

**DECISION NOTICE
And
FINDING OF NO SIGNIFICANT IMPACT
For The
Bridge Thin Project**

Forest Plan Amendment #50

**USDA - Forest Service
Willamette National Forest
McKenzie River Ranger District
Lane County, Oregon**

Legal Location:

Within T.15S, R.4E; T.15S, R.5E; T.16S, R.4E; T.16S, R.5E; Willamette Meridian.

I. INTRODUCTION

This decision notice documents my decision regarding implementation of the Bridge Thin Project on the McKenzie River Ranger District of the Willamette National Forest. The project consists of commercial timber harvest, fuel treatments, road maintenance, temporary road construction, road decommissioning, road closing, and rock quarry/borrow pit uses in the 20,657 acre McKenzie River / Elk Creek Subwatershed (Project Area). The project area is located between Finn Rock and McKenzie Bridge, and is bisected by the McKenzie River and State Highway 126. The attached map provides the general project area, activity units, and road locations.

The reasons for my decision and my finding regarding whether or not to prepare an environmental impact statement in accordance with the National Environmental Policy Act of 1969 (40 CFR Parts 1500-1508) are included in this decision notice. The proposed activities analyzed in the environmental assessment (EA) were designed to implement the management direction contained in the Willamette National Forest Land and Resource Management Plan (WNF Plan), as amended. The analysis follows the regulations for implementing the National Environmental Policy Act and Forest Service regulations for preparing environmental assessments.

An interdisciplinary team of Forest Service resource specialists prepared the March 2008 Bridge Thin EA. The environmental assessment documents the purpose and need for action, public involvement in the process, alternatives considered, the affected environment, and discloses the environmental effects of implementing each alternative. The project file contains background information and original documents used in the analysis.

The Bridge Thin EA is available for public review at the McKenzie River Ranger District office, 57600 McKenzie River Hwy, McKenzie River, OR. The telephone number is (541) 822-3381.

A copy of this document is also available upon request. It is also posted on http://www.fs.fed.us/r6/willamette/manage/nepa/current_mckenzie.html.

II. PURPOSE AND NEED FOR ACTION

The purpose of this project is to improve stand conditions in terms of species composition, density, and structure over the long term in managed stands up to 80 years of age and fire regenerated stands generally up to 120 years of age. The amended WNF 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;
• Restore “open oak savannah” stands where they were historically present;
• Provide a sustainable supply of wood in support of the local and regional economy.
• Restore degraded roads infrastructure;
• Protect and maintain water quality and reduce hazardous fuel levels in the watershed for communities in the wildland-urban interface;
• Improve the role of fire as a natural disturbance process in the ecosystem.

III. PUBLIC PARTICIPATION

Scoping began on the Bridge Thin Project under the current proposed action on May 18, 2007. The McKenzie River Ranger District sent a public scoping letter with preliminary information about this EA to a project mailing list of 54 interested individuals, agencies, tribal governments, and elected representatives. The scoping letter described the proposed action, a purpose and need for action, a summary of the proposed action, a brief summary of preliminary issues, and alternatives actions. The Bridge Thin Project has been listed in the Forest Focus – the quarterly schedule of proposed actions (SOPA) for the Willamette National Forest, since December 11, 2006

The interdisciplinary team developed the significant issues (EA, pages 14-16) to address in the environmental assessment from public and other agency comments, as well as internal management concerns. The original comments received are located in the project file; a summary of those comments and the responses to them is located in Appendix H to the EA.

The environmental assessment for this project was made available for a 30-day public review and comment from March 11, 2008 through April 9, 2008. Hard copies were mailed or hand-delivered to 8 people or groups who either commented during the initial scoping period or

requested a copy. Nine responses were received. A summary of these comments and the Forest Service responses to them are in the attached Appendix J to the EA.

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. In brief, this includes the activities listed in Table 1, and Non-Significant Forest Plan Amendment #50.

Table 1. Activities to be Implemented.

Management Activity	Units of Measure	Total
Harvest Type		
Moderate Thinning	Acres	391
Heavy Thinning	Acres	1,368
Wildlife Thinning	Acres	190
Oak Thinning	Acres	30
Riparian Thinning	Acres	145
Group Select	Acres	29 ^a
Harvest System		
Ground-based	Acres	770
Skyline	Acres	960
Helicopter	Acres	520
Fuels Treatments		
Fuel Thins	Acres	142
Natural Fuels Underburn	Acres	51
Grappel Pile and Burn	Acres	397
Hand Pile and Burn	Acres	264
Underburn	Acres	1,266
Transportation and Access		
Road Maintenance ^b	Miles	34.2
Open Roads Closed	Miles	0.2
Road Decommissioning	Miles	0.3
Temporary Roads	Feet	25,552
Other activities		
Post-harvest Planting	Acres	Indeterminate ^c
Subsoiling	Acres	Indeterminate ^d

Management Activity	Units of Measure	Total
Rock Quarry Development	Acres	0.5

^a: Acres not included in total, encompassed in other harvest prescriptions;

^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. 42 new/replacement 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: To occur in Group selects and Oak Savanna stands if soil compaction is created by ground-based equipment, the number of acres to be subsoiled are not currently known.

A Non-significant Forest Plan Amendment is included in the proposed action. The Forest Plan Amendment would provide for a one-time exemption of Management Area Standard and Guideline MA-5a-01.

MA-5a-01: An Implementation Guide shall be prepared for each SIA (Special Interest Area) describing the site specific management objectives, enhancement programs, and other acceptable uses and activities.

V. RATIONALE FOR DECISION

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 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 responds to the following elements defined in the purpose and need for Bridge 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 commercial thinning 145 acres, which can accelerate development of large trees and multi-storied stands.

- **Provide a sustainable supply of wood in support of the local and regional economy;**

The selected alternative will provide and estimated 47.5MMBF of timber product in support of the local and regional economy.

- **Restore “open oak savannah” stands where they were historically present;**

Oak thinning (30 acres) and prescribed underburns (53 acres) will occur to control the encroachment of conifers, and promote the restoration of this unique habitat.

- **Restore degraded roads infrastructure;**

The project will provide for 34.2 miles of road maintenance, providing access areas for management with minimum impact to other resources.

- **Protect and maintain water quality and reduce hazardous fuel levels in the watershed for communities in the wildland-urban interface;**

Fuels thins will occur on 142 acres within the wildland-urban interface in order to protect and increase defensible space near private residences, and protect and maintain water quality.

- **Improve the Role of Fire as a Natural Disturbance Process in the Ecosystem;**

Underburning of activity generated fuels, burning associated with oak savanna areas, and the natural fuels underburning proposed for Unit 100, which is a 51 acre stand along King Road adjacent to private land.

Significant Issues

Alternative B responds to the Significant Issues of Water Quality/Aquatic Resources and Threatened Northern Spotted Owl as follows (EA, pages 15 and 16).

Water Quality/Aquatic Resources:

Alternative B 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 145 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 would also provide greater immediate diversity of patches and openings, and would create conditions that result in greater plant species richness in the riparian reserves. This alternative improves passage for 100-year flows where road 2633-720 crosses Mill Creek that also benefits aquatic wildlife species (EA, pages 34 and 92-93)

Threatened Northern Spotted Owl:

Alternative B activities would not downgrade or remove existing suitable spotted owl habitat, which consists of nesting, roosting, and foraging habitat. The proposed action would reduce fuels of less than 7” diameter on 38 acres, and remove 228 acres of dispersal habitat; however, dispersal habitat is not limited within and between home ranges in the project area.

Non-significant Forest Plan Amendment #50

A Non-significant Forest Plan Amendment exempting the preparation of an implementation guide for project management activities in 71 acres of the McKenzie River Special Interest Area (SIA) is included in the proposal.

A one time exemption from preparing an implementation guide for the McKenzie River SIA is not considered a significant amendment to the Willamette Forest Plan for the following reasons (FSM 1926.51):

- 1) This one time Forest Plan Amendment was developed while considering site specific management objectives, enhancement programs, and other acceptable uses and activities within this management area (EA, page 7).
- 2) No commercial timber harvest would occur within the McKenzie River SIA. Activities within the McKenzie River SIA are focused on fuel reduction to decrease the potential for high intensity wildfires in the Wildland Urban Interface (EA, pages 18, 31, 72, and 137-140).

The following evaluation puts in to context to the level of significance of this amendment.

- **Timing** - The later in the planning period, the less likely it is to be significant. This proposal is occurring approximately 18 years after signing of the Forest Plan so it is far into the current planning cycle and is therefore not considered to be a significant change.
- **Location and Size** - The total acreage for the McKenzie River SIA is 2,034. The proposal includes 71 acres of fuels reduction in the McKenzie River SIA, only 3.5% of the entire SIA. This is a very small percentage of the SIA and should have no significant impact on the planned management of the McKenzie River SIA or implementation of Forest Plan standards and guidelines.
- **Goals, Objectives and Outputs** - An Implementation Guide has not been completed for the MA-5a land allocation (McKenzie River SIA) within the project area. However, all action alternatives were developed while considering site specific management objectives, enhancement programs, and other acceptable uses and activities within this management area. These criteria would be incorporated into the Implementation Guide that would be subsequently prepared for the project area to guide future management. The proposed actions will not significantly alter the multiple-use goals and objectives for long-term land and resource management in the McKenzie River SIA.

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 14-16). 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 73-75. 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;
• Restore “open oak savannah” stands where they were historically present;
• Provide a sustainable supply of wood in support of the local and regional economy.
• Restore degraded roads infrastructure;
• Protect and maintain water quality and reduce hazardous fuel levels in the watershed for communities in the wildland-urban interface;
• Improve the role of fire as a natural disturbance process in the ecosystem.

Alternative C Rationale for Non-Selection

This alternative was developed in response to public comments on the proposed action. It was designed to avoid harvest in stands greater than 80 years old. Alternative C primarily differs from Alternative B in the removal of six commercial thinning stands that are over 80 years old. This would result in an approximate 140 acre (2,079 acres) reduction in timber harvest and 3.5 MMBF reduction in timber product output in comparison to Alternative B. This alternative would not meet the purpose and need as well as Alternative B, because it would not accelerate restoration of late-successional conditions in 6 units that total 140 acres, and it would produce a smaller supply of wood in support of the local and regional economy.

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 23-167).

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 89-90, 162, and 165) and the Clean Air Act (EA, pages 141-142, and 162), during project implementation. In addition, development activities in the Mill Creek Rock Quarry would conform to the requirements of the Federal Mine Safety and Health Act of 1977 (EA, page 162). 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 would 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 Bridge Thin 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 159-161).

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, Appendices H and J). 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 76-167)

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 76 and Appendix I).

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 76-167) 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 159-161).

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 October 2007 with a Biological Assessment submitted on January 10, 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 02/07/2008 was received from US Fish and Wildlife Service that concurred with the Biological Assessment that the Bridge 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: ESA informal consultation was completed with the receipt of a letter of concurrence from USFWS (ref. number 1-7-05-I-0025; date 02/07/2008) 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. A letter of concurrence from NMFS dated March 20, 2008 agreeing with the Forest Service determination that Bridge Thin Project (Alternative B, proposed action) was **Not Likely to Adversely Affect** spring Chinook salmon was received.

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 (with the non-significant amendment for MA 5a-01) 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 Regional Forester, 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, Regional Forester; ATTN: APPEALS, P.O. Box 3623; Portland, OR 97208-3623;**
- **E-mailed to: appeals-pacificnorthwest-regional-office@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: Pacific Northwest Regional Office, 333 SW First Avenue, Robert Duncan Plaza Building, Portland Oregon** between 8 am and 4:30 pm, M-F; or
- **Faxed to: Regional Forester, ATTN: APPEALS at (503) 808-2255.**

The office business hours for those submitting hand-delivered appeals are: 8:00 am to 4:30 pm, Monday through Friday, excluding holidays. 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 Bridge 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

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/ Dallas Emch

April 18, 2008

Dallas Emch
Forest Supervisor
Willamette National Forest

Date

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Bridge Thin Project - Location maps of units included in the decision.



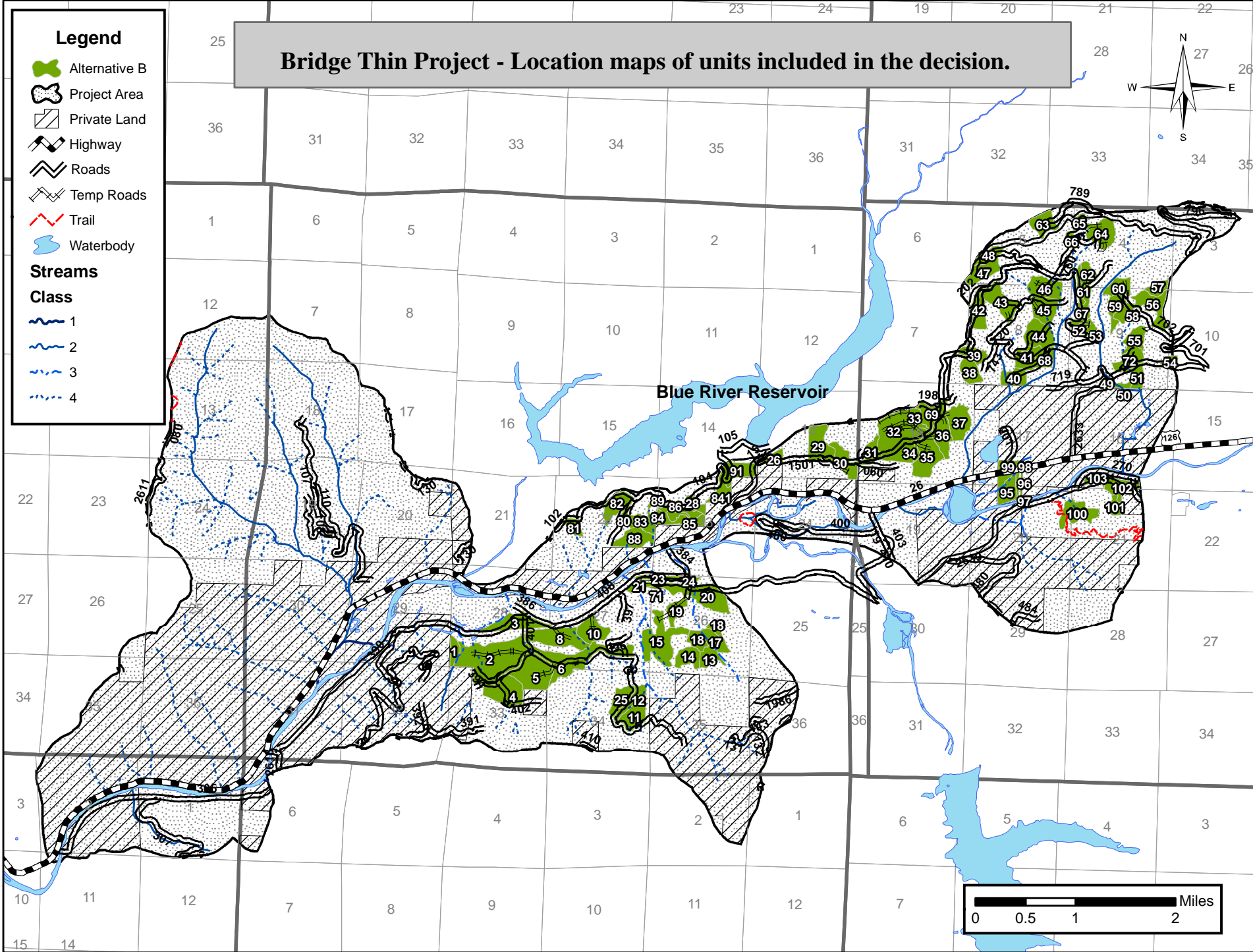
Legend

- Alternative B
- Project Area
- Private Land
- Highway
- Roads
- Temp Roads
- Trail
- Waterbody

Streams

Class

- 1
- 2
- 3
- 4



Appendix J: Response to Comments on the Bridge Thin EA

Appendix J contains the public comments received during the 30 formal comment period for the Bridge Thin Project and the Forest Service responses to those comments. This information is organized by subject with similar comments grouped together followed by the FS response in italics. 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 (AFRC)
Josh Laughlin, Cascadia Wildlands Project, (CWP)
Karl Morgenstern, Eugene Water & Electric Board (EWEB)
Tim Hermach and Bill Barton, Native Forest Council (NFC)
Doug Heiken, Oregon Wild (OW)
Carol Ach
Craig Patterson
Doug Waddell
Monty Wilson

Comments Responded to in Detail:

Thinning in Native Forests/Mature Native Stands

OW: “The mature native stands in the project area should be left to develop on their own...Mature forests do not benefit from thinning as much as younger, more plastic, stands. Older trees have already slowed their growth and will not respond to thinning as much.”

CWP: “There appears to be no ecological justification for thinning in this late successional habitat. With only a minor difference in timber volume between alt B and C, is it hard to comprehend why the district would propose for action the alternative that includes a controversial logging component...there are many ecological reasons to defer from logging native stands in the project area...The few native forests stands in the project our organization visited included 1-2 legacy old-growth trees per acre and significant late successional structure. This is, in essence, a baby old-growth forest that should be left alone.”

NFC: “There is absolutely no rational reason to enter what is left (less than 10%) of the native forests...”

Response: *As discussed on pages 79-80 in the EA, the objective of thinning treatments is to increase growth and vigor of remaining trees, including those stands in the 80-120 year age class. The thinning prescription in these older stands would maintain or increase vegetative diversity and resistance to future insect infestations and disease; make residual trees larger and more resistant to windthrow as they mature (Tappeiner, et al. p.213); and result in residual trees that should be less susceptible to fire and root diseases such as armillaria spp. and associated insects.*

Addition information responding to the concern of thinning in stands over 80 years old is available by reading the following:

Response of old-growth conifers to reduction in stand density in western Oregon forests written by Latham P., and Tappeiner J. published in Tree Physiology (volume 22, pages 137-146)

Silviculture for Multiple Objectives in the Douglas-Fir Region by Robert O. Curtis, Dean S. DeBell, Constance A. Harrington, Denis P. Lavender, J. Bradley St. Clair, John C. Tappener and John D. Walstad. General Technical Report PNW-GTR-435, November 1998

Response to Commercial Thinning in a 110-year-old Douglas-Fir Stand by Richard Williamson, Pacific Northwest Forest and Range Experiment Station Research Paper PNW-296, June 1982

Northern Spotted Owl Habitat

OW: “We are concerned that the EA has failed to correctly identify the native mature forest stands with nice large legacy trees as unsuitable spotted owl habitat. The wildlife BA seems to confuse suitable habitat with occupied habitat. Even if they don’t currently contain owl nests, these stands certainly serve as potential roosting and foraging habitat for spotted owls.”

“The EA p 75 indicates that there would be no impact to suitable spotted owl habitat even when thinning mature native stands. This analysis is misleading because it fails to (for instance) recognize the adverse impact of capturing mortality on owl prey species.”

“Any fuel treatment project in suitable owl nesting, roosting, foraging, or dispersal habitat must recognize and consider the impacts of removing surface fuels (which represent prey habitat), ladder fuels (which represent perching and foraging habitat), and canopy fuels (which represent owl nesting habitat).”

“Page 21 of the wildlife biological evaluation appendix dismisses the need to protect additional spotted owl habitat to compensate for suitable habitat that is occupied by barred owls. This fails to recognize the fact that, other things being equal, providing additional habitat increases the chances that spotted owls and barred owl can co-exist and decreases the chances of competitive exclusion.”

Response: *The Wildlife BA shows occupied spotted owl home ranges within the activity area. The acres of suitable owl habitat listed in Table 2 of the Wildlife BA have no documented history of spotted owl occupancy. The presence of a large legacy tree within a stand does not in itself constitute suitable spotted owl habitat.*

Table 12 on page 75 of the EA displays zero acres of suitable owl habitat downgraded or removed with this project. The foot note on Table 12 explains how suitable spotted owl habitat will be maintained with the non-commercial harvest of units 101 and 103.

Pages 19-23 of the Wildlife BA contains a discussion of the effects of barred owls on NWFP implementation concluding with "Similarly, the reports did not identify cause for changing the basic conservation strategy in the NWFP.

Heavy Thinning Delays Development of Complex Forest Habitat

OW: “Heavy thinning significantly delays development of complex forest habitat (including recruitment of large snags) and therefore has significant environmental impacts and requires an EIS.”

“ We are concerned about heavy thinning that “captures mortality” and increases vigor thereby delaying recruitment of snags and delaying development of critical components of old growth forests. This is especially critical in riparian reserves where recruitment of large wood is important...Unthinned stand continue to grow and actually result in more large snags sooner.”

Response: *Within the **Water Quality/Aquatic Resources** section of the EA the Riparian habitat Improvement section starts on page 96. A direct effect expected from thinning in riparian reserves in “...development of larger diameter trees” which can “accelerate forests toward late-successional conditions.” Additionally, the cumulative effects on page 97 state “The quantity of significant-sized large woody material...is expected to increase through time, in part accelerated through riparian reserve treatments proposed in the Bridge Thin project.”*

Heavy thinning will also help to develop species diversity by reducing stand densities and competition thus promoting natural regeneration and the “release of same existing understory trees and shrubs” (p.80 of EA). In addition, several units will promote natural Sugar Pine to address complexity and under represented species on the landscape (p.80 of EA).

Two recent seminars held since the publishing of the EA have helped to provide additional support and the latest science about thinning:

*In a presentation entitled **Meeting Complex Silvicultural Objectives Through Uneven-Aged Management in the Douglas-Fir Region** held March 27, 2008 Andrew Carey mentions several pluses associated with thinning which help trend towards complex forest habitat. Among other benefits, Mr. Carey’s list includes 1) large trees, 2) recruitment of large snags and fallen trees, 3) deciduous trees in the understory, 4) cavities in deciduous trees, 5) high plant species diversity.*

At the same conference, Tim Harrington, a researcher with the Pacific Northwest Research Station in Olympia, WA spoke about the benefits of heavy thinning for natural regeneration of Douglas-fir. Douglas-fir is shown to require a minimum 40% full sun to have continued morphological development. Mr. Harrington mentions that for Douglas-Fir to regenerate naturally it requires 50% of the overstory to be removed or have one acre or larger gaps. In fact, Mr. Harrington’s presentation also mentions that diameter growth for larger wood responds with >60% full sun in saplings.

*At a **Riparian Thinning** workshop held in Salem, OR on March 20, 2008 the issue of growing larger trees with thinning was discussed. Numerous presentations showed that with thinning there is the ability to shorten the time for trees to reach sizes which have the greatest benefit to riparian ecosystems. In addition, the EA requires no harvest buffers adjacent to stream channels. No harvest buffers are identified on page 63 of the EA. These will provide for recruitment of potential snags and green tree and in combination with thinned portions of the riparian reserves will provide a mix of stem sizes for the future.*

DecAID-Snags

OW: “The Forest Service really needs to do a programmatic EIS to address the lack of scientifically credible standards for snags and dead wood.”

“The EA (p 128) says that the FS is trying to use DecAID to try to “mimic natural conditions”. This is flawed for two reasons. First, DecAID’s description of unmanaged forest conditions lacks data from disturbed sites such as post-fire areas that have very abundant snags, so DecAID lacks an accurate presentation of the full range of natural variability in snags and deadwood. And Second, the Forest Service should be trying to mimic *dynamic* “processes” (which would include periodic pulses of abundant snags) not just *static* “conditions” (which is represented by a few snags/acre persisting between disturbances).”

Response: *The EA (p128) states that "DecAID" relies on data from unharvested plots to assist managers in setting objectives aimed at mimicking natural conditions".*

The EA (p125) discusses disturbances such as the 46 wildfires from years 1970 through 2007 as well as insect and pathogen that contribute to the development of snag habitat.

Oak Savanna Restoration

CWP: “We would like to be assured that no legacy Douglas fir will be logged as part of oak/meadow enhancement. Also, I was unable to find any disclosure about logging methods in the meadows. I would assume it will be facilitated through heli logging due to the sensitive nature of meadow habitat.”

OW: “In oak restoration units we urge the Forest Service to retain large old conifers that can coexist with oaks and are resistant to prescribed fire that should be used to maintain these stands over time.”

Response: *A current Forest Service tool used during implementation is Designation by Description (DxD). DxD is based on the proven results that by putting specific language in contract stating that larger trees “trump” all smaller trees within a given radius only the largest trees remain. DxD will be the primary tool used in contracts associated with the Bridge Thin EA, and will definitely be in associated with the Oak Savanna.*

The units associated with Oak Savanna are on slopes non-conducive to ground based harvest operations. For that reason, Helicopter and Skyline harvest operations will be used in these units. The deciding criteria to separate the two harvest systems are road access for the skyline in conjunction with terrain.

Temporary Roads, Road Decommissioning, and Road Closures

OW: “More road closures are warranted. Maintaining so many roads is not economical or justified. The Forest Service needs to remove more roads and avoid long-term maintenance costs.”

CWP: “Nearly 5 miles of temp road is proposed in the action alternative. This is extensive. Temp roads, even with decommissioning that follows, have long-term impacts.”

“There is a cost/benefit ration that must be looked at with the length of temp roads, impacts on the ground, and acres treated. For example, there would be nearly one mile (5,141 feet) of temp road to access one unit alone in the proposed action (unit 32, 123 acres). This is a lot of road to build to access a small area.”

“The proposed action will decommission .5 miles of road. Many square miles in this part of the district have over 4 miles of road. As we suggested in our scoping comments, we would like to see aggressive road removal of old road beds located in Riparian Reserves, especially after plantations are variably thinned. Road, whether old or new, wreak havoc on landscapes. It is our duty to put to bed any crumbling roads in the network that are no longer used or can’t be maintained due to lack of funds.”

Response: *Approximately 34% of the Forest Service road miles in the planning area are presently closed. The remaining open roads provide the long-term transportation network necessary to meet forest management objectives.*

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. The change in logging system may require a temporary spur which would be placed on top of an old skid trail if possible. The temporary roads in unit 32 are pre-existing roads. They will be utilized for harvest and then decommissioned.

ACS Compliance

CWP: “There was little, if any, discussion in the EA about temp roads, especially those that are built through riparian reserves, and whether or not they are in compliance with the nine objectives laid out in the Aquatic Conservation Strategy. For example, the temp road map on page 47 shows a temp road plowing right through two drainages. There was no disclosure about impacts of this road on waterways and whether or not this action is in compliance with the ACS objectives. Moreover, there was no disclosure about how much total temp road is being proposed in riparian reserves. “

OW: “The EA needs to consider aquatic impacts at multiple-scales as required by the Aquatic Conservation Strategy. The 2004 ACS amendment was rejected by a federal a court and the government dropped their appeal, so the Forest Service is required to disclose the effects of this timber sale at all relevant spatial scales, including the site scale.”

Response: *The effects of temporary roads are discussed in Chapter 3 section titles “Sedimentation and Roads” and in Appendix A. The number and location of temporary roads are disclosed on detailed maps as Figures 12-25 in Chapter 2 on pages 47-60.*

The discussion of planning documents that the Bridge Thin Project tiers to, or incorporates by reference in Chapter 1, pages 7 and 8 does not include the 2004 ACS Amendment. A discussion of ACS compliance at all relevant scales was included in the document as Appendix A. The Bridge Thin EA analysis considered aquatic impacts at multiple scales as required by the ACS.

Unroaded Areas

OW: “The preferred alternative would log 216 acres in unroaded areas >1,000 acres. The stand history of these unroaded units would be very useful information that seems to be missing from

the EA's discussion. These areas should be carefully evaluated to see if they might be better off if allowed to develop through natural succession processes. Unroaded areas are thought to be one of the few places where natural mortality and natural disturbance processes (unperturbed by logging and hazard tree removal) are mostly likely to lead to natural levels of snags and dead wood."

"Units 56, 57, 100, 101 appear to be located in an unroaded area. We urge the Forest Service to avoid commercial logging in this area and rely on natural processes as much as possible."

Response: *The project area does not include Inventoried Roadless Areas. Areas that are considered unroaded, and which may have roadless values were analyzed in the EA (pages 155-157). This includes an analysis of the areas identified and mapped in the unroaded area analysis presented in the Willamette Pilot Roads Analysis in 1998, and made a part of the Willamette Roads Analysis. The Bridge Thin analysis identifies no significant impacts to Soil, Water, and Air; Diversity of Plant and Animal communities; Habitat for TES Species and Biological Strongholds; Primitive, Semi-Primitive Non-Motorized Classes of Recreation; Landscape Character and Scenic Integrity; or Traditional Cultural Properties and Sacred Sites if the proposed project activities are implemented in unroaded areas. Also, units 100 and 101 are not identified as unroaded in the Willamette Pilot Roads Analysis.*

Hazardous Fuels Treatments in Small Areas

OW: "Since part of this project is justified on grounds that fire hazard will be reduced in the WUI, the Forest Service should do more to explain the expected benefits from treating such small areas in such a huge landscape of fuels (that are rarely dry enough to burn). This is a drop in the bucket and the moist Westside forests are just not a high priority for this kind of treatment. Landowners should focus on the fuels within 60-200 feet of their homes."

Response: *McKenzie River Ranger District is responsible for protecting life (firefighters and public), property (private and public on the WUI), and resources during fire suppression operations. Across the Bridge Thin EA landscape variations in vegetation, research, and oral history identify that fire occurs in this mixed severity fire regime. There is a low probability for high severity wildfire to occur; however, it is possible at any time, especially with the past 100+ years of settlement and suppression. Within WUI, the benefit of treatments by private landowners is increased by addition of treatments on public land. This integrated effort to reduce fire spread and intensity aids safety and effectiveness in protection of life, property, and resources by suppression forces.*

Climate Change and Carbon Sequestration

OW: "...concerns about climate change and requires a comprehensive plan amendment. It is now imperative that we manage and conserve our forests to store more carbon..."

Parts of this project might be justified on the basis of increasing the resiliency of native forests and improving their ability to store carbon, but logging mature native forests is probably not justified and needs careful scrutiny from a climate change perspective."

Response: *The FEIS for the Willamette National Forest Land and Resource Management Plan addressed climate change (pages III-7-III-10, and IV-47-IV-48), and provides some responsive strategies to be considered, including: 1) Emphasizing a diversity of species in plantations*

including hardwoods, 2) Enhance or maintain this mix through the pre-commercial and commercial thinning entries, 3) Increase protection of riparian areas to maintain channel stability and cool water temperatures. These strategies are integrated into the Bridge Thin project (EA, pages 76-107). Effects analysis in the FEIS (pages IV-47-IV-48) identifies the estimated loss of carbon for each alternative. Although Alternative L was not selected, it most closely represents the level of harvest activity occurring on the Willamette NF over the past 15 years. The estimated reduction of stored carbon in the first decade for Alternative L was 0.5 million tons, which was by far the least among the alternatives.

One of the purposes of the Bridge Thin project is to increase both the structural and species diversity within the project area which should provide future options to respond to the impacts of climate change on the stands to be treated (EA, pages 2-5).

Given the limited scope and scale of this project it is unlikely that the specific actions approved through this decision will have measurable impacts on regional or global climate change (EA, page 19).

Elk Habitat-Roads

OW: “The EA (p 114) discussion of roads and elk habitat is unclear. It seems to say that the Florence elk emphasis area has too few roads, implying that elk would ideally prefer more roads to play hide-and-seek among. This is not consistent with what we know about elk and roads. If the road density index in the elk model is inversely related to road density, then the EA needs to make this clear.”

Response: *The EA on (p. 114) states " Road densities in the Florence (0.41) area is currently below Forest Standards."*

This terminology is consistent with the Big game Habitat analysis write-up on pages 111-116 of the EA, which includes an explanation of habitat effectiveness values and minimum thresholds as they relate to Forest Standards.

Prescribed Fire Backing Through the Buffer in Riparian Reserves

EWEB: “..what might the effects from this be in terms of soil erosion? Is this expected to happen in most prescribed fire areas near streams..?”

Response: *The no treatment portions of the riparian reserves as documented in Chapter 2, in Table 8 on page 63 are intended to provide adequate protection for water quality. The design measure(Fuels Treatment #1, page 66) referenced is intended to provide a less impactful option to the use of constructed fire lines that disturb soil within riparian reserves. Low intensity fire that is allowed to back into relatively moist riparian areas rarely consumes enough of the duff layer to expose soil.*

The design measure will be clarified as follows:

“To reduce the amount of soil disturbance in riparian reserves resulting from fire line construction, low severity prescribed fire will be allowed to back into the riparian reserves.”

Bridge Thin and Stewardship Projects

NFC: “The stewardship proposal says that this project will include the cutting of 8 million bd. Ft. However the Bridge Thin NEPA document has 2 action alternatives, both of which propose logging in excess of 40 million bd ft.”

Response: *The first two timber sale units derived from the Bridge Thin project will be stewardship sales. Not all timber sales resulting from the Bridge Thin project are stewardship, so the higher estimated timber volume for the action alternatives should be expected. This point was disclosed at multiple McKenzie Stewardship Group meetings.*

Projected Stream Temperature Increase in the No Action Alternative

EWEB: “p.75 Table 12. It is unclear why there is a projected temperature increase in the no action alternative (a) but no temperature increase in alternatives B and C.”

Response: *Table 12 is a summary of the effects analysis contained in Chapter 3 of the EA. Discussion of the Affected Environment and analysis of Environmental Consequences with regard to Stream Shade and Temperature are provided in Chapter 3 on pages 87-90.*

There is no projected temperature increase in the no action alternative in Table 12. What is presented is the estimated existing cumulative increase in stream temperature that has resulted from all past and reasonably foreseeable future actions, and serves as the environmental baseline (existing condition). Chapter 3 provides detailed discussion of how implementation of the Northwest Forest Plan Temperature TMDL Implementation Strategy will prevent additional impacts to stream temperatures as a result of the Bridge project. Consequently, Table 12 depicts the effects of Alternatives B and C as no additional increase in stream temperatures from existing conditions.

The Amount of Difference between Alternatives B and C

Craig Patterson: “...the amount of difference between alternative B and C does not reflect significant differentiation of alternative responses to adequately provide meaningful analysis.”

Response: *The action alternatives were developed based on external and internal scoping comments on the proposed action. The primary point of concern was the inclusion of older/non-plantation timber stands in the proposed action. The significant issues (Threatened Northern Spotted Owl and Water Quality/Aquatic Resources) were addressed consistently in both alternatives to meet all Forest Plan standards and guidelines, as well as other legal requirements. Meeting these requirements reduced the number of viable management options, and narrowed the range of the two action alternatives.*

Missing Footnotes for Table 2 in EA

OW: “Table 2 has footnotes that can’t be found.”

Response: *We apologize for this technical error. A corrected Table 2 is attached to this appendix.*

Table 2. Alternative B Harvest Units.

Unit	Acres	Harvest Prescription ¹ (acres)	Stand History ² (acres)	Logging Systems (acres)	Temp Roads (feet)	Gross Estimated Timber Volume (MBF / CCF)		Fuels Treatment ⁴
1	14	HT-13, NT-1	M1	Heli	—	496	940	HP
2	140	HT-78, RT-48, NT-14	M1	Skyline: 15 Ground: 115 Heli: 10	2909	3,170	6,014	GP/HP
3	47	HT-47	M1	Ground	—	1,343	2,547	GP
4	57	HT-55, NT-2	M1	Ground: 19 Heli: 38	—	914	1,734	GP/HP
5	73	HT-69, NT-4	M1	Ground: 54 Heli: 19	1287	1,710	3,244	UB ¹ /GP/HP
6	87	HT-76, RT-7, NT-4	M1	Skyline: 48 Ground: 22 Heli: 17	643	2,178	4,132	UB ¹ /GP/HP
8	60	HT-54, RT-5, NT-1	M1	Ground	1099	934	1,771	GP
10	37	HT-36, NT-1	M1	Ground	1077	367	696	UB
11	37	HT-30, NT-7	M1	Skyline	—	478	907	HP
12	21	HT-14, NT-7	M1	Skyline	—	177	337	HP
13	21	HT-16, RT-3, NT-2	M1	Heli	—	385	731	HP
14	27	HT-27	M1	Heli	—	664	1,259	HP
15	79	HT-59, RT-12, NT-8	M1	Heli	1568	1,994	3,783	HP
17	24	HT-18, RT-4, NT-2	M1	Heli	—	282	534	HP
18	27	HT-24, RT-2, NT-1	M1	Heli	—	278	527	HP
20	66	MT-66	M1	Ground	832	1,161	2,202	UB
21	12	MT-9, NT-3	M1	Ground	737	49	93	GP
23	12	MT-11, NT-1	M1	Ground	—	118	224	GP
24	5	MT-5	M1	Ground	—	32	61	HP
25	26	HT-26	M1	Skyline	—	789	1,496	HP
26	14	MT-14	M1	Ground: 11 Heli: 3	—	342	648	UB
27	5	HT-5	M1	Skyline	—	84	159	UB
28	7	HT-5 RT-1, NT-1	M1	Skyline: 2 Ground: 5	—	282	534	GP/HP
29	47	HT-45, RT-1, NT-1	M1	Ground: 6 Heli: 41	—	827	1,568	UB ¹ /GP/HP
30	38	HT-38	M1	Ground: 9 Heli: 29	829	1,173	2,225	GP/HP
31	19	HT-19	M1	Skyline: 1 Heli: 18	—	344	652	UB ¹ /HP
32	123	MT-123	M1	Skyline	5141	1,787	3,390	UB
34	5	MT-5	M1	Skyline	—	95	180	UB
35	54	HT-54	M1	Skyline: 48 Ground: 6	1393	1,136	2,154	GP/HP
36	36	HT-34, NT-2	M1	Skyline	1146	827	1,569	HP
37	43	HT-39, RT-4	M1	Skyline	345	782	1,482	HP
38	27	HT-27	M1	Skyline	—	525	997	UB

Table 2. Alternative B Harvest Units.

Unit	Acres	Harvest Prescription ¹ (acres)	Stand History ² (acres)	Logging Systems (acres)	Temp Roads (feet)	Gross Estimated Timber Volume (MBF / CCF)		Fuels Treatment ⁴
39	20	HT-20	M1	Skyline: 18 Ground: 2	341	373	708	UB ¹ /HP
40	27	WT-14, RT-11, NT-2	M1	Skyline: 5 Ground: 22	___	837	1,588	UB
42	32	WT-32	M1	Skyline	___	412	781	UB
43	44	WT-26, RT-11, NT-7	M1	Skyline: 5 Ground: 39	625	1,379	2,616	UB ¹ /GP/HP
44	45	WT-41, RT-2, NT-2	M1	Ground	___	1,512	2,867	GP
45	38	WT-26, RT-9, NT-3	M1	Skyline: 21 Ground: 17	802	864	1,640	GP/HP
46	41	HT-41	M1	Skyline: 36 Ground: 5	857	476	904	UB ¹ /GP/HP
47	32	HT-26, RT-3, NT-3	M1	Skyline	___	720	1,365	HP
48	17	HT-17	M1	Ground	___	370	702	GP
49	7	HT-4, RT-2, NT-1	M1	Ground	___	119	227	GP
50	6	___	M1	___	___	___	___	FT
51	20	HT-18, NT-2	M1	Skyline	___	501	950	HP
52	11	HT-11	M1	Skyline	114	205	388	UB ¹ /HP
53	3	HT-3	M1	Skyline	___	32	61	UB
54	10	HT-10	M1	Ground	___	307	581	GP
55	25	HT-24, NT-1	M1	Skyline	473	659	1,251	UB ¹ /HP
56	44	HT-41, NT-3	M1	Heli	___	2,074	3,935	UB
57	15	HT-15	M1	Heli	___	654	1,241	UB
58	16	MT-16	M1	Skyline	___	140	266	UB ¹ /HP
59	22	HT-22	M1	Skyline: 16 Heli: 6	___	1,126	2,135	UB
60	24	MT-23, NT-1	M1	Skyline: 14 Ground: 10	762	189	359	UB
61	16	HT-12, RT-4	M1	Ground	___	426	809	UB ¹ /GP
62	19	MT-19	M1	Ground	801	123	233	UB
63	29	HT-29	M1	Skyline: 14 Heli: 15	___	798	1,514	HP
64	42	MT-41, NT-1	M1	Skyline: 36 Ground: 6	1346	548	1,040	GP/HP
65	10	MT-10	M1	Skyline	___	178	337	HP
66	11	MT-10, NT-1	M1	Skyline: 1 Ground: 10	___	116	220	UB
67	22	MT-22	M1	Ground	___	296	561	UB
68	41	WT-41	M1	Skyline: 31 Ground: 10	___	542	1,028	UB
69	33	HT-32, NT-1	M1	Skyline: 18 Ground: 15	___	1,109	2,103	UB ¹ /GP/HP
70	3	MT-3	M1	Skyline	395	15	28	UB

Table 2. Alternative B Harvest Units.

Unit	Acres	Harvest Prescription ¹ (acres)	Stand History ² (acres)	Logging Systems (acres)	Temp Roads (feet)	Gross Estimated Timber Volume (MBF / CCF)		Fuels Treatment ⁴
72	28	HT-27, NT-1	M1	Skyline: 20 Ground: 8 .	___	123	233	UB
80	10	WT-10	M2	Skyline	___	650	1,232	UB
81	14	MT-14	M2	Skyline	___	579	1,099	UB
82	35	HT-17, NT-18	M2	Skyline	___	479	909	UB
83	17	HT-11, NT-6	M2	Skyline	___	244	462	UB
84	32	OT-19, RT-8, NT-5	M2	Skyline: 24 Heli: 8	___	1,002	1,901	UB
84I	26	HT-22, NT-4	M2	Skyline	___	521	988	UB
85	12	OT-11, NT-1	M2	Heli	___	33	63	UB
86	7	___	M2	___	___	___	___	NFUB
87	2	___	M2	___	___	___	___	NFUB
88	36	HT-23, RT-8, NT-5	M2	Skyline: 9 Ground: 27	___	854	1,621	UB
89	6	___	M2	___	___	___	___	FT
91	38	HT-35, NT-3	M2	Skyline: 19 Heli: 19	___	244	462	UB
95	27	___	M2	___	___	___	___	FT
96	10	___	M2	___	___	___	___	FT
97	5	___	M2	___	___	___	___	FT
98	4	___	M2	___	___	___	___	FT
99	13	___	M2	___	___	___	___	FT
100	42	___	M2	___	___	___	___	NFUB
101	12	___	M2	___	___	___	___	FT
102	33	___	M2	___	___	___	___	FT
103	26	___	M2	___	___	___	___	FT
Totals	2,449	2,256	___	___	25,552	47,758	90,391	___

¹ HT = Heavy Thin; MT = Moderate Thin; OT = Oak Thin; WT = Wildlife Thin; RT = Riparian Thin; NT = No Treatment Riparian Reserve. (Total acreage of a stands that have commercial harvest. This number includes NT areas of a stand.) Unit 82 includes 8 acres of NT in Red Tree Vole habitat.

² M1 = Stands 40-80 years old resulting from previous even-aged management.

M2 = Stands about 81-120 yrs old resultant of fire regeneration and have signs of previous selective logging.

³ Trees per acres (TPA) of trees 7+ inches diameter breast height. Units with multiple prescriptions (i.e. HT and RT), and average TPA of the two prescriptions is given. TPA is calculated based on average stand residual spacing.

⁴ UB = underburn; UB¹ = possible underburn trees <15"; HP = Hand piling within unit and/or along roads ~100ft; GP = grapple pile throughout unit <30% slopes; UB¹/GP/HP = follow-up fuels treatment based on post harvest conditions; FT = Fuel Thins (these are fuel treatment stands in the Wildland Urban Interface); NFUB = Natural Fuels Underburn (See Fire and Fuels section in Chapter 3 for