Consequently, the use of one acre gaps, along with canopy closure as low as 30% for selected units included in Alternative B modified, is more effective in temporarily reducing competition for sunlight and increasing the growth of forbs and shrubs.

Another issue with increased gap size in Alternative C relates to efforts to promote the accelerated restoration of late-successional conditions in previously managed stands. As noted previously, larger gaps reduce the amount of thinning that can occur throughout the remainder of the unit, so the larger gaps within units will decrease the restoration of late-successional conditions when compared to Alternative B modified.

Alternative C was not selected because it would be less effective in providing early seral habitat for wildlife and promoting the accelerated restoration of late-successional conditions in these previously managed stands.

VII. FINDING OF NO SIGNIFICANT IMPACT (FONSI)

A. Context

This decision is consistent with the activities implemented by the Willamette National Forest, which lead toward achieving the goals, objectives and requirements in the WNF Forest Plan identified for the management areas within the project area (WNF Forest Plan, Chapters 2 and 3), while meeting the purpose and need of the EA.

B. Intensity

I have determined the following with regard to the intensity of the project. Bold items are directly from 40 CFR 1508.27:

- 1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes the effect will be beneficial.** The beneficial effects of the action do not bias my finding of no significant environmental effects. Impacts associated with my decision are discussed in Chapter 3 of the EA. The environmental assessment provides sufficient information to determine that this project will not have a significant impact (beneficial or adverse) on the land and its natural resources, air quality, or water quality (EA, pages 19-141).
- 2. The degree to which the proposed action affects public health or safety.** Measures will be taken to ensure compliance with the, the Clean Water Act (EA, pages 67-68, 147) and the Clean Air Act (EA, pages 129-130, and 147), during project implementation. Considering the effects disclosed in Chapter 3 of the EA, and the information contained in the project file, I conclude that implementing the chosen alternative with mitigation will not significantly affect public health or safety.
- 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.** There are no parklands, prime farmlands, or wild and scenic rivers affected by the Ball Park project. In addition, the supporting documentation located in Chapter 3 of the EA and the project file provides sufficient information to determine that this project will not affect any known unique characteristics of the geographic area such as cultural resources (EA, pages 134-136).
- 4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.** The degree of controversy, with regard to effects on the quality of the human environment, is limited and considered not significant based on comments received during the scoping and the comment periods (EA, pages 12-18, Appendice H). Differing opinions do not indicate controversy.
- 5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.** We have considerable experience with the types of activities to be implemented with this decision. The effects analysis shows the effects are not uncertain, and do not involve unique or unknown risk. Similar types of timber harvest, activity fuel treatments, road work and other connected actions have occurred previously on the Willamette and on other National Forests. No impacts to the human environment that are highly uncertain or involve unique or unknown risks have been identified in Chapter 3 of this analysis (EA, pages 59-141).
- 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 is not likely to establish a precedent for future actions with significant effects, because timber harvest projects of this magnitude and complexity are commonly implemented. The

proposed commercial thinning, activity fuels burning, road treatments, and connected actions are well established practices on the Willamette National Forest and on the McKenzie River Ranger District, and do not establish a precedent for future actions (past actions in the project area are documented in the EA (page 59-60, 72).

- 7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.** Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts. There would be no significant cumulative effects as a result of this project beyond those discussed in the Willamette National Forest Land and Resource Management Plan. I have reviewed the impacts of those past, present, and reasonably foreseeable actions described in the Environmental Consequences section of the EA (pages 59-141) and find that this action will not have a significant cumulative impact on the environment.
- 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.** This action will not cause loss or destruction of significant scientific, cultural, or historical resources. An appropriate review has been conducted by this undertaking (as discussed in Factor 3). Both previously known, and unknown significant cultural sites discovered in field surveys will be avoided. These measures resulted in a determination of No Historic Properties Affected. Because cultural resources would not be affected by this action there will be no significant adverse effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places. (EA, pages 134-136).
- 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.**

For the Northern Spotted Owl: Informal consultation with the U.S. Fish & Wildlife Service for effects to the northern spotted owl was initiated in February 2008 with a Biological Assessment submitted on February 29, 2008. This Biological Assessment (EA, Appendix D) contains an analysis of spotted owls including effects of project related activities as well as new information and potential threats. A letter of concurrence dated April 4, 2008, was received from US Fish and Wildlife Service that concurred with the Biological Assessment that the Ball Park Thin project may affect but is Not Likely to Affect the northern spotted owl or its critical habitat.

For Bull Trout and Spring Chinook Salmon: The ESA effects determination and rationale is described as Not Likely to Adversely Affect and has been found consistent with the Biological Assessment for Fiscal Year 2007-2009 Low-Risk Thinning Timber Sales on the Mt. Hood and

Willamette National Forest, and portions of the Eugene and Salem Bureau of Land Management Districts. ESA informal consultation was completed with a signature of concurrence from USFWS (April 8, 2008) agreeing with the Forest Service determination that the proposed action was Not Likely to Adversely Affect bull trout, and it would have no adverse modification of Critical Habitat. ESA informal consultation was completed with a signature of concurrence from NMFS agreeing with the Forest Service determination that Ball Park Thin Project was Not Likely to Adversely Affect spring Chinook salmon (April 8, 2008). The quality of Critical Habitat important to listed aquatic species, including spring Chinook salmon and bull trout, is expected to be maintained with implementation of the proposed action or any action alternative.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment. Laws imposed for the protection of the environment provided the framework for the Willamette National Forest Land and Resource Management Plan. From the documentation provided in the EA, the project file, and Other Findings Required by Law (below), I find that the proposed activities do not threaten a violation of Federal, State, or local law imposed for the protection of the environment.

C. Finding

Based on the context and intensity of the environmental effects documented in the EA and project file, on my experience with similar projects, and factors in 40 CFR 1508.27, I have determined that the project does not constitute a major Federal action that will significantly affect the quality of the human environment. Therefore, an Environmental Impact Statement is not needed.

VIII. OTHER FINDINGS REQUIRED BY LAW

I find that Alternative B modified is consistent with the Willamette National Forest Land and Resource Management Plan as amended. Alternative B meets the long-term goals and objectives of the Forest Plan (IV-2 to IV-44) and was designed in conformance with applicable Forest Plan standards and guidelines. This decision is also consistent with all applicable Acts and Regulations such as the National Forest Management Act (NFMA) of 1976, National Environmental Policy Act (NEPA) of 1969, Endangered Species Act (ESA) of 1973, Clean Water Act (CWA) of 1972 and section 319 of the 1987 CWA, Civil Rights Act (CR) of 1964, Title VI and Environmental Justice (EJ) Executive Orders 11988 and 11990, The Preservation of Antiquities Act of June 1906 and the National Historic Preservation Act of October 1966, Executive Order 12962 on Recreational Fishing, and Executive Order 13186 on Neotropical Migratory Birds. (EA, Chapter 3).

IX. APPEAL RIGHTS

This decision is subject to administrative review (appeal) pursuant to 36 CFR Part 215. Appeals can be submitted in several forms, but must be received by the Forest Supervisor, the Appeal Deciding Officer, within 45 days from the date of publication of notice of this decision in the Register Guard, Eugene, Oregon. The publication date in the Register Guard, newspaper of record for the Willamette National Forest, is the exclusive means for calculating the time to file an appeal. Attachments received after the 45 day appeal period will not be considered. Those wishing to appeal this decision should not rely upon dates or timeframe information provided by any other source.

- **Mailed to: Appeal Deciding Officer, Dallas Emch, Forest Supervisor;** ATTN: Appeals, P.O. Box 10607, Eugene, OR 97401;

- **E-mailed to: appeals-pacificnorthwest-willamette@fs.fed.us.** Please put APPEAL and the project name in the subject line. Electronic appeals must be submitted as part of an actual e-mail message, or as an attachment in Microsoft Word (.doc), rich text format (.rtf), or portable document format (.pdf) only. E-mails submitted to addresses other than the ones listed above or in formats other than those listed above or containing viruses will be rejected. It is the responsibility of the appellant to confirm receipt of appeals submitted by electronic mail;

- **Delivered to: Willamette National Forest, Supervisor's Office** at 211 E. 7th Ave, Eugene, OR 97401, between the hours of 8:00 am and 4:30 pm, M-F; or

- **Faxed to: Willamette National Forest, Supervisor's Office,** ATTN: APPEALS at (541) 225-6222.

The office business hours for those submitting hand-delivered appeals are: 8:00 am to 4:30 pm,. Electronic appeals must be submitted in a format such as an email message, plain text (.txt), rich text format (.rtf), or Word (.doc) to the email address above. In cases where no identifiable name is attached to an electronic message, a verification of identity will be required. A scanned signature is one way to provide verification. The notice of appeal must meet the appeal content requirements at 36 CFR 215.14.

X. IMPLEMENTATION OF DECISION

If no appeal is filed within the 45-day time period, the USDA Forest Service will implement the Ball Park Thin project five business days after the close of the appeal period, which starts on the date the legal notice announcing the decision appears in the Register-Guard, Eugene Oregon. When appeals are filed, implementation may occur on, but not before, the 15th business day following the date of the last appeal disposition. Contact

XI. CONTACT

Decision Notice
Ball Park Thin Project

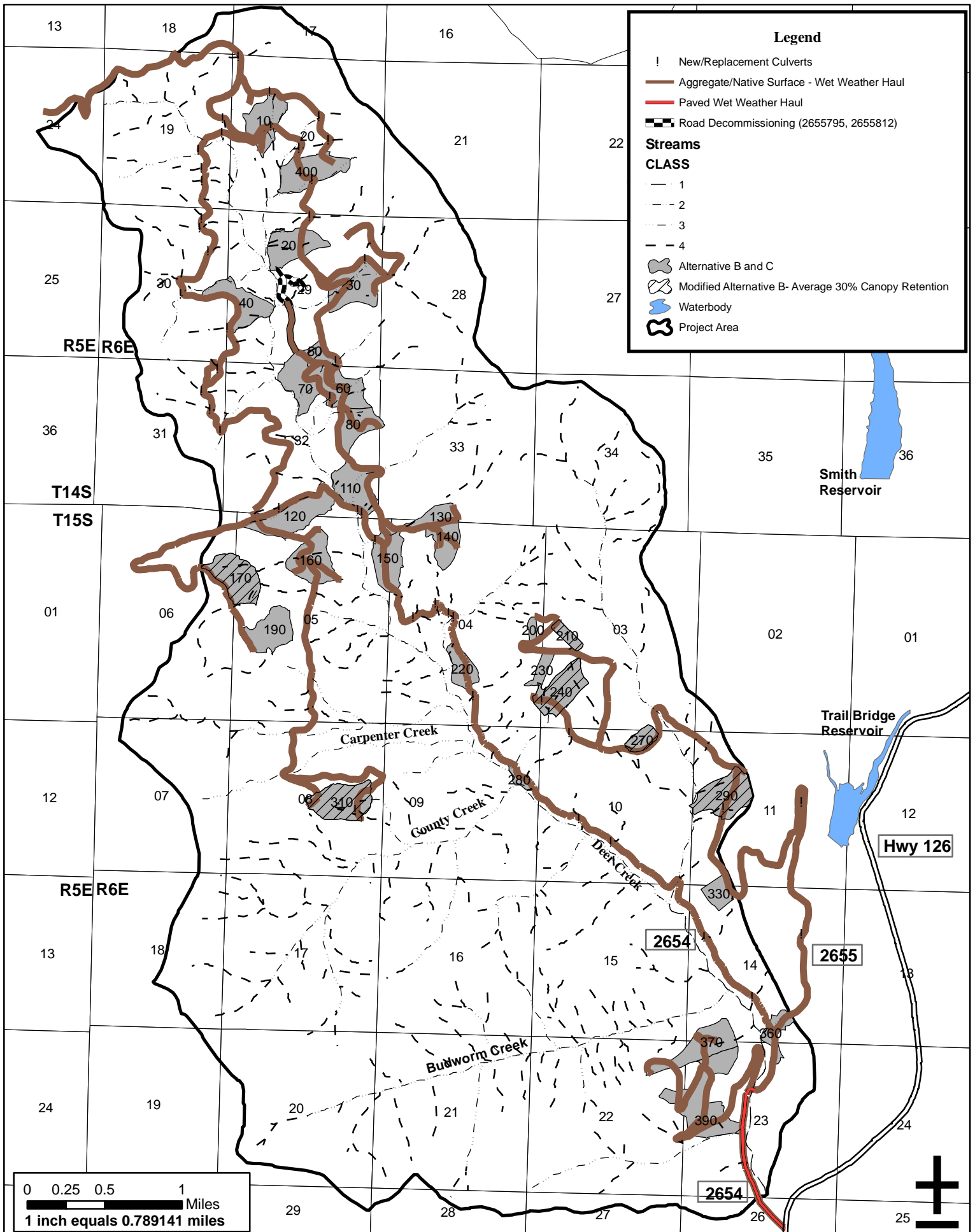
For additional information concerning this decision contact Mary Allison (District Ranger) or Kevin Bruce (Natural Resources Planner) McKenzie River Ranger District, 57600 McKenzie Highway, McKenzie Bridge, Oregon; by telephone at 541-822-3381 ; or email at mallison@fs.fed.us or kbruce@fs.fed.us.

/s/ Mary Allison

September 5, 2008

Mary Allison
District Ranger
McKenzie River RD
Willamette National Forest

Date



**Figure 1 - Ball Park Thin Project Map with Modified Alternative B
(Includes Units that will be thinned to an average of 30% Canopy Retention).**

Appendix H: Response to Comments on the Ball Park Thin EA

Appendix H contains the public comments received during the 30 formal comment period for the Ball Park Thin Project and the Forest Service responses to those comments. This information is grouped by commenter and then subject, and includes the FS response. Not all comments were addressed in detail below, but all were reviewed and considered in the decision-making process. Comment letters received are in the project file.

List of Respondents:

Jacob Groves, American Forest Resource Council
 Doug Heiken, Oregon Wild
 Daniel Kruse, Cascadia Wildlands Project

Submitter	Comment	Response and Where Addressed in the EA
<p>Daniel Kruse, Legal Director, Cascadia Wildlands Project</p>	<p>Roads: If the objective of the project is to restore forest health and watershed functionality, the construction of any new permanent or temporary road should be avoided at all cost.</p>	<p>Chapter 3 - Pages 63-80: Soil Productivity and Slope Stability, Water Quality/Aquatic Resources (Significant Issue #1)</p> <p>Chapter 3 - Pages 123-125: Roads and Access</p> <p>Temporary roads are used to help facilitate logging operations which balance impacts with economics. During ground surveillance, existing areas with prior impacts are identified whenever possible to use as temporary roads. For example, in situations where a unit may have been logged with traditional ground based equipment in the past we may choose to use a skyline harvest system to reduce ground impacts.</p>
	<p>Thinning Intensity: The CWP supports heavier thinning in one entry, rather than lighter thinning in multiple entries. In the</p>	<p>Chapter 2 - Pages 21-23 and 30 : Alternatives Considered in Detail</p>

	future it would be helpful to disclose approximately how many trees per acre would be left with the various intensities of thinning.	Residual Trees Per Acre is provided in Tables 3 and 9, which discloses approximately how many trees per acre would be left by stand for each action alternative.
Jacob Groves Western Oregon Field Forester American Forest Resource Council	Economics: AFRC supports Alt C over Alt B as it is clearly the most economically viable of the two action alternatives while best addressing multiple natural resource objectives and meeting the stated purpose and need.	Chapter 3 – Pages 132-133: Social/Economics The combined economic benefit from implementation of any of the action alternatives is expected to be positive.
	Gaps: The more frequent larger gaps (1-3 acres in size) that are proposed in Alt C will create 22 more acres of early successional habitat in winter range for species such as black-tail deer and Elk.	Chapter 3 - Page 61: Environmental Consequences – Forest and Structure By reducing the number of gaps created, the canopy closure within the remainder of the unit is further reduced. This creates a temporary reduction in competition for sunlight, which should increase growth of forbs and shrubs. Chapter 3 – Pages 82-84: Distribution and Amount of Diverse Early Seral Habitat for Wildlife In addition, through strategic placement of gaps during implementation will help to temporarily improve forage when combined with the commercial thinning around gaps.
	Road Decommissioning: We do not support the decommissioning of any permanent roads. Getting into the habit of	Chapter 3 - Page 108: Benefits to fish habitat.

	<p>decommissioning permanent roads on a landscape that is prone to catastrophic wildfires is careless and not beneficial to the health of the forest.</p> <p>We again encourage the selection of Alt C over Alt B as it harvest 13.1 mmbf compared to 12.3 mmbf with the same amount of temporary road construction.</p>	<p>Chapter 3 - Page 124-125: Roads and Access</p> <p>0.53 miles of road is proposed to be decommissioned after evaluation for infrastructure and resource protection needs. The ability of the district to access areas for future management will not be significantly impacted by this action, and was considered in the analysis.</p>
<p>Doug Heiken Oregon Wild</p>	<p>Focus on the younger stands: Focus on treating the youngest stands that are most "plastic" and amenable to restoration.</p>	<p>Chapter 1 - Page 3 Purpose and Need - All stands proposed for treatment in the project area are under 80 years in age and previously managed.</p>
	<p>Retain Largest Trees and Stand Diversity: Generally retain all the largest trees, then "free thin from below" retaining some smaller trees in all age-size classes.</p> <p>Retain and protect under-represented conifer and non-conifer trees and shrubs.</p>	<p>Chapter 3 – Pages 60-62: Environmental Consequences – Forest Structure -</p> <p>Trees removed would primarily be the smaller diameter trees in the stands. The objective is to increase growth and vigor of remaining trees. Emphasis is on maintaining non-Douglas-fir species. This prescription would maintain or increase vegetative diversity and resistance to future insect infestations and disease.</p> <p>Thinning creates openings in the canopy allowing for the release of some existing understory trees and shrubs. The residual canopy closures would also provide opportunity for the establishment new</p>

		<p>vegetation and shade intolerant tree seedlings (Tappeiner, et al. p.230-231).</p>
	<p>Variable Density Thinning/Patches: Strive for a variable density outcome.</p> <p>The scale of patches in variable density thinning regimes is important. Ideally variability should be implemented at numerous scales ranging from small to large, including: the scale of tree fall events; pockets of variably contagious disturbance from insects, disease, and mixed-severity fire; soil-property heterogeneity; topographic discontinuities; the imprint of natural historical events; etc.</p>	<p>Chapter 1 – Page 15: Non-significant Issues</p> <p>This issue was not considered significant because silviculture prescriptions and marking guidelines include variations in average residual tree spacing of between 17 and 35 feet. The average spacing along with openings caused by natural disturbances, such as, insects and diseases, as well as, windthrow along with untreated reserves will result in a stand with variability in continuity and density, similar to that suggested by the commenters.</p> <p>Chapter 2 – Pages 54 -56: Environmental Consequences – Forest Structure</p> <p>Chapter 3 – Pages 60-62: Environmental Consequences – Forest Structure</p> <p>A thorough discussion of thinning and the rationale for various proposed silvicultural treatments can be found at the above listed pages in the EA.</p>
	<p>Snags and Down Wood: Retain abundant snags and course wood both distributed and in clumps so that thinning mimics natural disturbance.... Continuous recruitment of snags is critical to development of old</p>	<p>Chapter 2 – Pages 45-51: Mitigation Measure and Design Features</p> <p>See Soil, Watershed, and Fisheries Protection Mitigation 17, Wildlife Mitigation Measures 1 and 4,</p>

	<p>growth forest habitat.</p>	<p>as well as Wildlife Design Measures 1, 5, and 6.</p> <p>Chapter 3 – Pages 100-106: Environmental Consequences - Snags and Down Wood</p>
	<p>Raptors: Avoid impacts to raptor nests and enhance habitat for diverse prey species.</p>	<p>Chapter 2 – Pages 49-51 Mitigation Measure and Design Features</p> <p>See Soil, Watershed, and Fisheries Protection Mitigations 1 and 3 and Table 12, as wells as Wildlife Design Measures 2, 3, and 5.</p> <p>Chapter 3 -Pages 90-93: Threatened Northern Spotted Owl (See Discussion)</p> <p>Chapter 3 – Pages 93-95: Sensitive Species (See Discussion)</p>
	<p>Weeds: Take proactive steps to avoid the spread of weeds.</p>	<p>Chapter 2 – Page 52 Design Features – Invasive Plants</p> <p>Chapter 3 –Pages 120 -123: Invasive Plants</p> <p>Seven design features to avoid and control the spread of invasive plants are presented in Chapter 2, and an in depth discussion of invasive plants and is available</p>

		in Chapter 3.
	<p>Stream Buffers: Buffer streams from the effects of heavy equipment and loss of bank trees and trees that shade streams.</p>	<p>Chapter 2 – Pages 45-48: Mitigation Measure – Soil, Watershed, and Fisheries Protection</p> <p>Chapter 3 – Pages 66-68: Stream Shade and Temperature</p> <p>Mitigation measures defined in chapter 2 clearly address stream buffers and stream shade, which is also discussed in the effects analysis in Chapter 3.</p>
	<p>Road Construction: Avoid road construction. Where road building is necessary, ensure that the realized restoration benefits far outweigh the adverse impacts of the road.</p>	<p>Chapter 3 - Pages 63-80: Soil Productivity and Slope Stability, Water Quality/Aquatic Resources (Significant Issue #1)</p> <p>Chapter 3 - Pages 123-125: Roads and Access</p> <p>No permanent road construction is proposed by the project. Temporary roads are used to help facilitate logging operations which balance impacts with economics. During ground surveillance, existing areas with prior impacts are identified whenever possible to use as temporary roads. For example, in situations where a unit may have been logged with traditional ground based equipment in the past we may choose to use a skyline harvest system to reduce ground impacts.</p>