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# Final Environmental Impact Statement

## Shore 'Nuf Timber Sale Detroit Ranger District Willamette National Forest

# Final Environmental Impact Statement

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## Shore 'Nuf Timber Sale

Willamette National Forest  
Detroit Ranger District  
Marion and Linn County, Oregon  
July 2002

Lead Agency: United States Department of Agriculture  
Forest Service

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Willamette National Forest

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## Abstract

The Shore 'Nuf Timber Sale is proposed to commercially thin second growth timber stands on the Detroit Ranger District of the Willamette National Forest. This will reduce current stocking levels, enhancing the growth and vigor of the remaining trees and reducing future losses from fire, insects and disease. This project is located approximately 50 miles east of Salem, Oregon on the western slopes of the Cascade Mountains, near Detroit Lake and the City of Detroit, Oregon. Thinning will be used to improve scenic views along the southern portion of Detroit Lake and to reduce the visual effects from past regeneration harvest. The proposed action includes commercially thinning approximately 1136 acres with approximately 1.4 miles of temporary road construction necessary to access harvest units. The proposed action also includes thinning within selected riparian reserve areas, reconstruction and maintenance of approximately 5.9 miles of existing roads, obliteration of temporary roads, and clearing approximately 20 acres of root rot pockets to prevent the spread of *Phellinus weirii*. This project is expected to be implemented over the next 5 years and produce approximately 10 mmbf (million board feet) of commercial wood products. Four alternatives were developed for this project including Alternative 1 – No Action, Alternative 2 – Proposed Action, and Alternative 3 – Reduce Timber Sale Noise, and Alternative 4 – No New Roads.

# Shore 'Nuf Timber Sale Final Environmental Impact Statement

## Table of Contents

### Chapter 1: Purpose and Need for Action

1. Introduction & Background .....	1-1
2. Purpose & Need for Action .....	1-5
3. Proposed Action .....	1-10
4. Public Scoping Process and Issues Considered .....	1-11
5. Issues .....	1-12
6. Responsible Official and Decision to be Made .....	1-15

### Chapter 2: Alternative Description

1. Alternatives Considered but Eliminated from Detailed Study	
A. No Ground Based Logging Systems – Helicopter Logging Only.....	2-1
2. Alternative 1 – No Action.....	2-2
3. Alternative 2 – Proposed Action .....	2-3
4. Alternative 3 – Reduce Timber Sale Noise .....	2-23
5. Alternative 4 – No New Roads .....	2-29

### Chapter 3: Affected Environment and Environmental Consequences

1. Environmental Consequences Related to Key Issues	
Noise Disturbance .....	3-1
Noxious Weeds .....	3-4
Roads.....	3-6
2. Floodplains & Wetlands .....	3-7
3. Threatened, Endangered, and Sensitive Species	
Northern Bald Eagle .....	3-7
Northern Spotted Owl.....	3-7
Peregrine Falcon.....	3-8
Harlequin Duck.....	3-8
Osprey .....	3-9
Big Game .....	3-9
Effects on Other Sensitive Wildlife Species.....	3-10
Fisheries.....	3-10
Sensitive Plants.....	3-10
Migratory Birds .....	3-10
4. Survey & Manage / Protection Buffer Species .....	3-11

5. Heritage Resources .....	3-11
6. Vegetation .....	3-12
7. Unavoidable Adverse Effects	
Fuels and Air Quality .....	3-12
Soils .....	3-13
Stream Channels .....	3-13
Water Quality .....	3-13
Water Quantity .....	3-13
6. Irreversible and Irrecoverable Commitments of Resources .....	3-14
7. Urban Quality .....	3-14
8. Environmental Justice .....	3-14
9. Effects on Prime Farmlands or Forest Lands .....	3-14
10. Energy & Natural or Depletable Resource Requirements and Conservation Potential of Various Alternatives & Mitigation Measures ...	3-15
11. Logging Cost Comparison .....	3-16

## **Chapter 4: List of Preparers**

### **Glossary**

### **References**

### **Index**

### **Appendices:**

Appendix A: Integrated Unit Prescriptions

Appendix B: Aquatic Conservation Strategy Objectives and  
Best Management Practices

Appendix C: Proposed Knutson/Vandenburg (KV) projects

Appendix D: Survey & Manage Species Lists & Survey Results

Appendix E: Consultation with Others /  
Response to Comments From the Draft EIS

## List of Tables

Table 1.1:	Forest Plan Management Allocations .....	1-5
Table 2.1:	Summary of Logging Systems .....	2-3
Table 2.2:	Thinning within Riparian Reserves .....	2-11
Table 2.3:	Logging System, Proposed Landings & Roads .....	2-15
Table 2.4:	Units with Root Rot.....	2-17
Table 2.5:	Prescribed Fuels Treatment .....	2-20
Table 2.6:	Operational Periods due to Wildlife Restrictions – Alternative 2.....	2-22
Table 2.7:	Operational Periods due to Wildlife Restrictions if Non-Nesting is Determined by Occupation Surveys – Alternative 2.....	2-22
Table 2.8:	Operational Periods due to Wildlife Restrictions – Alternative 3.....	2-23
Table 2.9:	Operational Periods due to Wildlife Restrictions if Non-Nesting is Determined by Occupation Surveys – Alternative 3.....	2-23
Table 2.10:	Peak Season – Units Adjacent to High Public Use .....	2-27
Table 2.11:	Peak Season – Units Distant from High Public Use .....	2-27
Table 2.12:	Peak Season – Holidays during Peak Season .....	2-27
Table 2.13:	Non-Peak Season – Units Adjacent to High Public Use.....	2-28
Table 2.14:	Non-Peak Season – Units Distant from High Public Use .....	2-28
Table 2.15:	Units Modified by Alt. 4 – No Temporary Road Construction. ....	2-29
Table 2.16:	Units Modified by Alt. 4 – No Non-System Road Reconstruction ...	2-30
Table 2.17:	Mitigation Measures Common to Action Alternatives .....	2-31
Table 2.18:	Comparison of Effects on Issues by Alternative – Noise .....	2-33
Table 2.19:	Comparison of Effects on Issues by Alternative – Noxious Weeds	2-34
Table 2.20:	Comparison of Effects on Issues by Alternative – Roads.....	2-35
Table 2.21:	Comparison of Effects on Issues by Alternative – Operational Periods Due to Wildlife Restrictions .....	2-35
Table 2.22:	Cost Comparison of Alternatives .....	2-36
Table 3.1:	Existing Road Density .....	3-6
Table 3.2:	Logging Cost Comparison.....	3-16

## List of Figures

Figure 1.1:	Vicinity Map.....	1-2
Figure 1.2:	Detroit Tributaries Watershed Planning Area .....	1-3
Figure 1.3:	Land and Resource Management Plan Allocations.....	1-4
Figure 2.1:	Proposed Action Units – All Units.....	2-4
Figure 2.2:	Hoover Units .....	2-5
Figure 2.3:	South Shore Units .....	2-6
Figure 2.4:	Kinney Ridge Units.....	2-7
Figure 2.5:	French Creek Units .....	2-8
Figure 2.6:	Lakes, Streams, and Riparian Buffers.....	2-10
Figure 2.7:	Transportation System .....	2-14
Figure 2.8:	Facilities and Recreation Map .....	2-18
Figure 2.9:	Unit Proximity to High Public Use – Adjacent vs. Distant .....	2-26

# CHAPTER 1: PURPOSE AND NEED FOR ACTION

Chapter 1 introduces a proposal for harvesting timber on the Detroit Ranger District of the Willamette National Forest, and discloses the underlying need for this action. In addition to the purpose and need for action, this chapter includes a description of the proposed action, and the scoping process used to identify concerns and significant issues.

The project record containing the complete analysis for the Shore 'Nuf Timber Sale is available for public review at the Detroit Ranger District, 44125 N. Santiam Hwy., Detroit, Oregon, 97342. For additional information about the project record, or to make appointments to review the record, please contact Jim Romero, Resource Planning Forester, at the Detroit Ranger District, HC73 Box 320, Mill City, OR 97360 or call (503) 854-4212.

## 1. Introduction & Background

The Shore 'Nuf Timber Sale project area is located approximately 50 miles east of Salem, Oregon on the western slopes of the Cascade Mountains, near Detroit Lake and the City of Detroit, Oregon on the Detroit Ranger District of the Willamette National Forest (Figure 1.1 and 1.2). The majority of proposed harvest units are located along the Blowout Road (Forest Road 10) with units also located along the French Creek Road (Forest Road 2223), Kinney Creek Road (Forest Road 2212) and on Piety Island. The legal description for this project is:

T. 9S., R. 5E., Sections 26, 27, 28, 35 and 36;

T.10S., R. 5E., Sections 10, 11, 12, 13, 14, 15, 18, 19, 20, 21, 22, 28 and 29; and

T.10S., R. 6E., Sections 7, 17, and 18, Willamette Meridian.

This area consists of several management areas as described in the *Willamette National Forest and Land Resource Management Plan* (Forest Plan) as amended by the *Record of Decision (ROD) and Standards and Guidelines on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (April 1994). The Forest Plan management allocations are shown in Figure 1.3. Table 1.1 identifies the acres for each management allocation and compares them with estimated acres proposed for harvesting. Management recommendations for this project are also described the Detroit Tributaries Watershed Analysis completed in November 1997.

Insert Figure 1.1 – Vicinity Map  
Insert Figure 1.2 – Watershed Map  
Insert Figure 1.3 – Forest Plan Allocations



<b>Table 1.1 – Forest Plan Management Allocations</b>		
<b>Management Allocation</b>	<b>Acres in the Shore 'Nuf Planning Area</b>	<b>Acres Proposed in Harvest Units</b>
<b>7 - Old Growth Groves</b>	<b>827</b>	<b>0</b>
<b>9B - Wildlife Habitat, Pileated Woodpecker</b>	<b>749</b>	<b>0</b>
<b>9C - Wildlife Habitat, Marten</b>	<b>236</b>	<b>0</b>
<b>11A - Scenic – Modification Middleground</b>	<b>2,969</b>	<b>51</b>
<b>11C - Scenic – Partial Retention Middleground</b>	<b>6,447</b>	<b>303</b>
<b>11D - Scenic – Partial Retention Foreground</b>	<b>1,290</b>	<b>373</b>
<b>11F - Scenic – Retention Foreground</b>	<b>986</b>	<b>91</b>
<b>12A - Developed Recreation</b>	<b>44</b>	<b>0</b>
<b>12B - Developed Recreation Special Use Permit</b>	<b>200</b>	<b>77</b>
<b>13A - Special Use Permit Area</b>	<b>485</b>	<b>34</b>
<b>13B - Forest Service Administrative Site</b>	<b>70</b>	<b>0</b>
<b>14A - Forest Matrix – General Forest</b>	<b>12,262</b>	<b>146</b>
<b>16B - 100 Acre – Late Successional Reserves</b>	<b>1,340</b>	<b>0</b>
<b>COE Lands</b>	<b>1,123</b>	<b>288</b>
<b>State &amp; Private Lands</b>	<b>3,156</b>	<b>0</b>

## 2. Purpose & Need for Action

This section explains the underlying need for the project proposal. A need for action is usually triggered when the existing conditions do not meet the desired conditions as described in the existing Forest Plans. Implementing the proposed action would resolve the discrepancies between the existing and desired conditions.

### Statement of Need for Action

The District Ranger of the Detroit Ranger District of the Willamette National Forest has determined that a need exists to manage forested stands within the Detroit Tributaries Watershed Analysis area for the purpose of:

- 1) Reducing current stocking levels to enhance the growth and vigor of the remaining trees and to reduce future losses from fire, insects and disease;
- 2) Accelerating the attainment of late-successional stand characteristics in the riparian reserves and to enhance the development of habitat diversity for wildlife on both matrix and riparian lands;
- 3) Capturing competition - induced mortality for use as commercial wood products and to reduce long term fuel buildup;
- 4) Enhancing scenic quality by promoting stand diversity and landscape variety along major recreation travel corridors; and
- 5) Reducing the visual effects of past regeneration harvest from private lands.



Stand of timber in 1937 near old Kinney Ridge lookout site. The stand burned in 1919

### **Assessment of Need for Action**

#### **Existing Condition of the Shore 'Nuf Project Area**

The Detroit Tributaries Watershed Analysis identified about 13,000 acres of forest stands (about 40% of the entire watershed in Federal ownership) having trees with size classes that range between 9- to 21- inches in diameter. These stands were established primarily through natural seeding following logging and/or large fires in the early 1900's. Approximately 6,000 acres of stands in the area date back to a single large fire in 1919 which occurred in the area where Detroit Reservoir now exists. Stands in the French Creek area were logged in the 1930's but have similar stand characteristics to stands harvested earlier. These stands are predominantly Douglas-fir, and exhibit high stand density (150-300 trees per acre) given the relatively large average tree size. Generally, only one significant canopy layer and a sparse to light ground vegetation exists. As a result, these

stands support a less diverse range of wildlife species (primarily fewer late successional species). Late successional characteristics (multi-layered canopy, snags, down woody material) are not likely to develop for many decades. Competition, resulting from high tree density and advanced stand age, is expected to slow future tree growth and increase tree mortality in tree stands.

Currently, the portion of the watershed addressed by this project is dominated by large blocks of 70 year-old stands with few openings or little structural diversity. This is the case for both riparian reserves as well as upland sites. Historically, there was a much higher proportion of older late successional stands which are still evidenced by large stumps remaining in the stands. On the south facing aspects, relatively short fire frequencies probably led to natural underburning and more of a mosaic of a varied stand conditions than is found today. On north facing aspects, large areas of old stands would have been more prevalent than today.

This project is entirely within a high emphasis area for big game winter range. The Watershed Analysis characterizes the condition of big game habitat, which depend on ground vegetation, as being limited for forage. Openings which might support higher quantities of forage are primarily limited to private harvest areas and the Bonneville Power Association (BPA) and Portland General Electric (PGE) powerline rights-of-way. There has been minimal regeneration harvest on National Forest lands in this project area which may contribute to a lack of forage for big game species.

Insect and disease levels are generally low in this analysis area. The one primary exception is the existence of small pockets of trees with *Phellinus* root rot that comprise about 5% of these stands. This fungus ultimately results in tree mortality for all the Douglas-fir, hemlock, and true fir within the pocket, eventually leading to additional blowdown and fuel buildup. These pockets expand gradually as the fungus spreads from tree to tree through root contact and grafting. These pockets are generally less than ¼ acre but could possibly range up to 6 acres.



January 2000 snow breakage within a root rot pocket in the NW corner of Unit #2

The area around Detroit Reservoir and the lower reaches of French Creek attract a great amount of recreational use every summer. This segment of the public exhibits a greater demand for the maintenance of higher scenic values. Currently there exists a sharp contrast between clearcuts and the timbered forest giving the landscape view an unnatural appearance.

There are high values at risk should a wildfire occur in the area. The City of Detroit, the Stahlman Summer Homes Tract & Sportsman's Club, five large developed campgrounds, two day-use areas, two private marina's, and many dispersed recreation sites within the area (See Figure 2.8 in Chapter 2 – Facilities & Recreation map). Given the large amount of recreation use in this area, there is a high risk for human caused fire starts. Private property and public safety present additional challenges to the control of wildfire. The area is generally characterized as having steep slopes, which hampers control efforts when fires occur.

### **The Desired Future Condition of the Shore 'Nuf Timber Sale Project Area**

The desired future condition for the project area is described in the Forest Plan and is characterized by the following:

1. Accelerated growth and vigor of well-formed trees promote stands that are less prone to insect and disease outbreaks, and large scale stand replacing fires;
2. Late successional characteristics are evident in both riparian reserves and upland matrix sites. These characteristics include large trees, downed woody material, structural diversity of native plants, and diversity of invertebrate and other species;

3. Fuel loadings, resulting from competition induced mortality, are below maximum acceptable levels to facilitate the control of wildfires. Fuel loadings are kept to acceptable levels by utilizing thinned trees for commercial wood products;
4. Enhanced scenic quality exists in high recreational use areas that is characterized by diverse vegetation composition, various stand densities, age classes, and tree diameters, with emphasis on large trees and vegetation that accentuates spring and fall colors;
5. Management activities, which may be visually dominant, borrow from established form, line, color, and texture of the original landscape.

Over the past decade, there are approximately 2000 acres of completed commercial thinnings which currently meet or are developing characteristics listed in the desired conditions. Past timber sales with thinning harvest have included Hammond Thin, Reservoir Thin, Flying Fish, Sour Fly, French Creek Thin, and Sporty. Characteristics that typify the current conditions of these treated stands include:

- Treated stands were thinned from below, leaving the largest, best growing trees.
- Shade tolerant species, such as western hemlock and western redcedar are common in the understory.
- Growth of shrubs and other ground vegetation has been enhanced.
- Canopy closures generally range from 50% – 80%.
- Competition-induced mortality has been greatly reduced.



- Root rot pockets were treated and are being managed for non-susceptible species.
- In riparian reserves that were thinned, trees were left that contribute to channel bank stability and shading.



Recently thinned stand of timber in the Shore 'Nuf project area

### 3. Proposed Action

This section describes the proposed action developed by the Detroit Ranger District Interdisciplinary Team (IDT) to meet the need for action. A proposed action is not a decision. Specifics of the proposed action, and alternatives to the proposed action, considered in this analysis are described in Chapter 2 of this EIS.

The project area is located approximately 50 miles east of Salem, Oregon on the western slopes of the Cascade Mountains, near Detroit Lake and the City of Detroit, Oregon on the Detroit Ranger District of the Willamette National Forest. The Shore 'Nuf Timber Sale would occur during the next five years on approximately 1136 acres of the Detroit Tributaries Watershed, and includes the following proposed actions:

1. Thin approximately 1136 acres of second growth Douglas fir stands, to reduce stocking levels while maintaining an average 70% canopy closure;
2. Thin selected portions of riparian reserves while maintaining a 70% or greater canopy closure that are within, or adjacent to the proposed thinning stands, to develop late successional characteristics in riparian areas;
3. Treat pockets of *Phellinus weirii* occurring in the proposed thinning stands by removing all of the affected trees within the infection site and/or within a buffer around the infection site, to prevent the spread of the *Phellinus weirii* and other diseases; and
4. Create six small visual units, up to twelve acres each, along the Blowout Road and Stahlman trail to provide views of Detroit Lake and the surrounding area.

The proposed action also includes the following associated actions:

1. Construct approximately 1.4 miles of temporary roads to access thinning units, and after implementation of the thinning, obliterate the roads by ripping, seeding, and re-establishing natural drainage patterns;
2. Reconstruct approximately 5.9 miles of existing roads that are currently inaccessible due to slides, overgrown vegetation, water damage, and downed trees;
3. Construct, reconstruct, or modify landings for helicopters, skylines, and ground based yarding systems;
4. Treat slash created by the thinning activities in areas where there is a high risk of fire starts, such as campgrounds, near summer homes and near major roads, by hand piling and burning slash; and
5. Reforest the treated *Phellinus weirii* and other root rot pockets by planting species that are not susceptible to root rot such as native hardwoods and fruit bearing trees.

#### 4. Public Scoping Process and Issues Considered

Scoping is an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.

##### Scoping Process

Public involvement in the planning process for the Shore 'Nuf Timber Sale was solicited through mailings and meetings with individuals and groups. The Willamette National Forest distributes a planning newsletter to individuals and groups who have shown an interest in past projects. This project, identified as the **Shore 'Nuf Timber Sale**, first appeared as an upcoming project in the Spring 1997 edition of the Willamette National Forest planning newsletter, *FOREST FOCUS*, and has been described in subsequent newsletters. This newsletter is sent quarterly to about 250 addressees.

A Notice of Intent (NOI) to complete the Shore 'Nuf Timber Sale EIS was published in the Federal Register on September 15, 2000 (Vol. 65, No. 180). This notice announced the intent to prepare an EIS, with the USDA Forest Service as the lead agency, and provided a brief background on the Proposed Action. The 45-day scoping period for the NOI ended on October 29, 2000. In addition to the NOI, a public scoping notice, describing the purpose and need and proposed action, was mailed on November 8, 2000 to individuals and groups that have expressed an interest in current projects on the Detroit Ranger District. The USDA Forest Service received 26 comment letters during the public scoping period and written comments concerning the Shore 'Nuf Timber Sale are included in the Project Record.

Forest Service specialists were contacted to provide agency concerns and potential issues with the proposed action. District personnel also met with individuals and groups as requested. This project was presented during meetings or field visits with the Stahlman Summer Home Association, Oregon Natural Resource Council (ONRC), American Lands Alliance, and the Confederated Tribes of Grand Ronde.

The Draft Environmental Impact Statement was mailed to interested parties in August 2001. The 45-day public scoping period ended on October 25, 2001. A total of 9 comment letters were received. Copies of the comment letters are available in the project record located at the Detroit Ranger District office.

## 5. Issues

The proposed action, developed to meet the need for action, may cause effects which conflict with various public uses or other resources managed by the Forest Service. These conflicts, called issues, are typically found during the initial scoping period and are used to generate alternatives to the proposed action, or mitigation.

### **Significant Issues:**

The following issues were deemed significant by the District Ranger:

#### 1) **Noise Disturbance from Harvest Operations:**

Noise disturbance from harvest operations was raised as a concern by Forest Service personnel as a result of receiving various comments over the past decade from the public, including residents of the City of Detroit.

Noise during harvest operations from helicopters, harvest equipment, log trucks and increased truck traffic could be disturbing to local residents and recreation users, potentially impacting local tourism and the related tourist economy. This noise disturbance is generally less accepted during the early morning, early evening, and nighttime hours, and on weekends in the vicinity of high use recreation areas and residences. No quantitative information exists in terms of noise levels or disturbance; therefore, the noise issue is addressed qualitatively. Alternative 3 – Reduce Timber Sale Noise addresses this issue.

#### 2) **Noxious Weeds:**

Noxious weeds were raised as a concern by Forest Service personnel and other agencies. There is concern that noxious weeds could spread to areas where additional acres of mineral soil would be exposed due to new temporary road construction, existing road reconstruction, and landing construction. Mitigation common to all alternatives addresses this issue.

#### 3) **Roads**

Comments were received during the public scoping period specific to new temporary roads and road reconstruction from K. Huling J. Brandt, K. Sjogren, G. Sexton, J. Hall, J. West, and E. Espenhorst.

There is concern that the 1.4 miles of new temporary road construction and 5.9 miles of existing road reconstruction would cause detrimental soil effects, increase sedimentation, and degrade water quality in nearby streams and Detroit Reservoir. Alternative 4 – No New Roads addresses this issue.



## **Other Issues Identified but Determined to be Non-Significant**

The following is a list of issues that were identified during scoping for this project. As a result of public and interdisciplinary team input, the following issues are not significant and are eliminated from detailed study. Provided is a brief statement of why they would not have a significant effect on the human environment. These issues were not used to develop alternatives to the proposed actions.

### **1. Water Quality:**

Comments were received from S. Brown, J. Brandt, K. Sjogren, G. Sexton, J. Hall, J. West, and E. Espenhorst during the public scoping period specific to water quality. The analysis area is within a larger watershed used by several downstream municipalities, including the City of Salem, for domestic drinking water. There is a concern that the proposed management activities on steep and/or unstable slopes and within riparian reserves could produce sediments that could be detrimental to water quality which supports downstream beneficial uses.

By applying Best Management Practices and following Forest Plan Standards & Guides, water quality is not expected to be impacted. See Appendix B for a description of the Best Management Practices.

### **2. Scenic Quality:**

Comments were received from J. Spencer, R. Parkin, R. Fallersach, K. Sjogren, L. Jones, G. & B. Coffman, and the Stahlman Summer Home Owners during the public scoping period specific to the scenic quality of the area. There is a concern that the proposed management activities for improving scenic quality and creating

scenic openings would adversely affect the scenic character of the area. This analysis area is highly visible from Detroit Lake, several high use recreation areas and a major travel route.

The Notice of Intent and Public Scoping Notice did not provide an adequate description of the treatments. See Scenic Quality Improvements in Chapter 2 for a detailed description of this action. By applying the actions described in Chapter 2, the scenic quality of the area would not be adversely affected.

### **3. Air Quality:**

Comments were received during the public scoping period specific to air quality from D. Riley raising the concern that smoke generated from prescribed burning activities may impact the air quality in the area.

All prescribed burning operations would comply with Oregon Smoke Management Guidelines to minimize impacts to populated areas. See Fuels and Air Quality discussion in Chapter 3 – Unavoidable Adverse Effects.

#### 4. Riparian Reserves

Comments were received from G. Sexton, J. Hall, J. West, and E. Espenhorst during the public scoping period requesting no logging within riparian reserve areas to protect water quality and riparian values.

By applying Best Management Practices and following Forest Plan Standards & Guides, water quality and riparian values are not expected to be negatively impacted. BMP's have been implemented for the past four years on recent timber sales, such as Sunnyview and Cloudy. Monitoring data from these sales have shown no effect to water quality from riparian thinning or other management activities. Results have shown that riparian thinning actually speeds up the attainment of Aquatic Conservation Strategy Objectives #8 and #9 without retarding the attainment of the remaining objectives. The primary effects of thinning in riparian reserves are:

- a. An increase in average stand diameter;
- b. Retention of greater tree live crown ratios;
- c. Reduced tree mortality; and
- d. Increased light to the forest floor which stimulates understory vegetation and the development of a second tree canopy much earlier than without thinning.

See Appendix B for a description of the Aquatic Conservation Strategy Objectives and Best Management Practices for the Shore 'Nuf Timber Sale.

#### 5. Economic Cost / Benefit

##### Analysis:

A request was received from E. Espenhorst to have an economic analysis completed for this project.

A cost/benefit analysis for this project is not relevant to the choice among different alternatives. Therefore, a economic cost/benefit analysis will not be completed for the Shore 'Nuf Timber Sale. A comparison of logging and road construction costs is presented in Table 2.19.

#### 6. Wildlife:

Comments were received from K. Sjogren, G. & B. Coffman, and E. Espenhorst during the public scoping period raising the concern that the proposed activities could impact the existing wildlife in the area.

Adherence to seasonal restrictions, unit prescriptions, and Forest Plan Standards & Guides would minimize impacts to wildlife. This project is not expected to adversely affect Threatened and Endangered Species, which are protected under the Endangered Species Act.

## **7. Old Growth:**

Comments were received from J. Spencer, K. Sjogren, G. Sexton, J. Hall, and E. Espenhorst during the public scoping period raising the concern that old growth will be harvested with this project.

No old growth would be designated for cutting within harvest units for this project. Old growth refers to trees greater than 200 years old. All stands scheduled for treatment have an average age class of 70 years old. Occurrence of old growth in these stands is scattered or non-existent, but these trees are not designated for removal. This definition applies to all future references of old growth within this document.

## **6. Responsible Official and Decision to be Made**

The District Ranger of the Detroit Ranger District on the Willamette National Forest will be the responsible official and will make the decision following preparation of an environmental impact statement by the USDA Forest Service for the proposal. The decision to be made is whether to implement the project as proposed; to implement an alternative to the proposal; or, to take no action at this time.

## CHAPTER 2 ALTERNATIVE DESCRIPTION

The agency is directed to include in this chapter (1) all reasonable alternatives, and for those eliminated from detailed study, a brief discussion of the reasons for their having been eliminated, (2) a substantial discussion of the alternatives considered in detail, including the proposed action, (3) a description of the no action, (4) identification of the agency's preferred alternative(s), and (5) appropriate mitigation measures not already included in the proposed action or alternatives. Based on the information and analysis presented in the sections on Affected Environment and Environmental Consequences, this chapter also presents the environmental impacts of the proposal and the alternatives in comparative form to provide a clear basis for choice among the options by the decisionmaker and the public. Mitigation measures are summarized in Table 2.17 following the alternative description information. A comparison of all alternatives is presented in Table 2.18. Integrated prescriptions can be found for each unit in Appendix A.

### 2. Alternatives Considered but Eliminated from Detailed Study

The following alternative was suggested as a result of internal and public scoping efforts, but eliminated from detailed study based on the rationale described below.

#### A. No Ground Based Logging Systems – Helicopter Logging Only

Comments were received during the public scoping period from K. Huling, suggesting this as a potential alternative. Additional comments on soil effects were received from J. Brandt and K. Sjogren.

This alternative addresses the public concern for 1) detrimental soil effects; and 2) water quality. This alternative would eliminate all ground based logging systems such as tractor, processor/forwarder, and skyline systems and require all units to be logged with helicopter or dropped from consideration. This alternative would change the proposed logging methods on approximately 30% of the sale from ground-based systems to helicopter logging.

This alternative was eliminated from detailed study because:

1. Detrimental soil effects, including soil compaction, are not expected to exceed the Willamette National Forest standard of 15% of the area. Past logging in the area was most likely done in the 1930's from the railroad with cable systems. There is very little evidence of past use of ground based logging systems in the area. Therefore, by designating well-spaced tractor skid trails and skyline corridors, and harvesting less than 30% of the sale with ground based systems, soil protection standards should easily be met.
2. Water quality would be maintained by implementing Best Management Practices, such as designating skid trails, sub-soiling, installing water bars, seeding and mulching, and excluding skid trails from riparian areas.

## 2. Alternative 1 – No Action

The no action alternative proposes no changes to the current condition at this time. This alternative serves as a baseline from which to understand the changes associated with the action alternatives. The information presented in the Affected Environment in Chapter 3 describes the current condition of the specific project area. A description of the existing condition of the watershed can also be found in the Detroit Tributaries Watershed Analysis, completed in November 1997.



Detroit Tributaries Watershed Analysis Area

### 3. Alternative 2 – Proposed Action

Alternative 2 is the proposed action as described in Chapter 1. The specific details of the proposed action are described here and included as Alternative 2. Units identified in the proposed action are shown on the proposed action map (Figure 2.1) and by geographic area on Figures 2.2 – 2.5.

#### Summary of Specific Actions:

The District Ranger for the Detroit Ranger District of the Willamette National Forest proposes to commercially thin approximately 1136 acres of second growth timber; construct approximately 1.4 miles of temporary road to access harvest units & landings; reconstruct approximately 5.9 miles of existing roads; remove affected trees within approximately 20 acres of root rot pockets; provide recreational improvements as a result of thinning around campgrounds, summer homes and dispersed camping areas; complete approximately 313 acres of fuel treatment by underburning and hand-piling and burning slash; and, remove several small trees that block the view around the Stahlman Point and Kinney Ridge Lookout sites. See the proposed action map for unit locations, roads and proposed landings and Table 2.3 for additional details for each unit in the timber sale.

### Commercial Thinning

Second growth stands would be commercially thinned to reduce stocking levels while maintaining an average 70% canopy closure. The best dominant and co-dominant trees of all species would be retained within each unit subject to meeting the stocking requirements of the prescriptions. No old-growth trees would be harvested with this action. The intent of the thinning is to encourage growth of the remaining trees, improve stand vigor and health, and improve visual quality. Maintaining the specified canopy closure average of 70% helps protect the stands from windthrow, and retains sufficient canopy cover to maintain stream temperatures. Silviculturally the 70% cover balances increased tree growth, full occupation of the stands with trees, and the need to maintain a 10-year or greater reentry period for future thinning. Implementation of this action would result in the sale of approximately 10 mmbf of commercial wood products. Table 2.1 describes a percentage breakdown of the timber sale by logging system.

<b>Table 2.1: Summary of Logging Systems</b>			
<b>Logging System</b>	<b># of Landings *</b>	<b>Estimated Acres</b>	<b>% of Total Sale</b>
Helicopter	26	804	70%
Skyline	12+	160	15%
Tractor	15+	142	12%
Processor/Forwarder	6+	30	3%

\* Estimated number of landings based on field reconnaissance. Logs in several units would be yarded to existing roads along the entire length of the unit

## Thinning Within Riparian Reserves

Portions of selected riparian reserves that are within, or adjacent to the stands proposed for thinning, would also be thinned to maintain a 70% canopy closure. (See Figure 2.6 for Lakes, Streams and Riparian Areas). Mitigation measures required for all riparian reserves include:

- No thinning would take place within the wet area of the riparian reserve and the portion of the reserve contributing to channel bank stability.
- In units adjacent to Detroit Reservoir and on Piety Island, no trees contributing to shoreline stability would be removed.
- Falling would be directed away from streams.

Unit	Streams <sup>1</sup>	Stream Class	Riparian Reserve Total Width <sup>2</sup>	No-Cut Buffer Total Width <sup>3</sup>	Notes	
1	1 & 2	III	344	250	#2 – Reserve in SE corner – Thinning OK at the headwaters.	
	3	IV	344	0		
	4	III	344	250		
2	1	III	344	See Notes	#1 – Lower 2/3 no thinning required, upper 1/3 yes (see marking for #5). #3 = Domestic water supply to Hoover C.G. on lower portion of the stream. #5 – Thin to leave best dominant and co-dominant trees to 160 square feet of basal area.	
	2	III	344	344		
	3	I/III	688/344	344		
	4	III/IV	344	344		
	5	III/IV	344	0		
3	1	III/IV	172	75	The stream is the unit boundary. Maintain a 75 ft. no-cut buffer along unit boundary.	
4	1 & 2	IV	344	344	#3 – Fish bearing stream.	
	3	II	688	688		
	4	III	344	344		
5	1	III	344	172		
	2	III	344	0		
	3	III	344	0		
6	1	III	172	172	The stream is the unit boundary. Maintain a 172 ft. no-cut buffer along unit boundary.	For the entire unit, if a root rot pocket is identified within a riparian reserve, allow removal within the reserve and re-plant with hardwood species.
	2	III	344	0		
	3	III	172	172	The stream is the unit boundary. Maintain a 172 ft. no-cut buffer along unit boundary.	
7	1	III	172	172	The stream is the unit boundary. Maintain a 172 ft. no-cut buffer along unit boundary.	

**Table 2.2: Thinning within Riparian Reserves (continued)**

Unit	Streams <sup>1</sup>	Stream Class	Riparian Reserve Total Width <sup>2</sup>	No-Cut Buffer Total Width <sup>3</sup>	Notes
8	1 & 2	III	344	150	
	3	III	344	150	
	4	III	344	150	
	5 & 6	III	344	150	
	7	III	344	0	
9	1	III	172	172	Both streams form the unit boundaries. Maintain a 172 ft. no-cut buffer along unit boundaries.
	2	III	172	172	
10	All	III/IV	344	0	
11	All	III/IV	344	0	
12	All	III	344	0	
13	1	III	344	250	Main channel maintain full buffer.
	2	III	344	0	Eastern channel, OK to thin.
14	None	N/A	N/A	N/A	
15	All	III	344	0	
16	All	III	344	0	
17	All	III	344	0	
19	All	III	344	0	
20	All	III	344	0	
21	All	II	688	See Notes	French Creek: Consult with Hydrologist during unit layout.
22	All	Lakeshore	100	100	Piety Island. No riparian reserves on island except lakeshore.
23	1	III	344	344	#1 – Forms the boundary between units 23a and 23b.
	2	III	344	344	#2 – Forms the boundary between units 23b and 23c.
	3	Lakeshore	100	0	#3 - along northern lakeshore
	4	Lakeshore	100	100	#4 – along western lakeshore
24	1	Lakeshore	344	0	#1 – along lakeshore
	2	III	344	344	#2 - No thinning along tributary riparian reserves.
25	All	Lakeshore	100	0	OK to thin along lakeshore
26	All	Lakeshore	100	0	OK to thin along lakeshore
27	All	Lakeshore & III	100/344	0	Avoid wet area in southern portion of unit.
28	All	III	344	75	Consult with Hydrologist during unit layout. No thinning along west edge of stream.
29	None	N/A	N/A	N/A	



**Table 2.2: Thinning within Riparian Reserves (continued)**

Unit	Streams <sup>1</sup>	Stream Class	Riparian Reserve Total Width <sup>2</sup>	No-Cut Buffer Total Width <sup>3</sup>	Notes
30	1	III	344	344	
	2	III	344	344	
	3	III	344	344	
	4	III	344	344	
	5	III	344	344	
31	All	Lakeshore	100	0	OK to thin along lakeshore
32	None	N/A	N/A	N/A	
33	1	II	344	344	Tom Creek. Exclude from unit boundary.

- Streams** are identified and numbered from east to west as shown on the proposed action maps (Figures 2.2, 2.3, 2.4 and 2.5).
- Riparian Reserve Width** is the total width of the riparian reserve as defined in the Northwest Forest Plan. This is two standard tree heights for Class I and II streams (344 feet), and one standard tree height for Class III and IV streams (172 feet) on either side of the stream.
- No-Cut Buffer Width** is the area within the Riparian Reserve Width where thinning is prohibited. **A zero (0) indicates that thinning is allowed throughout the entire riparian reserve.** If the No-cut buffer width is less than the total Riparian Reserve Width, some thinning is allowed in the riparian area.

**Thinning Near Stahlman Summer Home Tracts (Unit #30)**

Unit #30 encompasses the Stahlman summer home tracts administrative site and surrounding area. While the purpose of the thinning proposed between the summer home tracts and the Blowout road is to maintain forest health and to encourage the development of better vegetative screening of the summer home tracts, it is anticipated that the limited screening that now occurs from tree stems would be slightly reduced by the thinning in Unit #30.

To avoid liability problems for timber purchasers, no thinning would take place within 1½-tree lengths from any of the structures in the summer home tracts. (This area would be excluded from the unit as designated on the ground). If any home owners are interested in thinning adjacent to their structures, arrangements would be made with the Special Use Coordinator to review and approve individual trees to be thinned near the structures. At that point, it would be the responsibility of the individual homeowner

to have the trees felled, following which an option may be available to the homeowner to purchase the downed trees for firewood. In areas where riparian reserves cross the unit adjacent to structures, individual trees identified by homeowners would be evaluated by the District Hydrologist as to whether they contribute to the stability of the riparian reserve and would be removed or not. In summary, except for the area within 1½-tree lengths of the structures within the tracts, and within all riparian areas, all of Unit #30 would be thinned where the stand is in need of density management.

**Temporary Road Construction, Reconstruction & Landings**

Approximately 1.4 miles of temporary roads would be constructed to access thinning units and landings. (Figure 2.7 shows the existing Transportation System). After implementation of the thinning, these roads would be obliterated by ripping, seeding, and re-establishing natural drainage patterns. However, these roads may be evident on the landscape for approximately 5-10 years until the vegetation is fully recovered.

Approximately 5.9 miles of existing roads would be reconstructed that are currently overgrown with vegetation or are inaccessible due to slides, water damage, and downed trees. Reconstruction includes 4.3 miles of system roads and 1.6 miles of non-system roads. Activities may include brushing, culvert replacement, surface rock replacement, reconditioning the existing road surface, and hazard tree removal, where necessary. Reconstructing 0.7 miles of non-system road to Unit #10 would allow the private land owner to close a portion of very steep existing road.

The proposed action would construct new landings or reconstruct existing landings to accommodate helicopters, skylines, and ground based yarding systems. All landings for ground based logging systems such as tractor and processor/forwarder operations would be located along designated skid trails. In addition, several skyline landings would also be located at wide pull-outs along the Blowout (Forest Road 10) and French Creek (Forest Road 2223) roads.

Table 2.3 provides a detailed summary of the proposed acres, estimated volume, logging systems, landings and roads for this project.

**Table 2.3: Logging System, Proposed Landings & Roads**

Unit #	Acres	Acres Available After Riparian Exclusion	Estimated Volume (mbf)	Logging System	Proposed Landings	Road Access, Temporary Road Construction and Road Reconstruction
1	102	73	730	Helicopter	H1 & H2	<ul style="list-style-type: none"> <li>Use existing road 1003</li> </ul>
2	108	82	820	Helicopter	H3*	<ul style="list-style-type: none"> <li>Use existing roads 10 &amp; 1003.</li> </ul>
3	7	7	50	Helicopter	H3*	<ul style="list-style-type: none"> <li>See Unit #2.</li> </ul>
4	56	40	400	Helicopter	H5*	<ul style="list-style-type: none"> <li>Construct 0.10 miles of temporary road to H5.</li> </ul>
5	29	24	240	Helicopter	H25	<ul style="list-style-type: none"> <li>Use existing road 10-050</li> </ul>
6	9	6	50	Helicopter	H25	<ul style="list-style-type: none"> <li>See Unit #5</li> </ul>
7	6	1	10	Tractor	H6* (Tractor)	<ul style="list-style-type: none"> <li>Construct landing H6 off of the Blowout Road.</li> </ul>
8	86	67	670	Helicopter & Skyline	H7, H8 (Helicopter) H9 (Skyline)	<ul style="list-style-type: none"> <li>Reconstruct 0.60 miles of 10-081.</li> </ul>
9	31	29	300	Helicopter	H10 & H11	<ul style="list-style-type: none"> <li>Reconstruct 0.20 miles of 10-084.</li> </ul>
10	49	45	400	Helicopter	H12* (on private)	<ul style="list-style-type: none"> <li>Construct 0.10 miles of temporary road to H12.</li> <li>Reconstruct 0.70 miles of non-system road to H12.</li> </ul>
11	119	119	1190	Helicopter & Skyline	H13* & H14* Small skyline landings along Rd.	<ul style="list-style-type: none"> <li>Construct 0.30 miles of temporary road to H13.</li> <li>Reconstruct 0.70 miles of non-system road to H14.</li> </ul>
12	13	9	90	Skyline	H27 & H28	<ul style="list-style-type: none"> <li>Use existing road 2212.</li> <li>Reconstruct approx. 3.0 miles at various locations along 2212 road.</li> </ul>
13	76	60	400	Processor & Skyline	Processor landings along existing road. Approx. 6 small skyline landings along 2212-530.	<ul style="list-style-type: none"> <li>See Unit #10.</li> </ul>
14	32	32	320	Helicopter	H15	<ul style="list-style-type: none"> <li>None</li> </ul>
15	51	51	400	Helicopter	H16	<ul style="list-style-type: none"> <li>None</li> </ul>
16 <sup>1</sup>	15	15	150	Helicopter	H17*	<ul style="list-style-type: none"> <li>Construct 0.10 miles of temporary road to H17.</li> </ul>
17	4	2	15	Helicopter	H16	<ul style="list-style-type: none"> <li>None</li> </ul>
19	104	104	750	Helicopter	H18, H19, H20 & H21. Sm. Landings located at wide pullouts in road.	<ul style="list-style-type: none"> <li>Use existing road 2223</li> </ul>
20	13	13	100	Helicopter	H22. See U #19.	<ul style="list-style-type: none"> <li>Use existing road 2223</li> </ul>
21	97	5	40	Skyline	Several small skyline landings along road 2223.	<ul style="list-style-type: none"> <li>Use existing road 2223</li> </ul>

<sup>1</sup> Unit 18 was combined with Unit #16 during project development. Therefore no specific information is available for Unit #18.

**Table 2.3: Logging Methods, Proposed Landings & Roads (continued)**

Unit #	Total Acres	Acres Available After Riparian Exclusion	Estimated Volume (mbf)	Logging Method	Proposed Landings	Road Access, Temporary Road Construction and Road Reconstruction
22	94	94	940	Helicopter	H26	<ul style="list-style-type: none"> <li>Reconstruct 0.5 miles of 1000-021.</li> </ul>
23	125	119	1425	Tractor & Skyline	23a – One tractor landing.  23b – Tractor landings along the road plus other small processor & skyline landings.	<ul style="list-style-type: none"> <li>23a – Construct tractor landing T1 off of the Blowout Road.</li> <li>23b – Construct 0.8 miles of temporary road to access landings.</li> <li>23b – Reconstruct 0.2 miles of non-system road to access unit.</li> </ul>
24	12	12	60	Skyline	Small skyline landings along road.	<ul style="list-style-type: none"> <li>Use existing road 10</li> </ul>
25	3	3	15	Tractor	One landing in parking area at dispersed site.	<ul style="list-style-type: none"> <li>Use existing road 10</li> </ul>
26	6	6	30	Skyline	Small skyline landings along road.	<ul style="list-style-type: none"> <li>Use existing road 10</li> </ul>
27	28	28	100	Tractor	Landings on roads within Southshore Campground & along road 10.	<ul style="list-style-type: none"> <li>Use existing roads within Southshore Campground</li> </ul>
28	3	2	10	Skyline	Small skyline landings along road.	<ul style="list-style-type: none"> <li>Use existing road 10</li> </ul>
29	4	3	15	Skyline	Small skyline landings along road.	<ul style="list-style-type: none"> <li>Use existing road 10</li> </ul>
30	89	63	125	Tractor & Helicopter	H5 & H25. Small tractor landings on existing roads in summer home tracts.	<ul style="list-style-type: none"> <li>Use existing roads in summer home tracts.</li> </ul>
31	2	2	10	Skyline	One small skyline landing along road.	<ul style="list-style-type: none"> <li>Use existing road 10</li> </ul>
32	1	1	5	Helicopter	H3*	<ul style="list-style-type: none"> <li>See Unit #3</li> </ul>
33	19	19	190	Helicopter	H23 & H24	<ul style="list-style-type: none"> <li>Use existing road 10-017</li> </ul>
<b>Total</b>	<b>1390</b>	<b>1136</b>	<b>10 mmbf</b>		<b>Helicopter = 24</b> <b>** Skyline = 12+</b> <b>** Ground = 15+</b>	<b>Temporary Road Construction = 1.4 miles</b> <b>Road Reconstruction = 5.9 miles</b>

\* Indicates new landings to be constructed. All other landings currently exist and only require minor modifications and/or reconstruction.

\*\* Several units would only require logs to be skyline or tractor yarded to existing roads. No new major landings are required for these units. Small, minor landing areas would be placed where existing wide portions of the road or pullouts exist.

**Treatment of Root Rot Pockets**

Pockets of *Phellinus weirii* occurring in the proposed thinning stands would be treated by removing all of the affected trees within the infection site and/or creating a buffer around the infection site, to prevent the spread of the *Phellinus weirii*. After harvest, the area would be

replanted with non-susceptible species such as hardwoods and western redcedar. Native fruit bearing trees would be planted to increase diversity for open-habitat specialized bird species. Table 2.4 identifies the following units with root rot pockets:

Table 2.4: Units with Root Rot		
Unit	Size of Affected Area *	Comments
2	6 acres	Three pockets located along the west portion of the unit.
	3 acres	
	2 acres	
5	3 acres or less	
6	3 acres	Located along the west boundary.
10	3 acres or less	
15	3 acres or less	

- Actual size & location of the root rot pockets will be determined during final layout and marking.

**Scenic Quality Improvements**

Small visual units (Units 24, 25, 26, 28, 29 and 31), would be created by thinning along the Blowout Road and Stahlman Point trail to provide for scenic views of Detroit Reservoir and the surrounding area. Stands would be thinned to variable densities or by removing individually selected trees. Individual trees would be identified for removal by the Recreation specialist in cooperation with the pre-sale marking crew to enhance views of Detroit Reservoir from the road and trail. The resulting canopy closure may be as low as 30% in small-localized areas of less than 1/2 acre, however, overall canopy closure would achieve prescribed densities (average 70%) to meet other resource objectives.

The resulting canopy could be as low as 30% adjacent to the clearcut and gradually increase in density towards the interior of the unit.

In Unit #32, at the Stahlman Point Lookout site, up to 12 small diameter trees (less than 20" dbh) would be removed from the existing stand to recover the view of Detroit Reservoir from the lookout site. Figure 2.8 shows existing facilities and recreation areas.

Unit #3 would be thinned along the boundary with the private land to lesson the undesirable straight-edge visual impact created by the clearcut. A variable density thinning would soften the existing sharp contrast existing between the clearcut and timbered forest.

### **Recreation Improvements**

**Parking Lot Improvement for Dispersed Recreation Use:** At the conclusion of its use as helicopter landing H26, the graveled area would be converted to a public parking area. This would allow the public to park their vehicles when they use dispersed recreation sites around the peninsula. Vehicular access beyond the parking area would be blocked using boulders and other barriers.

### **Hoover Campground Parking Improvements:**

The parking area for the boat launch at Hoover Campground would serve as helicopter landing H3 for logs removed during the thinning of Unit 2 and 3. To facilitate that use, the small median strip between the two halves of the parking area would be removed. After its use as helicopter landing, the median strip would be paved and the parking lot re-striped, to allow the parking of longer vehicles and trailers than can currently park there.

### **Dispersed Recreation Site Improvement & Repair:**

During thinning, the small parking area within Unit 25, just below the road, would be used as a landing for logs skidded out of the unit. The landing would be leveled and graveled to allow for continued use as a parking area following the thinning. After thinning, the road leading to the shoreline would be obliterated and blocked at the edge of the parking area.

### **Kinney Ridge Lookout Improvements:**

Thinning activities would remove and prune small diameter trees (saplings to pole-size) around the lookout site in Unit 11. Slash generated from thinning activities would be hand-piled and burned adjacent to the trail within the unit.

### **Safety Considerations:**

Timber harvest activities would be restricted in Unit #22 (Piety Island) and Unit #14 that require logs to be flown over Detroit Reservoir during high water levels to provide for safety of recreational users on the island and boaters on the lake. No operations would occur between the May 1st through October 1st. For all units that require helicopter operations to fly over Forest Roads, flaggers would be required as described in the timber sale contract.

### **Prescribed Fire**

Slash created by the thinning activities, would be treated by hand piling and burning on approximately 191 acres where there is a high risk of fire starts. In units with gentler slopes, approximately 6 acres would be machine piled using a tracked-type grapppler; and 125 acres would be underburned in units where trees have developed thick enough bark to withstand heat and flames. In units adjacent to the Blowout Road and recreation facilities, stumps would be flush cut and hand piles would be placed away from residual trees to avoid scarring. Additional fuel treatments may occur as a result of post-harvest fuel evaluations. Table 2.5 describes the prescribed burning activities in each unit.

<b>Table 2.5: Prescribed Fuels Treatment</b>		
<b>Unit</b>	<b>Acres</b>	<b>Description of Fuel Treatment – See additional notes for ( )</b>
1	¼	Hand pile 2 chains in along south side road 1000-017 and both sides Rd. 1003. (A)
2	½	Hand pile 2 chains both sides of road 1003 and south side road 10. (A), (B), (C)
3	7	Hand pile entire unit. Option may be to PUM unit.
4	1	Operator whole tree yard along approximately 200 ft. strip on lower portion of unit (designate on map). Hand pile NW portion of unit along Unit 30.
5	29	Hand pile entire unit. Clear out trail. (B), (C)
6	¼	Hand pile 2 chains in unit boundary adjacent to private boundary.
7	¼	Hand pile 2 chains along road 10. Unit could be grapple piled – final determination to be made after harvest. (B), (C), (E)
8	¼	Hand pile 2 chains in both sides 1000-080 road and private boundary.
9	0	No treatment
10	¼	Hand pile 2 chains in unit boundary adjacent to private boundary.
11	½	Hand pile slash along both sides lookout trail and 2 chains along private property boundary. (B), (C)
12	¼	Hand pile 2 chains in unit along side road 2212 and along private boundary to the south. (B), (C)
13	¼	Hand pile 2 chains in unit along both sides Rd 2212 and 2212-530 where road runs thru unit and unit side of 530 road. Hand pile 2 chains in on all unit borders adjacent to private boundaries. (B), (C), (E)
14	¼	Hand pile 2 chains in unit along boundary adjacent to powerline right away. (D)
15	¼	Hand pile 2 chains in unit along boundary adjacent to powerline right away. (D)
16	¼	Hand pile 2 chains in unit along boundary adjacent to road 2225. (B), (C)
17	¼	No Treatment
19	½	Hand pile 2 chains in unit along road 2223 and along unit boundary adjacent to powerline right away. (B), (C)
20	¼	Hand pile 2 chains in unit along road 2223. (B), (C)
21	¼	Hand pile 2 chains in unit along road 2223. (B), (C)
22	¾	Hand pile 2 chains in unit where sale boundary borders campground and from trail. (B), (C)
23	125	Under burn for Big Game forage improvement and for hazard reduction.
24	12	Hand pile entire unit. (B), (C)
25	3	Hand pile entire unit. (B), (C), (E)
26	6	Hand pile entire unit. (B), (C)
27	28	Hand pile within the campground. (B), (C)
28	3	Hand pile entire unit. (B), (C)
29	4	Hand pile entire unit. (B), (C)
30	89	Hand pile entire unit. (B), (C), (E)
31	2	Hand pile entire unit. (B), (C)
32	½	Hand pile entire unit. (B)
33	0	No Treatment
	<b>316</b>	<b>= Total Acres of Fuels Treatment</b>

**Additional Notes:**

- A) Possible underburn upon post harvest evaluation.
- B) Hand pile in a manner to protect understory vegetation and foreground screen to avoid fire damage or scarring.
- C) Chunk and completely burn piles. Scatter unburned debris that would be visible from roads, campgrounds, trails, or other improvements.
- D) Purchaser whole tree yard.
- E) Possible Grapple Pile upon post harvest evaluation

## **Wildlife – Seasonal Restrictions**

Seasonal restrictions for wildlife species would comply with existing laws, regulations and policies as established in the Endangered Species Act and Forest Plan Standards & Guidelines. See Table 2.6 for a summary of wildlife seasonal restrictions.

### **Threatened, Endangered, and Sensitive (T, E, & S) Species**

For all T, E, and S species, seasonal restrictions may be lifted and operations may begin as early as May 1st if annual occupancy surveys determine that the species is not nesting in the area (See Table 2.7).

**Bald Eagle** – Restrictions for Bald Eagles are dependent on the unit proximity to a Bald Eagle Management Area (BEMA) or whether the unit is within a Bald Eagle Habitat Reserve (BEHR). (See the Biological Evaluation and Detroit Lake Bald Eagle Management Plan for a description of these areas). For the following units, helicopter operations, all ground based operations, and road building are only allowed from September 1st through December 31st. This applies to units 2-15, 23-30, and 32. Seasonal restrictions for Bald Eagle are not required within units 1, 16, 17, 19, 20, 21, and 22.

**Spotted Owls** – Seasonal restrictions applied to units to avoid disturbance of potentially nesting owls is dependent on the proximity to known nest sites within ¼ mile for ground-based operations and ½ mile for helicopter operations. For the following units, operations would only be allowed from July 1st through March 1st. Helicopter operations would be restricted in units 1, 6, 8, 10, 11, 16, 19, and 20. Ground based operations (includes felling

and road building) would be restricted in units 1, 12, 13, 16, 19, and 20.

**Harlequin Duck** – To avoid disturbance of potentially nesting Harlequin ducks adjacent to units 19, 20, and 21, all operations would only be allowed from July 15th – March 15th. Operations may be prohibited until August 15th if nesting is confirmed. There are no restrictions for ducks in all other units.

**Peregrine Falcon** – To avoid disturbance of potentially nesting falcons, seasonal restrictions are dependent on the type of operation and distance (2 miles for ground-based and 3 miles for helicopter operations) from a known nest site. Helicopter operations are only allowed from August 1st to January 15th in all units except 12 and 33. Ground based logging and road construction operations within two miles of a known nest site are also allowed during this period in units 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, 19, 24, 25, 26, 27, 28 & 29. There are no restrictions for peregrine falcon in units 12 and 33.

### **Other Species of Concern**

**Osprey** – Osprey were observed in or adjacent to units 2, 3, 4, 5, 10, 11, 12, 15, 19, 22 and 23. However, because ospreys may change nest trees yearly, all operations would only be allowed from August 1st to March 1st to avoid disturbance of potentially nesting osprey.

**Big Game/Winter Range** – Most of the project area lies within Big Game Winter Range, except for units 1 and 13. Therefore, to avoid undue stress and harassment of big game during the winter months, all operations in the remaining units would only be allowed from April 15th to November 30th.



Table 2.6: Operational Periods due to Wildlife Restrictions *													
Alternative 2 – Proposed Action													
Unit #'s	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1, 2, 3, 4, 23, 30, 31	X	X	X	X	X	X	X	X	X	X	X	X	X
5, 6, 7, 8, 9, 22, 24, 25, 26, 27, 28, 29, 32, 33	X	X	X	X	X	X	X	X	X	X	X	X	X
14, 15, 16, 17, 19, 20, 21,	X	X	X	X	X	X	X	X	X	X	X	X	X
10, 11, 12, 13	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 2.7: Operational Periods due to Wildlife Restrictions if Non-Nesting is Determined by Occupation Surveys *													
Alternative 2 – Proposed Action													
Unit #'s	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1, 2, 3, 4, 23, 30, 31	X	X	X	X	X	X	X						X
5, 6, 7, 8, 9, 22, 24, 25, 26, 27, 28, 29, 32, 33	X	X	X	X	X	X	X						X
14, 15, 16, 17, 19, 20, 21,	X	X	X	X	X	X	X						X
10, 11, 12, 13	X	X	X	X	X	X	X						X

\* Refer to the description by species above for specific activities that are restricted.

**Shaded area indicates times when operations are allowed**

**X** indicates times when operations are prohibited

Each block represents approximately 15 days (example Jan. 1-15, Jan. 15-31)

**4. Alternative 3 – Reduce Timber Sale Noise**

Alternative 3 is a modification of the proposed action that specifically addresses the issue of noise disturbance and includes the same actions as Alternative 2, except for the following changes:

1. Provides for seasonal operational restrictions to minimize noise disturbance on recreation visitors and local communities in the general area from harvest & logging operations.
2. Extends the operating season for harvest activities by eliminating

the seasonal restrictions for Osprey and Big Game as described in the Forest Plan (FW-133 and FW-143) (Eliminating the seasonal restrictions for Osprey and Big Game does not require a Forest Plan Amendment). Nest trees for Osprey would be protected. In addition, the seasonal restriction for Harlequin duck would end on August 1<sup>st</sup> instead of August 15<sup>th</sup>. No changes to the seasonal restriction periods would be implemented for Bald eagles, Spotted owls or Peregrine falcons. See Table 2.8 and Table 2.9 for a summary of the seasonal restrictions for wildlife in Alternative 3.

Table 2.8: Operational Periods due to Wildlife Restrictions * Alternative 3 – Reduce Timber Sale Noise												
Unit #'s	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1, 2, 3, 4, 23, 30, 31	X	X	X	X	X	X	X	X	X			
5, 6, 7, 8, 9, 22, 24, 25, 26, 27, 28, 29, 32, 33		X	X	X	X	X	X	X				
14, 15, 16, 17, 19, 20, 21,		X	X	X	X	X	X	X				
10,11(BEHR)	X	X	X	X	X	X	X	X	X			
12,13(BEMA)	X	X	X	X	X	X	X	X				

Table 2.9: Operational Periods due to Wildlife Restrictions if Non-Nesting is Determined by Occupation Surveys * Alternative 3 – Reduce Timber Sale Noise												
Unit #'s	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1, 2, 3, 4, 23, 30, 31	X	X	X	X								
5, 6, 7, 8, 9, 22, 24, 25, 26, 27, 28, 29, 32, 33		X	X	X	X	X						
14, 15, 16, 17, 19, 20, 21,		X	X	X	X	X						
10,11(BEHR)	X	X	X	X	X							
12,13(BEMA)	X	X	X	X	X							

\* Refer to the description by species above for specific activities that are restricted.

**Shaded area indicates times when operations are allowed**

X indicates times when operations are prohibited

Each block represents approximately 15 days (example Jan. 1-15, Jan. 15-31)

## **Operating Restrictions**

### **Recreation:**

Considerations would be made to minimize noise disturbance on recreation visitors and local communities in the general area from harvest & logging operations adjacent to High Public Use Areas (Figure 2.9) such as campgrounds, Stahlman summer homes, and in the vicinity of Detroit and Idanha). Tables 2.10, 2.11, 2.12, 2.13 and 2.14 list the schedules of operating times for timber harvest and logging activities to reduce the effects of noise during the peak (May 1<sup>st</sup> through September 30<sup>th</sup>) and non-peak recreation seasons (October 1<sup>st</sup> through April 30<sup>th</sup>).

#### ○ **Helicopter operations:**

##### **Peak Season**

- **Units Adjacent to High Public Use Areas:** Helicopter operations would be allowed from 8:00 a.m. to 7:00 p.m. on Monday through Thursday; and 8:00 a.m. to 5:00 p.m. on Fridays (Table 2.10). Operations are prohibited all other times.
- **Units Distant From High Public Use:** Helicopter operations are unrestricted Monday through Thursday and Friday until 5:00 p.m. Operations are prohibited all other times. (Table 2.11).

##### **Non-Peak Season**

- **Units Adjacent To High Public Use Areas:** Helicopter operations are allowed from 8:00 a.m. to 7:00 p.m. on Monday through Thursday; and 8:00 a.m. to 5:00 p.m. on Fridays (Table 2.13). Operations are prohibited all other times.
- **Units Distant From High Public Use:** Helicopter operations would be unrestricted (Table 2.14).

### **Timber harvest operations**

Timber harvest operations include, but are not limited to, felling activities using chainsaw or processor/forwarder, yarding activities using tractor & skidder or skyline yarding systems, and loading at landings.

#### **Peak Season**

- **Units Adjacent To High Public Use Areas:** Timber harvest operations would be allowed from 8:00 a.m. to 7:00 p.m. on Monday through Thursday; and 8:00 a.m. to 5:00 p.m. on Fridays. Operations are prohibited all other times (Table 2.10)
- **Units Distant From High Public Use:** Timber harvest operations are unrestricted Monday through Thursday, and Friday until 5:00 p.m. Operations are prohibited all other times. (Table 2.11).

#### **Non-Peak Season**

- **Units Adjacent To High Public Use Areas:** Timber harvest operations are unrestricted Monday through Thursday, and Friday until 5:00 p.m. Operations are prohibited all other times. (Table 2.13)
- **Units Distant From High Public Use:** Timber harvest operations would be unrestricted (Table 2.14).

- **Truck hauling:**
  - **Peak and Non-Peak Seasons:**

For all units truck hauling is unrestricted Monday through Thursday, and Friday until 5:00 p.m. Operations are prohibited all other times.
  
- **Legal Holidays During Peak Season** (Table 2.12)
  - No operations would be permitted beginning 5:00 p.m. the previous Friday through 8:00 a.m. Tuesday.
  - No operations would be allowed during the entire week in which the Fourth of July falls on a Tuesday, Wednesday, or Thursday.

The tables on the next two pages illustrate the restrictions necessary to mitigate the impacts of noise disturbance on recreation visitors and local communities in the vicinity of the project area. Units have been identified on each table based on their proximity to High Public Use Areas.

**PEAK SEASON**  
**May 1<sup>st</sup> to September 30<sup>th</sup>**

**Table 2.10: Activity Schedule for Units Adjacent to High Public Use Area – Alternative 3**  
**Units 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 19, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32**

	Sun.	Monday			Tuesday			Wednesday			Thursday			Friday			Sat.
	All Day	Midnight To 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 5:00 p.m.	5:00 p.m. to Midnight	All Day
<b>Helicopter</b>	X	X		X	X		X	X		X		X		X		X	X
<b>Harvest Operations</b>	X	X		X	X		X	X		X		X		X		X	X
<b>Hauling</b>	X															X	X

**Table 2.11: Activity Schedule for Units Distant to High Public Use Area – Alternative 3**  
**Units 1, 10, 11, 12, 13, 16, 17, 20, 21, 33**

	Sun.	Monday			Tuesday			Wednesday			Thursday			Friday			Sat.
	All Day	Midnight To 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 5:00 p.m.	5:00 p.m. to Midnight	All Day
<b>Helicopter</b>	X															X	X
<b>Harvest Operations</b>	X															X	X
<b>Hauling</b>	X															X	X

	Sun.	Monday			Tuesday			Wednesday			Thursday			Friday			Sat.
	All Day	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 5:00 p.m.	5:00 p.m. to Midnight	All Day
<b>Holidays</b>	X	X	X	X	X											X	X
<b>Week of 4<sup>th</sup> of July</b>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Shaded areas indicate allowable times of operation. X indicates prohibited activities. Refer to the description above for details.

**NON - PEAK SEASON**  
**October 1<sup>st</sup> to April 30<sup>th</sup>**

**Table 2.13: Activity Schedule for Units Adjacent to High Public Use Area – Alternative 3**  
**Units 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 19, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32**

	Sun.	Monday			Tuesday			Wednesday			Thursday			Friday			Sat.
	All Day	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 5:00 p.m.	5:00 p.m. to Midnight	All Day
<b>Helicopter</b>	X	X		X	X		X	X		X		X		X		X	X
<b>Harvest Operations</b>	X															X	X
<b>Hauling</b>	X															X	X

**Table 2.14: Activity Schedule for Units Distant to High Public Use Area – Alternative 3**  
**Units 1, 10, 11, 12, 13, 16, 17, 20, 21, 33**

	Sun.	Monday			Tuesday			Wednesday			Thursday			Friday			Sat.
	All Day	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 7:00 p.m.	7:00 p.m. to Midnight	Midnight to 8:00 a.m.	8:00 a.m. to 5:00 p.m.	5:00 p.m. to Midnight	All Day
<b>Helicopter</b>																	
<b>Harvest Operations</b>																	
<b>Hauling</b>	X															X	X

Shaded areas indicate allowable times of operation. X indicates prohibited activities. Refer to the description above for details.

## 5. Alternative 4 – No New Roads

Alternative 4 is a modification of the proposed action that specifically addresses the public concern for 1) the effects to water quality from increased sedimentation and turbidity, and 2) the irretrievable commitment of resources, from the construction of temporary roads. (Comments were received during the public scoping period specific to this potential alternative from K. Huling, J. Brandt, K. Sjogren, G. Sexton, J. Hall, and J. West). In addition, K. Huling and K. Sjogren raised concerns about the impacts on water quality from road reconstruction. This alternative includes the same actions as Alternative 2, except for the following changes:

1. This alternative would eliminate approximately 1.4 miles of proposed new temporary road construction, and approximately 1.6 miles of non-system road reconstruction, necessary to access harvest units and

proposed landings (Figure 2.7 shows the existing Transportation System).

2. This alternative would not affect the 4.3 miles of reconstruction/maintenance of existing system roads as described in the Proposed Action.
3. Harvest methods in several units (See Table 2.15 and 2.16) would be modified from tractor and skyline to helicopter logging due to limited access to the units.
4. Several landings (See Table 2.15 and 2.16) would be relocated on existing roads, including the Blowout Road.
5. Without the reconstruction of the non-system road to access units 10 and 13, the option of closing a very steep portion of private road would be lost.
6. This alternative would implement the same seasonal restriction to wildlife, and operational restrictions for noise reduction as described in Alternative three.

**Table 2.15: Units Modified by Alternative 4 – No Temporary Road Construction Harvest Methods & Landing Locations**

Unit #	Temp. Road Construction Miles – Alt. 2	Harvest Method		Landing Location	
		Alt. 2	Alt. 4	Alt. 2	Alt. 4
4	0.10	Helicopter	Helicopter	H5	H5 moved to existing road near Unit 23.
10	0.10	Helicopter	Helicopter	H12	H12 moved to end of private road
11	0.30	Helicopter & Skyline	Helicopter	H13 & H14 plus several skyline landings along short spurs off the existing road.	Short spurs eliminated. H13 & H14 would be located adjacent to the existing road.
16	0.10	Helicopter	Helicopter	H16	H16 moved to wide pullout on 2225 rd.
23	0.80	Tractor & Skyline	Helicopter & Tractor	Several tractor & skyline landings along the temp. road	Would use new location of H5. See Unit 4 above.
<b>Total = 1.4 miles</b>					

<b>Table 2.16: Units Modified by Alternative 4 – No Non-System Road Reconstruction Harvest Methods &amp; Landing Locations</b>					
<b>Unit #</b>	<b>Non-System Road Reconstruction Miles – Alt. 2</b>	<b>Harvest Method</b>		<b>Landing Location</b>	
		<b>Alt. 2</b>	<b>Alt. 4</b>	<b>Alt. 2</b>	<b>Alt. 4</b>
<b>10</b>	0.70	Helicopter	Helicopter	H12	H12 moved to end of private road. Access road is very steep.
<b>11</b>	0.70	Helicopter & Skyline	Helicopter	H13 & H14 plus several skyline landings along short spurs off the existing road	Access road into unit would be unavailable for use. New landing constructed on 2212 Road (1/4 mi. west of Heater Cr), plus use H27 and H28.
<b>13</b>	Miles included in Unit 10	Skyline & Processor	Skyline, Processor, & Helicopter	Several landings along the 2212 and existing road 2212-530.	Some portions would be helicopter logged to H12 or other landings along 1012-530 road. Remaining portions the same as Alt. 2.
<b>23</b>	0.20	Tractor & Skyline	Helicopter & Tractor	Several tractor & skyline landings along the temp. road	Landings would be located along existing road near Blowout Road. Create landing along road to Sportsman Club.
<b>Total = 1.6 miles</b>					



**Table 2.17: Mitigation Measures Common to Action Alternatives**

The following mitigation measures address Forest Plan Standards & Guidelines as well as adverse effects on resources identified in the issue statements in Chapter 1. These mitigation measures apply to all action alternatives unless otherwise indicated.

<b>Resource</b>	<b>Objective</b>	<b>Location</b>	<b>How</b>
<b>Water Quality</b>	<ul style="list-style-type: none"> <li>Minimize sediment and increased turbidity in streams.</li> </ul>	<ul style="list-style-type: none"> <li>All Units</li> </ul>	<ul style="list-style-type: none"> <li>Implement Best Management Practices (BMP's)</li> </ul>
<b>Soils</b>	<ul style="list-style-type: none"> <li>Minimize compaction from ground based logging systems</li> </ul>	<ul style="list-style-type: none"> <li>All Units</li> </ul>	<ul style="list-style-type: none"> <li>Implement BMP's.</li> <li>Obliterate and sub-soil all temporary roads following timber sale activities.</li> <li>Sub-soil and install water bars on all landings and skid trails, unless otherwise specified in the selected alternative.</li> </ul>
<b>Noxious Weeds</b>	<ul style="list-style-type: none"> <li>Prevent the spread of noxious weeds on disturbed soils.</li> </ul>	<ul style="list-style-type: none"> <li>All Units</li> </ul>	<ul style="list-style-type: none"> <li>Re-vegetate landings and temporary road disturbance at the first appropriate opportunity following project work with competitive seeding and plantings.</li> <li>Use weed-free rock sources for any additional gravel needed for temporary road construction and reconstruction</li> <li>Use only certified weed-free seed and straw for erosion and forage seeding.</li> <li>All road construction and logging equipment would be pressure washed prior to working in the area in accordance with C Clause C6.343 (Option 2) Cleaning of Equipment.</li> <li>Prior to beginning harvest operations, locate and control noxious weeds on all harvest units and associated roads and landings in the planning area to avoid spreading seeds to other areas.</li> <li>project area by keeping new landings and skid trails to a minimum.</li> </ul>
	<ul style="list-style-type: none"> <li>Ensure successful mitigation during project activities</li> </ul>	<ul style="list-style-type: none"> <li>All Units</li> </ul>	<ul style="list-style-type: none"> <li>Monitor and treat infestations following post-harvest activities.</li> </ul>

**Table 2.17: Mitigation Measures (Continued)**

<b>Resource</b>	<b>Objective</b>	<b>Location</b>	<b>How</b>
<b>Heritage Resources</b>	<ul style="list-style-type: none"> <li>• Protect known and undiscovered cultural resource sites.</li> </ul>	<ul style="list-style-type: none"> <li>• All units.</li> </ul>	<ul style="list-style-type: none"> <li>• In the event cultural resources are discovered during harvest operations, cease all operations and consult with the District Archaeologist prior to resuming operations.</li> </ul>
<b>Wildlife</b>	<ul style="list-style-type: none"> <li>• Maintain habitat for snag utilizing species.</li> </ul>	<ul style="list-style-type: none"> <li>• All units</li> </ul>	<ul style="list-style-type: none"> <li>• Retain all existing snags, where safety permits</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>• Minimize conflicts with recreation vehicles on haul routes.</li> </ul>	<ul style="list-style-type: none"> <li>• All units.</li> </ul>	<ul style="list-style-type: none"> <li>• Restrict haul from 5:00 pm Friday through midnight Sunday, Memorial Day to Labor Day(C5.12).</li> </ul>
	<ul style="list-style-type: none"> <li>• Avoid hazards associated with helicopter operations over roads and Detroit Lake.</li> </ul>	<ul style="list-style-type: none"> <li>• Units 1, 2, 3, 14, 19, 20, and 22.</li> </ul>	<ul style="list-style-type: none"> <li>• Include contract requirements for flaggers during periods when helicopter operations fly directly over major roads.</li> <li>• Limit helicopter operations for units 14 and 22 from Oct. 1<sup>st</sup> to April 15<sup>th</sup>.</li> </ul>

**Table 2.18: Comparison of Effects on Issues by Alternatives – Noise Disturbance**

<b>Action</b>	<b>Alternative 1 No Action</b>	<b>Alternative 2 Proposed Action</b>	<b>Alternative 3 Reduce Timber Sale Noise</b>	<b>Alternative 4 No New Roads</b>
<ul style="list-style-type: none"> <li>• Helicopter Operations</li> </ul>	<ul style="list-style-type: none"> <li>• No noise would be generated from helicopter operations</li> </ul>	<ul style="list-style-type: none"> <li>• Helicopter operations would be unrestricted and allowed to operate 7 days per week during all daylight hours.</li> </ul>	<ul style="list-style-type: none"> <li>• Depending on time of year and proximity to High Use Public Use Areas, helicopter operations would be restricted limiting hours of use.</li> <li>• Helicopter operations would generally be restricted to only operate from 8:00 a.m. to 7:00 p.m. Monday – Thursday, and 8:00 a.m. to 5:00 p.m. on Friday.</li> <li>• Only in units distant from high public use areas, and during the non-peak season, are helicopter operations unrestricted.</li> <li>• No helicopter operations are allowed on weekends during Peak Season, during holidays, or adjacent to High Public Use Areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Approximately 195 additional acres of harvest would be done with helicopter instead of skyline, tractor, or processor/forwarder.</li> </ul>
<ul style="list-style-type: none"> <li>• Harvest Operations</li> </ul>	<ul style="list-style-type: none"> <li>• No noise would be generated from harvest operations</li> </ul>	<ul style="list-style-type: none"> <li>• Harvest operations would be unrestricted and allowed to operate 7 days per week, during all hours of the day.</li> </ul>	<ul style="list-style-type: none"> <li>• Depending on time of year and proximity to High Use Public Use Areas, harvest operations would be restricted limiting hours of use.</li> </ul>	<ul style="list-style-type: none"> <li>• Noise generated from road construction equipment would be reduced and limited to maintenance operations on system roads.</li> </ul>
<ul style="list-style-type: none"> <li>• Hauling</li> </ul>	<ul style="list-style-type: none"> <li>• No noise would be generated by log hauling</li> </ul>	<ul style="list-style-type: none"> <li>• Log hauling would only be allowed to operate Monday through Friday.</li> </ul>	<ul style="list-style-type: none"> <li>• Log hauling would only be allowed to operate Monday through Friday.</li> </ul>	<ul style="list-style-type: none"> <li>• Log hauling would only be allowed to operate Monday through Friday.</li> </ul>

**Table 2.19: Comparison of Effects on Issues by Alternatives – Noxious Weeds**

<b>Action</b>	<b>Alternative 1 No Action</b>	<b>Alternative 2 Proposed Action</b>	<b>Alternative 3 Reduce Timber Sale Noise</b>	<b>Alternative 4 No New Roads</b>
<ul style="list-style-type: none"> <li>Activities occurring within the timber sale project area.</li> </ul>	<ul style="list-style-type: none"> <li>Existing non-system roads with bare soil <u>would</u> continue to be habitat for noxious weed establishment and spread.</li> <li>No new areas would be opened up to the spread of noxious weeds.</li> <li>Mitigation and monitoring would not be accomplished.</li> </ul>	<ul style="list-style-type: none"> <li>Existing non-system roads with bare soil <u>would not</u> continue to be habitat for noxious weed establishment and spread.</li> <li>New areas would be opened up to the spread of noxious weeds along new and reconstructed roads (approximately 17.5 acres total) and landings (15 acres total), but the risk would be mitigated.</li> <li>Mitigation and monitoring, as called for in this alternative, would be accomplished.</li> </ul>	<ul style="list-style-type: none"> <li>Existing non-system roads with bare soil <u>would not</u> continue to be habitat for noxious weed establishment and spread.</li> <li>New areas would be opened up to the spread of noxious weeds along new and reconstructed roads (approximately 17.5 acres total) and landings (15 acres total), but the risk would be mitigated.</li> <li>Mitigation and monitoring, as called for in this alternative, would be accomplished.</li> </ul>	<ul style="list-style-type: none"> <li>Existing non-system roads with bare soil <u>would</u> continue to be habitat for noxious weed establishment and spread.</li> <li>New areas would be opened up to the spread of noxious weeds along reconstructed system roads (approximately 10.5 acres total) and landings (15 acres total), but the risk would be mitigated.</li> <li>Approximately 1.4 miles of temporary road construction, and 1.6 miles of non-system road reconstruction would not occur, thus reducing the soil disturbance by approximately 7 acres.</li> <li>Mitigation and monitoring, as called for in this alternative, would be accomplished.</li> </ul>

<b>Table 2.20: Comparison of Effects by Alternatives – Roads</b>				
<b>Action</b>	<b>Alternative 1 No Action</b>	<b>Alternative 2 Proposed Action</b>	<b>Alternative 3 Reduce Timber Sale Noise</b>	<b>Alternative 4 No New Roads</b>
Temporary Construction	• N/A	• 1.4 Miles	• 1.4 Miles	• 0 Miles
System Road Reconstruction & Maintenance	• N/A	• 4.3 Miles	• 4.3 Miles	• 4.3 Miles
Non-System Reconstruction	• N/A	• 1.6 Miles	• 1.6 Miles	• 0 Miles

<b>Table 2.21: Comparison of Effects by Alternatives - Operational Periods due to Wildlife Restrictions</b>				
<b>Action</b>	<b>Alternative 1 No Action</b>	<b>Alternative 2 Proposed Action</b>	<b>Alternative 3 Reduce Timber Sale Noise</b>	<b>Alternative 4 No New Roads</b>
Units 1, 2, 3, 4, 23, 30, 31	• N/A	• Operations are allowed from Sept. 1 <sup>st</sup> to Nov. 30 <sup>th</sup> .	• Operations are allowed from Sept. 1 <sup>st</sup> to Dec. 31 <sup>st</sup> .	• Same as Alternative 3
Units 5, 6, 7, 8, 9, 22, 24, 25, 26, 27, 28, 29, 32, 33	• N/A	• Operations are allowed from Aug. 1 <sup>st</sup> to Nov. 30 <sup>th</sup> .	• Operations are allowed from Aug. 1 <sup>st</sup> to Jan 15 <sup>th</sup> .	• Same as Alternative 3
Units 14, 15, 16, 17, 19, 20, 21	• N/A	• Operations are allowed from Aug. 15 <sup>th</sup> to Nov. 30 <sup>th</sup> .	• Operations are allowed from Aug. 1 <sup>st</sup> to Jan 15 <sup>th</sup> .	• Same as Alternative 3
Units 10, 11	• N/A	• Operations are allowed from Sept. 1 <sup>st</sup> to Nov. 30 <sup>th</sup> .	• Operations are allowed from Sept. 1 <sup>st</sup> to Dec. 30 <sup>th</sup> .	• Same as Alternative 3
Units 12, 13	• N/A	• Operations are allowed from Sept. 1 <sup>st</sup> to Nov. 30 <sup>th</sup> .	• Operations are allowed from Aug. 1 <sup>st</sup> to Jan 15 <sup>th</sup> .	• Same as Alternative 3

<b>Table 2.22: Cost Comparison by Alternative – Logging Costs, Temporary Road Construction, and Road Reconstruction</b>				
<b>Action</b>	<b>Alternative 1 No Action</b>	<b>Alternative 2 Proposed Action</b>	<b>Alternative 3 Reduce Timber Sale Noise</b>	<b>Alternative 4 No New Roads</b>
Helicopter Skyline Tractor Processor	• N/A	<ul style="list-style-type: none"> <li>• \$2,387,463</li> <li>• \$ 441,276</li> <li>• \$ 123,462</li> <li>• \$ 47,998</li> </ul>	<ul style="list-style-type: none"> <li>• \$2,387,463</li> <li>• \$ 441,276</li> <li>• \$ 123,462</li> <li>• \$ 47,998</li> </ul>	<ul style="list-style-type: none"> <li>• \$3,035,343</li> <li>• \$ 145,429</li> <li>• \$ 115,017</li> <li>• \$ 50,244</li> </ul>
Road Construction	• N/A	• \$ 14,000	• \$ 14,000	• \$ 0 Miles
Road Reconstruction	• N/A	• \$ 88,500	• \$ 88,500	• \$ 64,500
Total Costs	• N/A	<ul style="list-style-type: none"> <li>• \$3,102,699</li> <li>• Approx. \$ 310 / mbf</li> </ul>	<ul style="list-style-type: none"> <li>• \$3,102,699</li> <li>• Approx. \$ 310 / mbf</li> </ul>	<ul style="list-style-type: none"> <li>• \$3,410,533</li> <li>• Approx. \$ 341 / mbf</li> </ul>

## CHAPTER 3      **AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

The chapter will succinctly describe the environment of the areas to be affected or created by the alternatives under consideration. The descriptions are no longer than is necessary to understand the effects of the alternatives. The environmental consequences form the scientific and analytical basis for the comparison of the alternatives. The discussion includes environmental impacts of the alternatives including the proposed action, any adverse environmental effects that cannot be avoided, and the relationship between short term uses of man's environment and the maintenance and enhancement of long term productivity, and any irreversible or irretrievable commitment of resources.

### **1. Environmental Consequences Related to the Key Issues**

#### **Noise Disturbance – Existing Condition**

Noise typically associated within the Detroit Lake watershed is related to recreational activities on and around the lake, and traffic in the area especially on Highway 22. Most common noise within the Shore 'Nuf analysis area is associated with recreational activities around the lake. Most of the noise occurs from Memorial Day to Labor Day, and occurs for continuous periods during daylight hours and more predominantly on weekends and holidays. Some noise is localized to a specific site such as a campground, while other noises are heard from a long distance such as from motor boats and jet skis.

To understand what contributes to typical noise within the area, the characteristics and types of uses and users, and where the use and amount of use is occurring are described. Detroit Lake is the third most heavily used lake in the State

attracting well over 500,000 people a year. The lake is within a 2-hour drive of nearly 80% of Oregon's population, or about 2.3 million people, which makes it an important recreation resource. The area offers a variety of recreational opportunities. During the summer recreation season the area is typically crowded, noisy, and has lots of activity. The area has more of an urban park-like setting, with modernized developments and conveniences, as opposed to a pristine forested setting. Generally, people who visit Detroit Lake enjoy the social, urban-like experience and/or setting that it offers.

Most of the use at Detroit Lake occurs at the east end of the lake due to the proximity of facilities, and access to usable flat land and sheltered from prevailing wind conditions on the lake. Recreational developments located at the east end of the lake include: five high use developed campgrounds, two day use areas including one boat launch area, hundreds of dispersed recreation sites, and two privately owned marinas that are under a special use authorization. In addition, there are 70 recreational residences on the Stahlman summer home tracts that provide seasonal recreational occupancy; and the Sportsmen's Club organizational camp that contains camping sites and moorage spaces for it's club members. The City of Detroit offers services such as lodging, RV parks, restaurants, gas and shopping to visitors.

Recreation use peaks on weekends and holidays and during the week in the heart of summer. During these times campgrounds and day use areas are generally full. Noise associated with camping activities such as radios,

generators and voices can be heard near these sites. Marinas and day use areas become crowded, and summer home and Sportsman's Club occupancy is also highest on weekends and holidays during the summer. Most people are aware that Detroit Lake is one of the most popular recreation areas in the State, and 80% are repeat visitors. Therefore, visitors are used to the type of noise associated with the recreational activities occurring in the area.

In contrast, during the week visitors leave the area to return to their jobs and homes. Historically, the Cities of Detroit and Idanha were logging communities and thus timber harvesting and associated noise was part of the norm. While the local economy has shifted from logging to tourism, local residents and businesses generally recognize the value of continuing forest management practices. The residents and businesses generally accommodate noise during reasonable hours of the day associated with forest management practices such as chainsaws, logging equipment, helicopters, and road maintenance equipment. There are three other timber sales scheduled to occur within the next five years in the vicinity.

Highway 22 parallels the north shore of Detroit Lake for about 10 miles, and bisects the City of Detroit. The highway serves as a major east-west route over the Cascades. Highest use on the highway occurs during the summer and decreases during the fall and spring with the lowest use during the winter season. Most commercial truck travel occurs during the weekdays, and highest passenger car and RV travel occurs on Friday and weekends, when the experience of seeing a constant string of vehicles is typical. Emergency vehicle use, such as police and ambulance, also increases during the recreation season and on weekends. Recreation traffic and emergency vehicles can also be heard

along the Blowout Road which parallels the south side of the lake for about 7 miles.

A commonly used flight path that military jets use for radar practice follows the North Santiam canyon and continues up the Breitenbush River. Although extremely loud, these low elevation flights are infrequent and only a few seconds in duration. Flights occur mostly during the summer.

#### **Noise Disturbance – Effects of Alternative 1**

Since no harvest would occur, no additional noise or disturbance would be created. The noises of traffic, recreation activities, and already scheduled timber sales would continue. The existing condition serves as the baseline for analysis.

#### **Noise Disturbance – Direct and Indirect Effects of Alternative 2**

Noise, in addition to normal recreation activities, would be generated from logging operations such as chainsaws, logging equipment (skyline, tractors, and loaders), helicopters, road equipment, and log trucks. Noise associated with logging operations would increase in the immediate sale area and along haul routes. The highest disturbance would result from noise during helicopter operations. Log hauling would occur during the week, but is prohibited on all weekends and holidays between Memorial and Labor Day weekends.

Noise disturbance from harvest operations and hauling, within and adjacent to high public use areas during peak and non-peak use periods, would occur. Because the seasonal restrictions for wildlife prohibit harvest operations and hauling during critical nesting periods, there would be no noise from Alternative 2 during those seasons (see Tables 2.6 and 2.7). However, if annual occupancy surveys determine that a specific species



is not nesting in the area, it is probable that restrictions may be lifted as early as May 1<sup>st</sup>. If restrictions are lifted there could be noise disturbance within the vicinity of high public use areas during the peak use season and on weekends. Harvest operations could begin at dawn and end at dusk, and would have no imposed time or weekday limitations. Visitors and local residents could anticipate noise disturbances above the norm which may affect the recreational experiences of those visiting the area.

#### **Noise Disturbance – Direct and Indirect Effects of Alternative 3**

Noise levels in Alternative 3 would be the same as described in Alternative 2 during time periods in which they are allowed to occur. In Alternative 3, noise impacts to recreation users from harvest activities and hauling are reduced through the timing of operations (See Table 2.10 through 2.14). Operations are restricted during periods of high use from May 1<sup>st</sup> to September 30<sup>th</sup>; therefore, reducing the total number of people impacted by noise disturbance, and amount of time of disturbance. Noise disturbance is reduced during periods when most people are on their “leisure” time during weekends and holidays, and early mornings and evenings. Log hauling is prohibited on all weekends year-round.

Noise associated with logging operations would increase in the immediate sale area and along haul routes. The highest disturbance would result from noise during helicopter operations. Generally the impacts to recreation users from helicopter and harvest operations would be reduced due to the restrictions placed on timing of these activities. There would be no noise during certain times of day and days of the week (See Tables 2.10 through 2.14).

If imposed, any additional wildlife restrictions would further minimize noise disturbance during those critical nesting

periods. Refer to Alternative 2 discussion for effects of noise. The only difference between Alternatives 2 and 3 is that there would not be any wildlife restrictions on operations for the month of December, which is typically a low use recreation season.

#### **Noise Disturbance – Direct and Indirect Effects of Alternative 4**

Alternative 4 would have similar affects as alternative 3 with the addition of increased noise associated from helicopter logging as opposed to ground based systems on an additional 195 acres. Alternative 4 increases noise occurrence for Unit 23, proposed as tractor logging in Alternative 2 and 3, which is adjacent the high public use areas along Blowout Road and near the City of Detroit. It also increases noise on that portion of Unit 11 that was prescribed for skyline logging in Alternatives 2 and 3. Although the frequency of noise is increased, the timing would be restricted on weekends throughout the year for Unit 23, and on weekends during the peak recreation season for Unit 11.

#### **Noise Disturbance - Cumulative Effects**

Harvest operations of Shore ‘Nuf could overlap in time with the three sales of High and Dry, Bould Puppy and Windy Canyon, but the noise from these sales may not overlap spatially. These sales include helicopter operations, which would increase helicopter activity and harvest operation noise in the area. These sales would be operated under the same specific restrictions to reduce noise disturbance to area visitors and residents during peak recreation season and weekends as Alternative 3. Some noise generated by recreation activities and other sources are loud enough to mask any logging operation noise depending on the location of the listener, or the noise.

### **Noxious Weeds – Existing Condition**

Noxious weeds and invasive non-native plants are a threat to native plant communities. These species are able to thrive in a new environment because they arrive without the complement of predators, disease, and other ecosystem components found in their native region of the world that keeps them in check. Most of these species take advantage of disturbed areas such as logged units, roads, rock quarries, burned areas, the areas surrounding human structures, and trails. Weed seeds and other propagules can be introduced into an area by a variety of agents, most notably wind, highway and off-road vehicles, and construction equipment. They can also be moved by water, animals, and humans. Once established, these populations serve as a seed source for further dispersal, generally along road, powerline, and trail corridors.

Many noxious weed and non-native species migrate up from the Willamette Valley through the Santiam Canyon via Highway 22 and the power-line corridor and from there can be spread to the rest of the Detroit District. Tansy ragwort, St. Johns-wort, and Scotch broom have established large populations on the reservoir banks and along the highway; Canada and bull thistles are also present.

Regarding new invaders, Detroit Tributaries Watershed contains some of the largest populations of spotted knapweed on the District, which presumably have migrated from Central Oregon. Other new invaders that are expanding into the area include Himalayan and evergreen blackberry, white sweet-clover, and reed canarygrass. Of recent concern is the proliferation of giant knotweed. Although it is still relatively uncommon on National Forest System Lands, a number of plants have been found in the communities of Detroit and Marion Forks.

The Willamette's integrated weed management program specifies that spotted knapweed populations and certain other new noxious weed invaders are the highest priority for treatment. Bio-control and manual control efforts are generally used on established weed species, such as tansy ragwort and Scotch broom.

### **Noxious Weeds – Effects of Alternative One**

The direct, indirect and cumulative effects of noxious weed occurrence and spread on native plant communities would not change from the existing condition under the no action alternative. However, natural spread would continue to occur. There are many existing non-system roads with bare soil that would continue to be habitat for noxious weed establishment and spread. Ground disturbance from human and natural sources, not related to this project, occur frequently and also create habitat for weed expansion. Opportunities for mitigation and monitoring, present in Alternatives 2, 3 and 4 would no occur.

### **Noxious Weeds – Direct and Indirect Effects of Alternatives 2 and 3**

It is a combination of soil disturbance and transport of seed that constitutes the direct effects of timber harvest on weed introduction and persistence. In alternatives 2 and 3, the areas that would be opened up to light and disturbance would be most at risk, e.g., roads and landings. This totals approximately 17.5 acres of new temporary roads and reconstructed roads, and approximately 15 acres from landings. Risk decreases in areas where roads and landings are closed, rehabilitated, and seeded with desirable species, as required in mitigation for alternatives 2 and 3. Risk also decreases as the harvest prescription goes from heavy conifer removal (root rot pockets) to heavy thinning to light thinning.

Indirect effects would be the spread of noxious weeds to other areas. If mitigation measures are applied there should be either a significant reduction in, or no risk of, indirect effects.

**Noxious Weeds – Direct and Indirect Effects of Alternatives 4**

In Alternative 4, approximately 1.4 miles of temporary road construction, and 1.6 miles of non-system road reconstruction would not occur, thus reducing the soil disturbance and risk of noxious weed infestation by approximately 7 acres. Indirect effects would be the same as described in Alternative 2 & 3.

**Noxious Weeds – Cumulative Effects**

Most of the risk from direct and indirect effects are eliminated if the mitigation measures are applied. Some risk remains from the root rot pocket treatment and heavy thinning, which could increase the acres infested. However, actions from this project would eliminate unregulated access and close non-system roads, which may result in no net increase or a decrease to risk. If there is no net increase to risk, or a net decrease, then there are no cumulative effects.

### Roads – Existing Condition

The primary roads in the Shore 'Nuf project area include the Blowout (Forest Road 10), Kinney Creek (Forest Road 2212) and French Creek (Forest Road 2225). Additional roads in the project area access recreation sites, administrative use areas (summer homes, etc.), past logging areas, or private lands. Current road densities are described in Table 3.1 below.

Area	Total Road Miles per area	Miles of Road per Square Mile
French Creek	41	3.33
Hoover Area	48.6	3.56
Kinney Creek	30.4	4.21

### Roads – Direct & Indirect Effects Alternative One

No changes to the current number of road miles and condition of the roads would occur with this alternative. Maintenance activities would continue as regularly scheduled and as funds are available.

### Roads – Direct & Indirect Effects Alternative Two and Three

Alternative two and three include approximately 1.4 miles of new construction and the obliteration of these roads following timber sale activities. By obliterating the temporary roads following use in alternatives 2 and 3, it is expected that within a few years following the timber sale, the limited signs of the temporary roads' earlier existence (mostly differences in vegetation with the former road corridor) would not be evident to most observers. The ground previously occupied by the roads would have resumed its hydrologic function. The obliterated condition of the temporary roads would not encourage vehicle traffic. Ecosystem function would return to the area as vegetation recovers and the crowns of adjacent trees increase in size.

This project also includes the reconstruction of approximately 5.9 miles of existing roads. Reconstruction activities are expected to improve the current conditions of these roads by replacing culverts, improving road surfaces by adding rock and grading, and improving drainage along the roads. These activities are not expected to adversely impact water quality in the area.

### Roads – Direct & Indirect Effects Alternative Four

Alternative four eliminates all temporary road construction and approximately 1.6 miles of reconstruction of non-system roads. By eliminating access roads to the logging units, several logging systems would be modified from ground based systems to helicopter logging (See Table 2.15 and 2.15 in Chapter 2). In addition, several landings would need to be relocated along the Blowout Road requiring temporary closures of the road. This alternative also eliminates the option to close a very steep portion of private road located near Unit 10.

### Roads – Cumulative Effects

No cumulative effects are expected as a result of implementing this project. Proposed road construction from other timber sales in the area has been very light to non-existent. This project will result in a zero-net increase to the road density of the area for all alternatives.

## **2. Floodplains & Wetlands**

### **Existing Condition**

There are minor wetlands in or adjacent to the proposed stands. No flood plains are found within the project area. The wetlands are associated with the riparian network and would be buffered and protected. Within the project area the wetlands are generally small (less than ¼ acre). Larger wetlands greater than ¼ acre have been buffered from the proposed activities. The small wetlands are associated with colluvial deposits adjacent to stream channels or at the base of extended slopes.

### **Floodplains and Wetlands - Direct & Indirect Effects**

#### **Alternative 2, 3, and 4**

This project's effect on downstream flood plains or wetlands is negligible. Immediately following harvesting the water table may rise in the wetlands. Within 2-3 years it would return to existing conditions due to increased transpiration of the thinned stands.

## **3. Threatened, Endangered, and Sensitive Species**

### **Northern Bald Eagle – Threatened**

#### **Existing Condition**

Bald eagles require nesting habitat consisting of scattered old-growth conifer trees near available food sources. The proposed project occurs within the Detroit Lake Bald Eagle Management Area (BEMA). Bald eagle habitat does exist within the project area; however, no old-growth trees are proposed to be harvested. In past years a nesting pair of bald eagles have been using an old-growth nest tree within the Bald Eagle Habitat Reserve (BEHR) which is included as a 125-acre reserve within the BEMA. Thinning units proposed within the Detroit Lake BEMA and include units 2-12, 14, and 22-31. Units 10, 11 and 12 are within the BEHR.

### **Bald Eagles - Direct and Indirect Alternative 1**

While there are no direct effects on bald eagles in alternative 1, not thinning stands within the BEMA lengthens the time necessary for the development of future nest, perch and roost trees for bald eagles.

### **Bald Eagles - Direct and Indirect Alternatives 2, 3, and 4**

None of the action alternatives would adversely affect bald eagles or their habitat. Seasonal restrictions for activities included in all action alternatives within the BEMA should protect bald eagles during the critical nesting period.

### **Bald Eagles - Cumulative Effects**

Proposed thinning and previous thinning in the Detroit BEMA would encourage the growth of large diameter conifers which would enhance the development of future nest, perch and roost trees. The Detroit Lake Bald Eagle Management Plan would recognize this project as a habitat enhancement opportunity.

### **Northern spotted owl – Threatened**

#### **Existing Condition**

The northern spotted owl is primarily an inhabitant of old growth and mature forests. Suitable spotted owl habitat contains adequate quantities of dead and down woody material, decadent trees, a medium to high crown closure, multiple layers in the overstory, and trees at least 200 years old or greater than 32 inches dbh (ISC Report 1990). All of the above characteristics do not need to be present for spotted owls to make use of an area, and for habitat to be determined suitable. Approximately 10 acres of unit 21 in the French Creek drainage is considered foraging habitat. No nesting habitat exists within the proposed thinning units. The remaining area is considered dispersal habitat.

### **Spotted owls - Direct and Indirect Effects**

#### **Alternative 1**

While there are no direct effects on spotted owl habitat, not thinning stands lengthens the time necessary for the development of foraging habitat for spotted owls.

### **Spotted owls - Direct and Indirect Effects**

#### **Alternatives 2, 3, and 4**

There are no direct effects to spotted owl habitat from alternatives 2, 3, and 4. Proposed thinning units are dispersal habitat for spotted owls. Thinning would increase the average diameter of the stands and they would remain dispersal habitat. Thinning would shorten the time needed for the trees in these stands to reach sufficient size to become foraging habitat for spotted owls. Thinning unit 21 would not affect its status as foraging habitat.

### **Spotted Owls - Cumulative Effects**

This project, plus the 2000 acres of past thinning in this area, and future timber sales (High & Dry, Windy Canyon), would result in large areas of second growth trees attaining forage habitat decades earlier than if left untreated. This would be considered spotted owl forage habitat in the future.

### **Peregrine Falcon R-6 Sensitive species Existing Condition**

Potential nesting habitat occurs at approximately 25 cliff sites within three miles of proposed units. Three pairs of peregrine falcons are known to occupy the area.

### **Peregrine Falcon - Direct and Indirect Effects**

#### **Alternative 1**

There are no direct or indirect effects to peregrine falcons from alternative 1.

### **Peregrine Falcon - Direct and Indirect Effects - Alternatives 2, 3, and 4**

There is potential for disturbance to nesting peregrine falcons if activities occur within the nesting period from January 15th to July 31st. Disturbance could result in nesting failure from broken eggs or nest abandonment. Seasonal restrictions would prohibit all logging activities from January 15th to July 31st, resulting in no effect to peregrines.

### **Peregrine Falcon - Cumulative Effects**

No cumulative effects are expected. Nesting habitat is not being impacted.

### **Harlequin Duck – Candidate species, R-6 Sensitive species**

#### **Existing Condition**

Harlequin ducks use rivers, streams, and creeks as feeding habitat and commonly nest on stream banks and adjacent forest. Shrubby riparian vegetation, lack of human disturbance, and loafing sites are important factors for harlequin ducks (Cassirer and Groves, 1989). Foraging and nesting habitat exists in the French Creek drainage.

### **Harlequin Duck - Direct, Indirect & Cumulative Effects - Alternative 1**

There are no direct, indirect, or cumulative effects to harlequin ducks from Alternative 1.

### **Harlequin Duck - Direct, Indirect & Cumulative Effects - Alternative 2, 3, and 4**

Nesting and foraging habitat would not be affected. The only potential effects would be from disturbance; however, this would be mitigated by seasonal restrictions in Alternative 2. In Alternative 3 & 4, there may be disturbance to individual nesting ducks between August 1st and August 15th. Because of the limited number of individuals affected, and the disturbance would only occur for one year, this would not move the species toward federal listing as a threatened or endangered species.

## **Osprey**

### **Existing Condition**

Surveys were completed and Ospreys were discovered nesting in residual old growth trees in or adjacent to units 2, 3, 4, 5, 10, 11, 12, 15, 19, 22 and 23. Ospreys generally use large trees adjacent to streams or reservoirs for nest building platforms and forage in fish bearing streams and lakes. Ospreys may change nest trees yearly or use the same one for many years, thus requiring yearly surveys to determine active nest locations.

### **Osprey - Direct & Indirect Effects**

#### **Alternative 1**

There are no direct or indirect effects to Osprey from alternative 1.

### **Osprey - Direct & Indirect Effects**

#### **Alternative 2**

Harvest operations would not disturb nesting birds or destroy nest trees. Harvest activities would be prohibited during the nesting period from March 1st to July 31st. Existing nest trees and residual old growth trees would be retained within all harvest units.

### **Osprey - Direct & Indirect Effects**

#### **Alternatives 3 and 4**

Harvest operations would disturb nesting birds as seasonal restrictions would not be in place to restrict helicopter and other logging operations in the vicinity of nest trees. Ground based activities within 500 feet and helicopter operations within 1000 feet of a nest tree during the nesting period from March 1st to July 31st is likely to cause nest abandonment and loss of young in the nest. The affect of these activities will apply only to the year activities occur within the nesting period. No nest trees would be removed by harvest activities.

### **Osprey - Cumulative Effects**

No cumulative effects are expected as a result of harvest operations in the area. Because of the limited number of individuals affected, and the disturbance

would only occur for one year, this would not move the species toward federal listing as a threatened or endangered species.

## **Big Game**

### **Existing Condition**

The project is mostly in winter range and managed for high emphasis habitat values such as cover quality, forage quantity, open roads and spacing of cover. Units 1 and 13 are considered within summer range. Current values for forage are the most limiting factor in attaining habitat effectiveness in this area. Sizing and spacing are at high values throughout the area.

### **Big Game - Direct & Indirect Effects**

#### **Alternative 1**

Forage values will continue to decline as trees overgrow grass and brush species. Optimal thermal cover will not develop as quickly without thinning of young stands.

### **Big Game - Direct & Indirect Effects**

#### **Alternative 2**

There is potential to disturb big game by helicopter operations and other harvest equipment during critical severe winter weather. Forage quality would be increased in units and along roads by seeding disturbed areas and underburning specific units which have old woody shrubs. Underburning will cause these species to re-sprout and provide additional forage in winter range. Thinning will also open the tree canopy and allow light to reach the ground and enhance plant growth.

### **Big Game - Direct & Indirect Effects**

#### **Alternatives 3 & 4**

Alternatives 3 and 4 propose harvest activities in big game winter range during heavy snow accumulations. Big game use lower elevation areas when snow accumulates on higher summer range. Snow buries forage and occurs after deciduous plants have lost their leaves,

thus making movement difficult. During this period big game are using fat reserves to survive. Food eaten during this time does not provide adequate energy to replace energy being used to maintain body heat, etc. Seasonal restrictions would not be implemented with these alternatives; therefore, the amount of energy lost by big game species may increase during times when heavy snow accumulates in winter range. In alternative 4, fewer roads would be constructed therefore reducing the amount of available forage openings following harvest activities.

### **Big Game - Cumulative Effects**

Thinning would increase the habitat effectiveness of optimal thermal cover in winter range. This combined with summer forage provided by clearcuts on adjacent private land may provide some compensation for decreasing forage values on Forest Service lands.

### **Effects on Other Sensitive Wildlife Species**

Activities associated with the Shore 'Nuf Timber Sale may impact the following species or their habitat: Baird's Shrew, Pacific Shrew, Oregon Slender Salamander, and the Cascade Torrent Salamander. Surveys have not been conducted on the Willamette National Forest for these species; however, it is likely that potential habitat exists at or near proposed activities in the project area. It is undetermined what specific impacts this project may have on individuals or the species population. Some individuals may be lost or disturbed during implementation of the project; however, this would not affect the species population as a whole or would not move the species' toward federal listing as a threatened or endangered.

Habitat for the following sensitive species is not present in the project area (based on information found in the references cited in the Biological Evaluation):

Northwestern Pond Turtle, Horned Grebe, Bufflehead, Black Swift, North American Lynx, Pacific Fringe-tailed Bat, Foothill Yellow-legged Frog & Oregon Spotted Frog. Therefore, the project would not adversely impact these species and they will not be discussed further in this document.

### **Fisheries**

There are no fish or aquatic insects in the project area that are listed under the Endangered Species Act or are on the Regional Foresters Sensitive Species list. There is no Essential Fish Habitat that exists above Detroit Dam on the North Santiam River as described in the Magnuson-Stevens Act (1976).

### **Sensitive Plants**

No Region Six sensitive plant species or habitat types were identified as occurring in or adjacent to the Shore 'Nuf project area. Field surveys of Shore 'Nuf units did not discover any new occurrences or suitable habitat for Region 6 sensitive plants.

### **Migratory Birds**

Migratory birds may be disturbed and nests unintentionally destroyed during proposed activities. Each type of migratory bird specializes in a habitat niche and are widely distributed within the Pacific Northwest during the summer nesting season. Altering habitat may favor one species but not favor another with the overall effect being insignificant. Generally forested habitats would contain warblers, swallows, swifts and other migratory species. Riparian areas having alder and maple may contain the same species as the forest, but with higher densities of riparian specialized species of warblers, flycatchers, etc. This project may provide small openings in root rot pockets that may be used by sparrows and other open habitat specialized birds. Overall the project would not cause a significant habitat change from existing conditions. The species mix is expected



to remain the same, with minor variations where open habitat specialized birds are located. Planting native fruit bearing shrubs and other species resistant to root rot is expected to increase species diversity in the areas affected by this disease.

#### **4. Survey & Manage/Protection Buffer Species**

##### **Wildlife**

##### **Canada Lynx & Great Grey Owls**

The Shore 'Nuf Timber Sale is not within habitat for these species and therefore no direct, indirect or cumulative effects are expected.

##### **Mollusks**

##### **Existing Condition**

Two species of mollusks (*Megomphix hemphilli* and *Pristiloma arcticum crateris*) listed as survey and manage species are suspected to occur in conifer forests with hardwood components on the Detroit Ranger District. Mosses, leaf litter, especially near hardwood logs, ferns, and areas under shrubs are key features used by these mollusks. Suitable habitat for both species may be present in the project area; however, these species have not been located. Spring surveys for mollusk species were completed in June 2001, and final surveys were completed in Fall 2001. Results of surveys for mollusk species are documented in Appendix D.

##### **Mollusks - Direct, Indirect, and Cumulative Effects**

Activities proposed within the Shore 'Nuf Timber Sale would disturb areas where survey and manage mollusk species may be located. No mollusk species were found during field surveys; therefore a management strategy will not be developed. This project is not expected to have any effects on mollusk species.

##### **Red Tree Vole**

##### **Existing Condition**

Potential habitat occurs in the proposed units. Surveys for Red tree voles have been completed and no voles or nesting structures were discovered during the survey process. Results of surveys are disclosed in Appendix D.

##### **Survey and Manage Plants**

Surveys were conducted for survey and manage plants in the Shore 'Nuf area (See Appendix D). Species located include the vascular plant candystick (*Allotropa virgata*, Survey & Manage strategies 1 & 2), and a moss (*Ulota megalospora*, PB). In addition, four Survey & Manage strategy 4 (regional survey, no management requirements) lichen species are documented as occurring in or near a proposed unit. These include *Lobaria oregana*, *Lobaria pulmonaria*, *Pseudocyphellaria crocata*, and *Pannaria leucostictioides*. For a description of the habitat for these species, see the botany report in the project record. All of these species have been found in great numbers forest-wide, region-wide, or both. As a result of this abundance, the recently released *Final Supplemental Environmental Impact Statement For Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (FSEIS-S&M 2000) has dropped all of these species from survey and manage requirements. Therefore, no mitigation measures are required for survey and manage plants.

#### **5. Heritage Resources**

##### **Direct, Indirect and Cumulative Effects Alternatives 2, 3, and 4**

For both action alternatives, no direct, indirect, or cumulative effects are expected on cultural resources in the area. Two new sites were discovered during surveys. One site was located in a stand that was dropped during project development, and a second site is located

on the edge of a proposed unit and would not be affected by thinning activities. An overgrown trail leads to the historic Kinney Ridge Lookout and is partially located in Unit #11. Thinning and subsequent post harvest activities would re-open the trail to the lookout to help improve recreation opportunities on the south shore of Detroit Reservoir.

## **6. Vegetation**

### **Existing Condition**

Refer to the information in the Purpose and Need for Action in Chapter 1 for a description of the existing condition for vegetation.

### **Vegetation – Direct & Indirect Effects Alternative 1**

The primary forest health issue is high tree densities found in all stands. The No-Action alternative would perpetuate this condition. Trees in these stands would continue to exhibit low or declining diameter growth and would decline in live crown ratios. Suppression related mortality would increase without treatment. Low light levels in unthinned stands would suppress development of shade tolerant trees and limit understory vegetation. In root rot pockets, this alternative would permit disease spread and mortality to continue.

### **Vegetation – Direct & Indirect Effects Alternatives 2, 3, and 4**

The action alternatives would increase growing space for trees following thinning which would increase diameter growth and maintain or increase live crowns. Suppression related mortality is expected to be reduced resulting in healthier, diverse stands. Development of a second canopy layer would be accelerated following thinning and understory vegetation and should increase due to more sunlight reaching the forest floor. Specific to unit 30, the increased growth of shrubs and understory trees should increase the vegetative screening and take approximately 5-10 years to fully

develop. A few trees may be damaged during logging; however, timber contract requirements keep this number so low that it does not affect ecosystem function. Some trees may blow down as a result of increased exposure to the wind; however, this would be minimized based on the prescription and therefore would not affect the ecosystem function of these stands. Scattered blow-down contributes to needed downed woody material, but does not contribute significantly to the fuel loading of the area. Finally, under the action alternatives, root rot pockets would be treated and disease spread slowed, thus improving the health & vigor of the stand as a whole.

### **Vegetation - Cumulative Effects**

From a silvicultural and forest health aspect there do not appear to be any cumulative effects related to past harvest activities and the proposed action. There are approximately 2,000 acres of commercial thinning units completed within the past twenty years that are adjacent to the project area. The growth and development of stands proposed for treatment is not affected by treatment on adjacent sites. No known insects or pathogens have occurred in thinned stands that would affect either unthinned or proposed thinnings.

## **7. Unavoidable Adverse Effects Fuels & Air Quality**

Activity generated fuels would increase as a result of thinning activities. Prescribed fire methods would be used to reduce the risk of fire hazards from these fuels. During burning operations smoke would be generated, causing short term effects (smoke, haze) to the visual quality of the area; however, the area quickly returns to pre-burn quality as wind and other atmospheric conditions dissipate the smoke within 1-2 days. All prescribed burning operations would comply with Oregon Smoke Management Guidelines to minimize impacts to populated areas.

These guidelines include burning during specific fuel moisture and weather conditions that allow for rapid dispersal of smoke.

### **Soils**

The major short term impacts to soil productivity from harvest activity, as discussed in the Willamette National Forest Final Environmental Impact Statement (FEIS 1990), include displacement, compaction, nutrient loss, and instability. These detrimental soil conditions are defined in the Forest Plan Standards and Guidelines, FW-081. The Standards require that the total area of cumulative detrimental soil conditions should not exceed 20% of the total acreage within the activity area, including roads and landings. Currently, less than 20% detrimental soil conditions exist for the area as a whole. Very little evidence of past use of ground based system roads was found in the area, and many of the old skid roads in the area may have been used in conjunction with the construction of Detroit Dam. Past logging in the area was most likely done in the 1930's with cable systems from the railroad. Therefore, for the Shore 'Nuf Timber Sale, with the implementation of designated skid trails, and less than 30% of the harvest units logged with ground based systems, cumulative conditions would not exceed 20% of the total acreage proposed for ground based logging systems after implementation.

This standard would be achieved by implementing Best Management Practices (T-2, T-9, T-11, T-12, VM-1, and F-3).

### **Stream Channels**

Stream Channels found in the Shore 'Nuf project area are typically Rosgen types A and B channels which are resistant high-energy type channels. It is expected that these channels would be unchanged as a result of project activities with the exception at designated crossings.

These crossings would be designed to allow the natural flow of waters down existing stream channels. Channel bank stability would be retained by excluding trees that contribute to channel bank stability from harvesting. Increased amounts of water generated from the thinned stands would be handled by the existing channels without detrimental affects.

### **Water Quality**

Water quality is important for downstream beneficial users. The quality of water flowing off the project area is anticipated to be the same as current conditions. Water quality laws and regulations do not allow detrimental effects on water resources. Thinning in riparian areas and road construction must follow Forest Plan standards and guidelines, which direct how the project would be done. Through the implementation of Best Management practices (Appendix B), it is anticipated that the waters within the project area would be protected. Stream temperature would be protected through maintenance of the 70% canopy closure prescribed within the riparian reserve. There are no 303(d) listed streams in the Shore 'Nuf project area. Sediment delivery exceeding natural levels would be prevented through the use of unit designs.

Piety Island is actually less likely to have any effects due to the absence of perennial streams.

### **Water Quantity**

Under both action alternatives, short term disturbance to the forest floor and canopy would occur. This disturbance would create some bare areas, change the species composition of the riparian areas, and create greater diversity. General hydrologic functions of the area are anticipated to experience slight fluctuations resulting from the removal of vegetation during the thinning. This fluctuation would be short term due to the remaining vegetation utilizing the

available water once the stand responds to the thinning. A seasonal increase in groundwater could result in localized wet areas increasing in size or duration. Stream flow could also be affected in amount and duration of flow. These effects should be short lived until such time that trees remaining on the site would utilize the available water. It is expected that within five years the riparian stand would have become more diverse because of the thinning.

With the utilization of Best Management Practices and Contract requirements, there are no anticipated adverse impacts to downstream beneficial users.

#### **8. Irreversible and Irrecoverable Commitments of Resources**

No irreversible and/or irretrievable use of the soils or geologic resources is anticipated beyond that which has been previously identified in the Willamette National Forest Land and Resource Management Plan, as amended.

#### **9. Urban Quality**

See the existing condition under Noise Disturbance described on pages 3-1 through 3-2 for a brief description of the demographics of the area surrounding the Shore 'Nuf project area. In general, the area is located in a rural forest setting and no effect to urban quality would occur as a result of implementing any alternative.

#### **10. Environmental Justice**

The Shore 'Nuf Timber Sale is located adjacent to the Cities of Detroit and Idanha, Oregon. These communities are not considered to be minority or low income communities; however, low income families do reside in both cities. According to information from the Oregon Economic and Community Development Department (OECD) both cities are

considered to be within a distressed area. For the City of Detroit, approximately 44% of the population is considered to be in Low to Moderate Income range; whereas for the City of Idanha, approximately 66% of the population is in this range. Both of these Cities have experienced a significant decline in timber based jobs over the past decade contributing to the factors that determine a distressed community. Implementation of an alternative that precludes any local employment, such as falling, tractor or skyline operations, may impact those families that rely on timber based employment for their income. Therefore, implementation of the project is not expected to pose a disproportionately high or adverse effect to those populations. The Proposed Action, as described does fall within compliance with Executive Order 12989 "Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations".

#### **11. Effects on Prime Farmlands or Forest Lands**

Department of Agriculture Land Use Policy (DR 9500-3) as discussed in FSH 1909.15-93-1, 65.21 Exhibit 01 states that "Continued conversion of the Nation's farmlands, forest lands, and rangelands may impair the ability of the United States to produce sufficient food, fiber, and wood to meet the domestic needs and the demands of export markets." The Department's responsibility is to assure that the United States retains a farm, range, and forest land base sufficient to produce adequate supplies at reasonable production costs of high quality food, fiber and wood. The Shore 'Nuf project area has no farm land or range land. All forested lands located within harvest units have been determined to be suitable for timber production.

## 12. Energy and Natural or Depletable Resource Requirements and Conservation Potential of Various Alternatives and Mitigation Measures

Life-cycle analysis is a process which considers the total resource and energy use, emissions, effluents, and solid wastes from the use of various building materials through the entire life-cycle from extraction of basic resources, through manufacturing, building construction, service, and post-use disposal. Application of life-cycle analysis indicates that the use of wood for building materials yields the most environmentally favorable results amongst the choices between wood, masonry, concrete, or steel<sup>1</sup>. This finding also coincides with the findings of an extensive survey of North American architects and engineers in which wood was considered the most environmentally friendly building material amongst these leading choices for building materials.

<sup>1</sup> American International Forest Products, *Environmental Effects of Building Materials*, 1999.

Alternatives 2 and 3 for the Shore 'Nuf Timber Sale utilize a mix of harvest methods including about 10% ground-based yarding, 20% skyline yarding, and 70% helicopter yarding. While a greater proportion of the project uses helicopter yarding, the mix is not out of the ordinary for wood fiber extraction techniques used around the world. By locating helicopter landings in the action alternatives in such a way that keeps average yarding distances close to ¼ mile, and considering the findings of life-cycle analysis of the environmental considerations of the use of wood fiber for building materials, there would be no unusual energy requirements for implementing either of the action alternatives. The no action alternative (Alternative 1) fails to achieve the life-

cycle conservation potential from the use of the wood fiber available in the Shore 'Nuf project area at this time for the production of building materials.

Wood fiber is a renewable natural resource. With the exception of fossil fuels used in the extraction, transportation, and manufacture of the wood products yielded by the action alternatives and any gravel that is used in the maintenance of the roads and landings used by the alternatives, there is no use of depletable natural resources in the action alternatives. Therefore, the amounts of depletable natural resources used in connection with the implementation of either of the action alternatives is not out of the ordinary. By making the wood fiber, a renewable natural resource, available for use as building materials and by striking a balance between landing locations and yarding distances as was done in the action alternatives, depletable natural resources are conserved in both of the action alternatives. The no action alternative results in the use of no depletable natural resources except indirectly, to the degree that less environmentally friendly building materials are substituted for the wood fiber not produced from the Shore 'Nuf area.

### 13. Logging Cost Comparison

<b>Table 3.1: Logging Cost Comparison</b>				
<b>Logging Method</b>	<b>Alternative 2 and 3</b>		<b>Alternative 4</b>	
	Volume (mbf)	Total Dollars	Volume (mbf)	Total Dollars
<b>Helicopter</b>	6,925	\$ 2,387,463	8,630	\$ 3,035,343
<b>Skyline</b>	2,200	\$ 441,276	595	\$ 145,429
<b>Tractor</b>	625	\$ 123,462	525	\$ 115,017
<b>Processor</b>	300	\$ 47,998	300	\$ 50,244
<b>Total</b>	10,050	\$ 3,000,189	10,050	\$ 3,346,034

A cost analysis was completed to determine logging cost differences between alternatives 2, 3 and 4. Costs were calculated for falling through loading activities. These were the activities for which costs varied substantially from alternative to alternative. Complete data and methodology for the cost analysis is located in the Project Record.

Logging costs remain the same for both Alternative 2 and 3 based on no differences to logging systems. For Alternative 4, logging costs increase by approximately \$345,000 due to additional helicopter logging acres, flight distances, and increased yarding distances for tractor and processor. In alternative 4, when the difference in road costs is added into the equation, (See Table 2.19) this could reduce the amount of available KV funds by approximately \$338,000 for mitigation and enhancement projects. Mitigation costs would need to be made up from other sources, such as appropriated funds.

## CHAPTER 4 – List of Preparers

The following are the members of the interdisciplinary team (IDT) responsible for conducting the environmental impact statement for the Shore 'Nuf Timber Sale.

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# Shore 'Nuf Timber Sale Environmental Impact Statement

## Glossary of Terms

### Summary of Acronyms

<b>ACSO</b>	Aquatic Conservation Strategy Objectives
<b>BMP</b>	Best Management Practices
<b>BEHR</b>	Bald Eagle Habitat Reserve
<b>BEMA</b>	Bald Eagle Management Area
<b>COE Lands</b>	U.S. Army Corp. of Engineer Lands
<b>DBH</b>	Diameter at Breast Height (approximately 48")
<b>DWD</b>	Down Woody Debris (a.k.a. Course Woody Debris)
<b>HTH</b>	Commercial Thinning
<b>KV Funds</b>	Knutson-Vandenburg Act
<b>LMP</b>	Land Management Plan (i.e. The Willamette National Forest Land & Resource Management Plan)
<b>MIS</b>	Management Indicator Species
<b>TES</b>	Threatened, Endangered, and Sensitive Species
<b>S&amp;M</b>	Survey & Manage

### **Best Management Practices (BMP)**

A practice for combination of practices that is determined by a State(or designated areawide planning agency) after problem assessment, examination of alternative practices, and appropriate public participations, to be the most effective , practicable (including technological economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals.

### **Bald Eagle Habitat Reserve (BEHR)**

As part of the recovery plan for bald eagles, habitat suitable for nesting, foraging and roosting are maintained at potential and existing sites near several reservoirs and lakes. At least 125 acres of nesting habitat in mature or old growth forest characteristics are maintained at each site. Detroit Reservoir has one known, and two potential sites protected for bald eagle use. (Willamette National Forest Plan standard FW-165)

### **Bald Eagle Management Area (BEMA)**

Areas managed for the protection of the threatened and endangered bald eagle. BEMAs provide nesting and roosting habitat for the bird in each plot. Also described as Management Area 8 in the Willamette National Forest Plan (pg. 161- 164).

### **Canopy Closure**

The degree to which the canopy (forest layers above one's head) blocks sunlight or obscures the sky. It can only be accurately determined from measurements taken under the canopy as openings in the branches and crowns must be accounted for.



## **Cumulative Effects**

Impacts on the environment resulting from the incremental effect of the action when added to effects of past, present, and reasonably foreseeable future actions regardless of the agency (federal or nonfederal) or person undertaking such other actions. Cumulative effects can result from individually minor, but collectively similar, actions occurring over a period of time.

## **Down Woody Debris (DWD)**

Portion of a tree that has fallen or been cut and left in the woods. Additional detail is available in the Northwest Forest Plan Standards & Guidelines page C-40. The Standard for Course Woody Material is to manage to provide a renewable supply of large down logs well distributed across the matrix landscape in a manner that meets the needs of species and provides for ecological functions. Develop models for groups of plant associations and stand types that can be used as a baseline for developing prescriptions. Until standards are developed as described above, use the following guidelines. A minimum of 240 linear feet of logs per acre, each log greater than or equal to 20 inches in diameter on the small end and 20 feet in length are to be left on Willamette National forest lands.

## **Draft Environmental Impact Statement (DEIS)**

The draft statement of environmental effects, which is required for major federal actions under Section 102 of the National Environmental Policy Act, and released to the public and other agencies for comment and review.

## **Effects**

Effects, impacts, and consequences, as used in this environmental impact statement, are synonymous. Effects may be direct, indirect, or cumulative and may fall in one of these categories: aesthetic, historic, cultural, economic, social, health, or ecological (such as effects on natural resources and on the components, structures, and functioning of affected ecosystems).

## **Endangered Species**

Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified by the Secretary of the Interior as endangered in accordance with the 1973 Endangered Species Act.

## **Environmental Impact Statement (EIS)**

A statement of the environmental effects of a proposed action and alternatives to it. It is required for major federal actions under Section 102 of the National Environmental Policy Act (NEPA), and released to the public and other agencies for comment and review. It is a formal document that must follow the requirements of NEPA, the CEQ guidelines, and directives of the agency responsible for the project proposal.

**Ground-disturbing activity** – See habitat disturbing activity

## **Habitat-disturbing activity**

Activities with disturbances having a likely substantial negative impact on the species habitat, its life cycle, microclimate, or life support requirements.

### **Interdisciplinary team (ID team)**

A group of individuals with varying areas of specialty assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad enough to adequately analyze the problem and propose action.

### **Irretrievable**

Applies to losses of production, harvest, or commitment of renewable natural resources. For example, some or all of the timber production from an area is irretrievably lost during the time an area is used as a winter sports site. If the use is changed, timber production can be resumed. The production lost is irretrievable, but the action is not irreversible.

### **Irreversible**

A term that describes the loss of future options. Applies primarily to the effects, or use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity that are renewable only over long periods of time.

### **Issue**

A point, matter, or question of public discussion or interest to be addressed or decided through the planning process.

### **Knutson-Vandenburg Act funds (KV funds)**

The KV Act of 1930 was enacted to provide a source of stable funding for reforestation projects. This Act was amended by the National Forest Management Act in 1976 to include funding for other renewable resources within a timber sale area.

### **Late-successional forests**

Forest stands consisting of trees, structural attributes, supporting biological communities, and processes associated with old-growth and/or mature forests. Forest seral stages that include mature and old-growth age classes. Age is not necessarily a defining characteristic but has been used as a proxy or indicator in some usages. Minimum ages are typically 80 to 130 years, more or less, depending on the site quality, species, rate of stand development, and other factors.

### **Live Crown Ratios**

A live crown ratio is the ratio of crown length to tree height. For example: A 100 foot tree with 40 feet of live crown has a 40% live crown ratio.

### **Logging Methods**

**Helicopter:** A system using helicopters to yard logs from a harvested unit to a landing.

**Skyline:** A system using a series of cables and pulleys attached to a central tower to yard logs to a landing.

#### **Ground-Based Systems**

**Processor/Forwarder:** A machine that is generally used in small diameter material that can cut, limb, and buck logs within a unit. Cut logs are placed on a Forwarder, or flat-bed skidder, and hauled to the landing.

**Tractor:** A rubber tired, or track driven machine that uses cables to pull logs to skid roads throughout the unit. Logs are then pulled to a central landing or road.

## **Management Indicator Species (MIS)**

Management indicator species represent limited habitat such as old-growth and mature forests, cliff nesting habitat, winter range, and dead and decaying trees. Species used to represent old-growth and mature forests include northern spotted owls, pileated woodpecker and pine marten. Other examples include:

Bald eagles = old-growth and mature conifers near large bodies of water;

Peregrine falcons = Cliff nesting habitat

Deer & Elk = Winter range

Cavity excavators (ex. red breasted nuthatches and woodpeckers = Dead and decaying trees

## **Mitigation measures**

Modifications of actions taken to: (1) avoid impacts by not taking a certain action or parts of an action; (2) minimize impacts by limiting the degree or magnitude of the action and its implementation; (3) rectify impacts by repairing, rehabilitating, or restoring the affected environment; (4) reduce or eliminate impacts over time by preservation and maintenance operations during the life of the action; or, (5) compensate for impacts by replacing or providing substitute resources or environments.

## **Monitoring**

A process of collecting information to evaluate if objectives and anticipated or assumed results of a management plan are being realized or if implementation is proceeding as planned.

## **National Environmental Policy Act (NEPA)**

An Act passed in 1969 to declare a National policy that encourages productive and enjoyable harmony between humankind and the environment, promotes efforts that prevent or eliminate damage to the environment and biosphere, stimulates the health and welfare of humanity, enriches the understanding of the ecological systems and natural resources important to the nation, and established a Council on Environmental Quality.

## **Northwest Forest Plan**

Coordinated ecosystem management direction incorporated into land management plans for lands administered by the Bureau of Land Management and the Forest Service within the range of the northern spotted owl. In April 1993, President Clinton directed his cabinet to craft a balanced, comprehensive, and long-term policy for management of over 24 million acres of public land within the range of the northern spotted owl. A Forest Ecosystem Management Assessment Team (FEMAT) was chartered to develop a series of options. These options were modified in response to public comment and additional analysis and then analyzed in a Final Supplemental Environmental Impact Statement. A Record of Decision was signed on April 13, 1994, by the Secretaries of the Department of Agriculture and the Department of Interior to adopt Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl. The Record of Decision, including the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl is referred to as the Northwest Forest Plan. The Northwest Forest Plan is not a "plan" in the agency planning regulations sense; the term instead refers collectively to the 1994 amendment to existing agency unit plans or to the specific standards and guidelines for late successional species incorporated into subsequent administrative unit plans.

### **Old-growth forest (Old Growth)**

An ecosystem distinguished by old trees and related structural attributes. Old growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics which may include tree size, accumulations of large dead woody material, number of canopy layers, species, composition, and ecosystem function. More specific parameters applicable to various species are available in the USFS, Region 6, 1993 Interim Old Growth Definitions.

The Northwest Forest Plan SEIS and FEMAT describe old-growth forest as a forest stand usually at least 180 to 220 years old with moderate-to-high canopy closure; a multi-layered, multi-species canopy dominated by large overstory trees; high incidence of large trees, some with broken tops and other indications of old and decaying wood (decadence); numerous large snags; and heavy accumulations of wood, including large logs on the ground.

### **Prescribed fire**

Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition. This term replaces management ignited prescribed fire.

### **Prescription**

Written direction for forest vegetation management, including timber harvest and regeneration activities. For fire, a document that describes the conditions (including but not limited to area, fuel moisture, and weather) under which a fire for resource benefits may be permitted to burn.

### **Record of Decision (ROD)**

A document separate from, but associated with, an environmental impact statement that: states the management decision, states the reason for that decision, identifies all alternatives including the environmentally preferable and selected alternatives, and also states whether all practicable measures to avoid environmental harm from the selected alternative have been adopted, and if not, why not.

### **Riparian Reserves**

Areas along live and intermittent streams, wetlands, ponds, lakes, and unstable and potentially unstable areas where riparian-dependent resources receive primary emphasis. Riparian Reserves are important to the terrestrial ecosystem as well, serving, for example, as dispersal habitat for certain terrestrial species.

### **Scoping**

A process defined, according to the provisions of the National Environmental Policy Act, as an early and open process for determining the scope of the issues to be addressed and for identifying the significant issues related to a proposed action.

### **Sensitive species**

Those species that: (1) have appeared in the Federal Register as proposed for classification and are under consideration for official listing as endangered or threatened species; (2) are on an official state list; or, (3) are recognized by the implementing agencies as needing special management to prevent their being placed on federal or state lists.

**Snag**

Any standing dead, partially dead, or defective (cull) tree measuring at least 10 inches in diameter at breast height and at least 6 feet in height. A hard snag is composed primarily of wood in advanced stages of decay and deterioration, generally not merchantable.

**Survey and Manage (S&M)**

Mitigation measure adopted as a standard and guideline within the Northwest Forest Plan Record of Decision that is intended to mitigate impacts of land management efforts on those species that are closely associated with late-successional or old growth forests whose long-term persistence is a concern. These measures apply to all land allocations and require land managers to take certain actions relative to species of plants and animals, particularly some amphibians, bryophytes, lichens, mollusks, vascular plants, fungi, and arthropods, which are rare or about which little is known. These actions include: (1) manage known sites; (2) survey prior to ground-disturbing activities; (3) conduct extensive surveys; and, (4) conduct general regional surveys.

**Threatened Species**

Plant or animal species likely to become endangered throughout all or a significant portion of its range within the foreseeable future. A plant or animal identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

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# INDEX

## Shore 'Nuf Timber Sale Final Environmental Impact Statement

### A

Air Quality: 1-13, 3-12  
Alternative 1: 2-2  
Alternative 2: 2-3  
Alternative 3: 2-23  
Alternative 4: 2-29  
Aquatic Conservation Strategy Objectives  
(ACSO): 1-14, Appendix B

### B

Bald Eagle: 2-21, 3-7  
Bald Eagle Habitat Reserve (BEHR): 2-21, 3-7  
Bald Eagle Management Area (BEMA): 2-21, 3-7  
Best Management Practices (BMP's):  
1-13, 2-1, Appendix B  
Big Game: 2-21, 2-23, 3-9

### C

Canada Lynx: 3-11  
Canopy Closure: 1-6, 1-8, 2-3, 2-9  
Cumulative Effects: 3-5 thru 3-15  
Commercial Thinning: 1-8, 1-10, 2-3

### D

Decisions to be Made: 1-15  
Desired Future Condition: 1-8

### E

Economic/Cost-Benefit Analysis: 1-14  
Endangered Species Act (ESA): 1-14  
Environmental Justice: 3-14

### F

Fisheries: 3-10  
Floodplains: 3-7  
Fuels: 1-10, 2-19, 3-12

### G

Ground Based Logging: 2-13

### H

Harlequin Duck: 2-21, 2-23, 3-8  
Harvest Operations: 2-15, 2-16, 2-24, 3-2, 3-3  
Heritage Resources: 2-32, 3-11  
High Public Use Areas: 2-24

### I

Integrated Unit Prescriptions: Appendix A  
Issues: 1-12, 1-13, 1-14

### J/K

KV Projects: Appendix C

### L

Late-Successional Characteristics:  
1-5, 1-6, 1-8  
Legal Description: 1-1  
List of Preparers: 4-1  
Landings & Logging Systems:  
2-1, 2-3, 2-15, 2-16, 2-29, 2-30  
Logging Cost Comparison: 3-16

## M

Management Allocations: 1-5  
Mitigation Measures: 2-31, 2-32  
Mollusks: 3-11

## N

Need for Action: 1-5  
No Action Alternative: 2-2  
Noise Disturbance:  
    1-12, 2-23, 2-24 2-29, 2-33, 3-1  
Northern Spotted Owl: 2-21, 3-7  
Noxious Weeds: 1-12, 2-31, 3-4, 3-5

## O

Old-growth Stands: 1-15, 2-3  
Osprey: 2-21, 2-23, 3-9  
Operating Periods (See Seasonal Restrictions)

## P

Peak Recreation Season: 2-24, 2-27  
Peregrine Falcon: 2-21, 3-8  
*Phellinus weirii* (See Root Rot)  
Piety Island: 2-19, 3-13  
Prescribed Burning: 2-19, 2-20, 3-12  
Public Scoping: 1-11, Appendix E  
Proposed Action: 1-10, 2-3

## R

Recreation: 1-5, 1-8, 2-19, 2-23, 2-24, 2-27, 3-1  
Red Tree Vole: 3-11, Appendix D  
Riparian Reserves: 1-5, 1-10, 1-14, 2-9, 3-13  
Road Reconstruction: 1-12, 2-12, 2-15, 2-29, 2-35  
Root Rot (*Phellinus weirii*)  
    1-7, 1-9, 1-10, 2-3, 2-17, 3-4, 3-12

## S

Scenic Quality: 1-5, 1-8, 1-10, 1-13, 2-17  
Seasonal Restrictions:  
    2-19, 2-21, 3-7 to 3-9  
Sensitive Species: 2-21, 3-8  
Soils: 2-31, 3-13, 3-16  
Spotted Owl Habitat (see Northern Spotted Owl)  
Survey and Manage Species: 3-11

## T

Temporary Road Construction:  
    1-10, 1-12, 2-3, 2-13, 2-15, 2-16, 2-29, 2-31,  
    3-5, 3-6, 3-16  
Threatened, Endangered, & Sensitive Species:  
    2-21, 3-7

## U

Unavoidable Adverse Effects: 3-12  
Underburning: 2-19, 2-20  
Urban Quality: 3-14

## V

Vegetation: 3-12  
Visual Effects: See Scenic Quality

## W

Watershed Analysis: 1-5 to 1-7, 2-2  
Water Quality: 1-13, 2-1, 2-29, 2-31, 3-15  
Water Quantity: 3-16  
Wildfire: 1-8  
Wildlife: 1-5, 1-6, 1-15

## X/Y/Z



# **Appendices**

## **Shore 'Nuf Timber Sale Final Environmental Impact Statement**

- A: Integrated Unit Prescriptions**
- B: Aquatic Conservation Strategy Objectives (ACSO's) & Best Management Practices (BMP's)**
- C: Knutson-Vandenburg (KV) Projects**
- D: Survey & Manage Species List & Survey Results**
- E: Response to Public Comments Received from the Draft Environmental Impact Statement**

## APPENDIX A

### Shore 'Nuf Timber Sale Integrated Unit Prescriptions

Unit prescriptions consist of general requirements and specific unit information to be implemented during layout and marking of the units, and during actual harvest operations on each unit.

Table 1: Summary of Logging Systems			
Logging System	# of Landings *	Estimated Acres	% of Total Sale
Helicopter	26	804	70%
Skyline	12+	160	15%
Tractor	15+	142	12%
Processor/Forwarder	6+	30	3%

#### **Prescriptions applicable to all harvest units:**

**Special Forest Products:** Special forest products found in commercial thinning units may be sold according to the Standards and Guides of the Willamette National Forest Plan. Vine maple, salal, and sword fern are the primary products found in the proposed units.

**Snags:** Retain snags where safety permits. **Leave all residual old growth.**

**Riparian Reserves:** See Table 2.2 as described in Alternative 2.  
Fall away from streams.  
Leave trees contributing to channel-bank and shoreline stability.

**Directional Falling:** Fall away from improvements such as campgrounds, recreation residences, etc.

**Suspension:** One-end suspension required, except across riparian reserves where full suspension is required.

**Landings/Road Construction & Reconstruction:**  
See Table 2.3 as described in Alternative 2.  
Additional information may also be provided by unit listed in the following pages.

**Seasonal Restrictions:** Follow seasonal restrictions as described in the Alternatives.

**Reforestation:** For units with root rot pockets (**Alternative 2 - Table 2.4**) plant non-susceptible species – red cedar, western white pine, and big-leaf maple.

**Site prep/fuel treatment:** See Table 2.5 as described in Alternative 2.  
**Sub-Soil all temporary roads and landings following harvest operations.**

<b>Shore Nuf Unit 1</b>	
<b>Stand Number (s): 6511, 6541</b>	
<b>Location (Township, Range, Section): T. 10S., R. 6E., Sec. 18, SE1/4, WM</b>	
<b>LMP Allocations</b>	11a = 4 acres    11c = 84 acres 11d = 6 acres    11f = 2 acres 14a = 6 acres
<b>Average Slope = 55%</b>	<b>Elevation = 2400 ft</b>
<b>Estimated Unit Size = 102 acres</b>	<b>Estimated Volume = 1000 mbf</b>
<b>Silvicultural Prescription - HTH</b>	<b>Logging Method – 100% Helicopter</b>

**Key Points:** This unit is located within the Bald Eagle Management Area (BEMA).

**Unit Access:** Unit is located along the 1003 road approximately ½ mile from the junction with the Blowout Road. Unit extends uphill to the ridge.

**Stand Conditions:** The stand is predominantly Douglas-fir averaging 14.5 inches in diameter with a minor component of western hemlock and western redcedar. There is a very scattered residual component of approximately 300 year old western redcedar. Total basal area is 240 square feet per acre. The stand has been previously logged and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

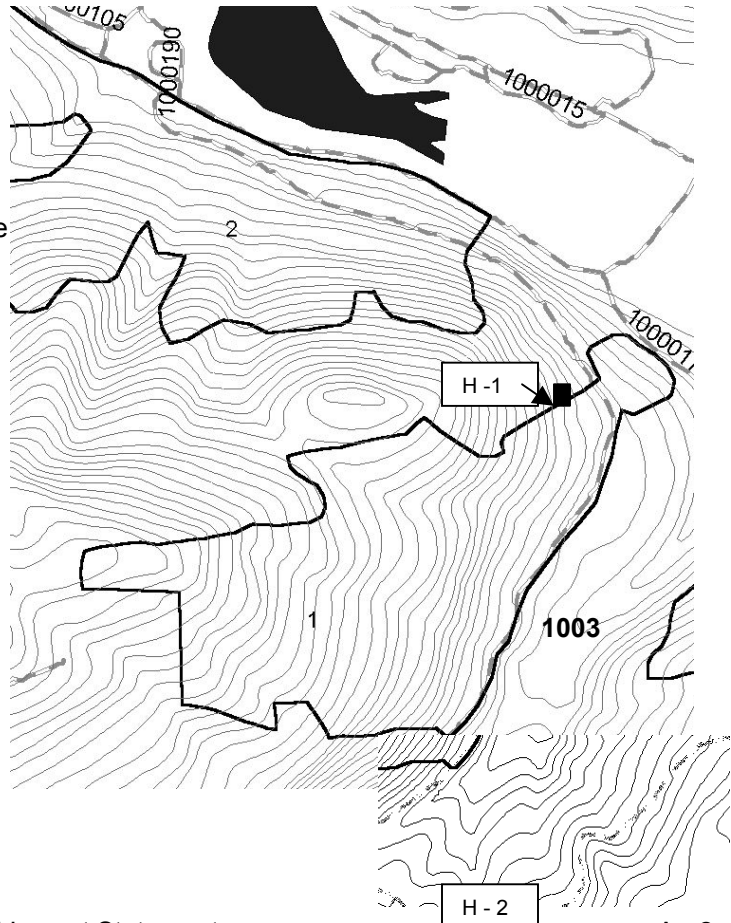
**Stand Health:** There is heavy snow damage in some of the riparian areas. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to 160 square feet in B1(see map) and 120 square feet in B2. Leave all redcedar > 12" dbh.

**Landings:** Two landings identified: H1 and H2

**Logging Operations:** Contract require flaggers during helicopter operations.

**Road construction/Reconstruction:** None



<b>Shore Nuf Unit 2</b>	
<b>Stand Number (s): 6268, 6348, 6462, 6181, 16994</b>	
<b>Location (Township, Range, Section): T. 10S., R. 6E., Sec. 18, N1/2</b>	
<b>LMP Allocations: 11c = 5 acres, 11d = 91 acres, 11f = 12 acres</b>	
<b>Average Slope = 50%</b>	<b>Elevation – 2000 ft.</b>
<b>Estimated Unit Size = 108 Acres</b>	<b>Estimated Volume = 1000 mbf</b>
<b>Silvicultural Prescription - HTH</b>	<b>Logging Method = 100% Helicopter</b>

**Key Points:** Unit is located across from Hoover Campground. The entire unit is located with the Bald Eagle Management Area (BEMA)

**Stand Conditions:** The stand is predominantly Douglas-fir 9 to 21” in diameter with a minor component of western hemlock and western redcedar. There is a very scattered residual component of approximately 400 year old Douglas-fir. Total basal area is 220 square feet per acre. The stand has been previously logged and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** There are three root rot pockets (6 ac, 3 ac., 2 ac.) identified along the west portion of the unit. The unit also contains moderate amounts of windthrow and snow breakage throughout the unit. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to 160 square feet of basal area in area C1 (see map) and in area C2 leave 120 square feet. Leave all redcedar and old growth Douglas-fir. In root rot pockets, leave **only** redcedar and bigleaf maple.

Create wider spacing on flatter ground within 100 feet of Blowout Road for visual diversity. Coordinate with visual quality specialist during marking and cutting operations for individual tree removal to achieve desired visual objective. Mark take trees.

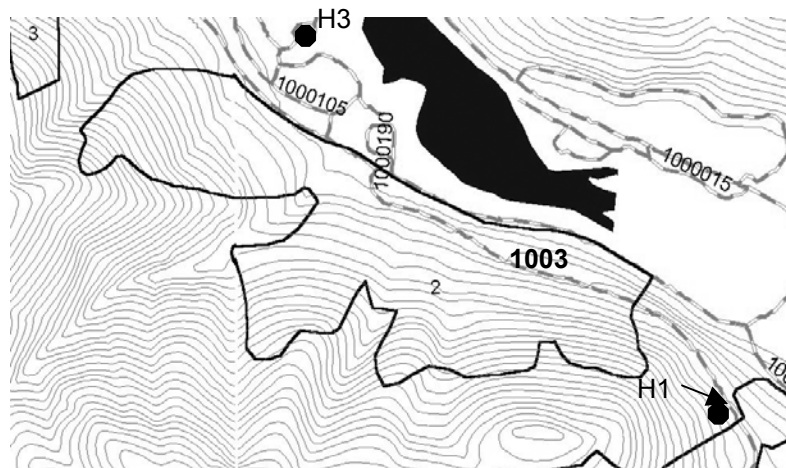
**Landings: Two landings identified:**

H1: Will use the landing in Unit 1 for the eastern portion of the unit.

H3: Use the boat ramp parking area at Hoover campground – this will require flying logs over the Blowout Road. Area will need to be cleaned up by March 1<sup>st</sup>. Agreement needs to be made with concessionaire.

**Logging Operations:** Protect improvements within the campground. Provide flaggers on 1003 rd during yarding.

**Road construction/Reconstruction:** Reconstruction required on the existing private spur located across from Hoover C.G. After hauling is complete, repair condition of campground road.



<b>Shore Nuf Unit 3</b>	
<b>Stand Number: 24690</b>	
<b>Location (Township, Range, Section) T. 10S., R. 5E., Sec. 12, WM</b>	
<b>LMP Allocations: 11d = 7 acres</b>	
<b>Average Slope = 50%</b>	<b>Elevation = 2000 ft.</b>
<b>Estimated Unit Size = 7 acres</b>	<b>Estimated Volume = 50 mbf</b>
<b>Silvicultural Prescription - HTH</b>	<b>Logging Method – 100% Helicopter</b>

**Key Points:** Objective is to have an undulating edge along the private land clearcut. Thin to soften the edge effect created by the adjacent clear cut on private land. High priority to remove downed material (8-12" diameter) from snow breakage.

**Unit Access:** Unit is located at the edge of the clearcut on private land across from Hoover Campground. Unit extends along the top and western portion of the clearcut.

**Stand Conditions:** The stand is predominantly Douglas-fir 14.5 in diameter with a minor component of western hemlock and western redcedar. Total basal area is 150 - 200 square feet per acre. The stand has been previously logged and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

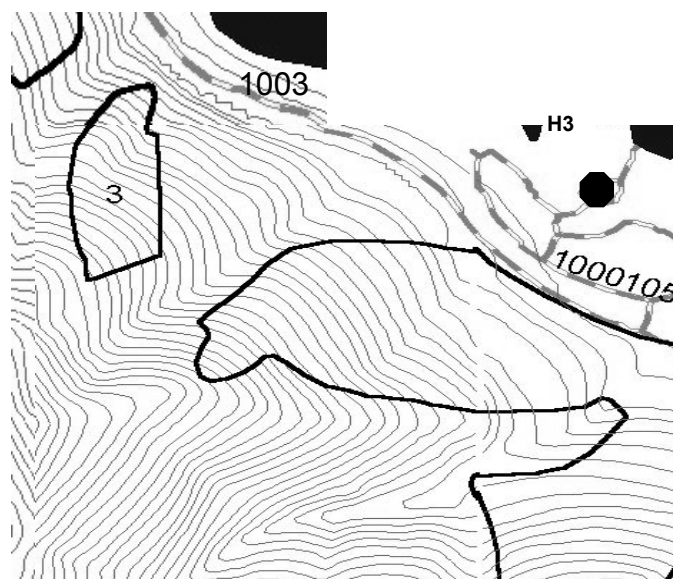
**Stand Health:** There is medium – high amounts of snow breakage in the stand and heavy areas of fuel due to self-thinning due to competition mortality. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to an average basal area of 160 square feet. Leave all redcedar >12" dbh. Coordinate marking with visual quality specialist to create edge effect adjacent to the private clearcut.

**Landings:** H3

**Logging Operations:** A flagger is required during helicopter operations.

**Road Construction/ Reconstruction:** Use existing 1003 road.



Shore Nuf Unit 4	
Stand Number: 24690	
Location (Township, Range, Section): T. 10S., R. 5E., Sec. 12, SE1/4, WM	
LMP Allocations	11d = 57 acres 12b = 12 acres
Average Slope = 50%	Elevation = 2200
Estimated Unit Size = 69 acres	Estimated Volume = 700 mbf
Silvicultural Prescription - HTH	Logging Method = 100% Helicopter

**Unit Access:** This unit is located uphill from the Stahlman Summer home tract, adjacent to the boundary for Unit 30.

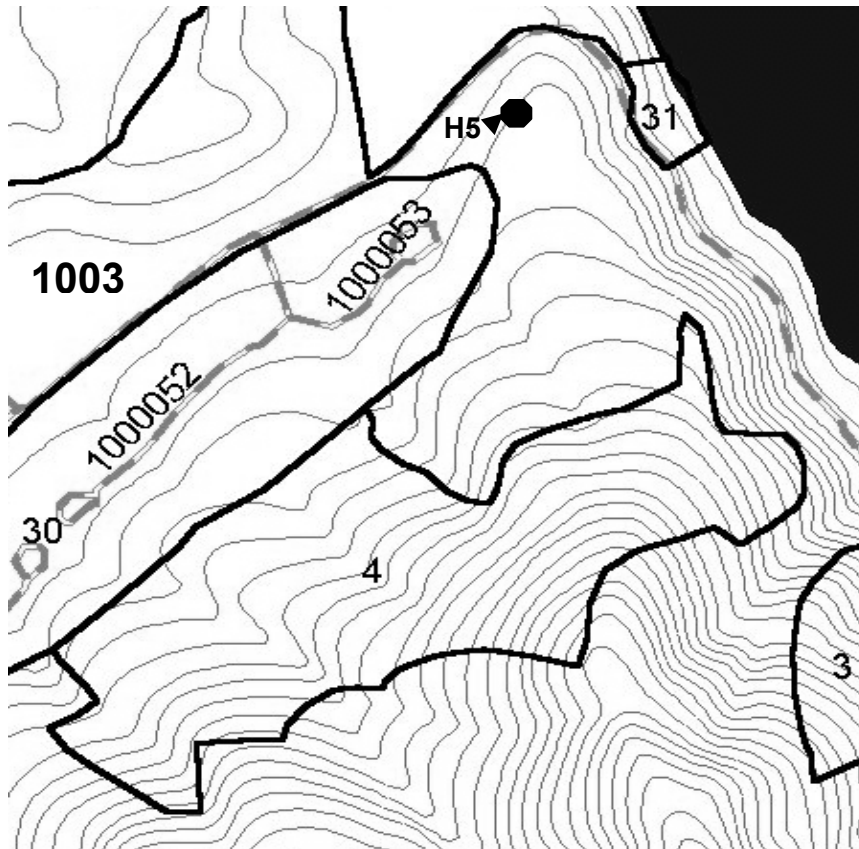
**Stand Conditions:** The stand is predominantly Douglas-fir 14.5 in diameter with a minor component of western hemlock and western redcedar. There is a very scattered residual component of approximately 400 year old Douglas-fir. Total basal area is 220 square feet per acre. The stand has been previously logged and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** There is light snow breakage in the stand and heavy areas of fuel due to self-thinning due to competition mortality. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives.

**Marking:** Leave the best dominant and co-dominant trees to an average basal area of 160 square feet. Leave all redcedar >12" dbh.

**Landings:** H5

**Road Construction/ Reconstruction:** Construct 0.1 miles of temporary road to H5 landing.



<b>Shore Nuf Unit 5</b>	
<b>Stand Number: 6040</b>	
<b>Location (Township, Range, Section): T. 10S., R. 5E., Sec. 13, NW1/4, WM</b>	
<b>LMP Allocations</b>	11d = 28 acres 12b = 1 acre
<b>Average Slope = Range from 20-70%</b>	<b>Elevation: 2200</b>
<b>Estimated Unit Size = 29 acres</b>	<b>Estimated Volume = 300 mbf</b>
<b>Silvicultural Prescription – HTH</b>	<b>Logging Method – 100% Helicopter</b>

**Key Points:** This unit is located above the Stahlman Summer Homes and along the Stahlman trail. This unit also contains several heavily thinned areas below the Stahlman trail to create openings to allow for better views of the lake.

**Stand Conditions:** The stand is predominantly Douglas-fir 14.5 in diameter with a minor component of western hemlock and western redcedar. Total basal area is 240 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape.

**Stand Health:** A *Phellinus* root rot pocket, approximately 3 acres, has been identified. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

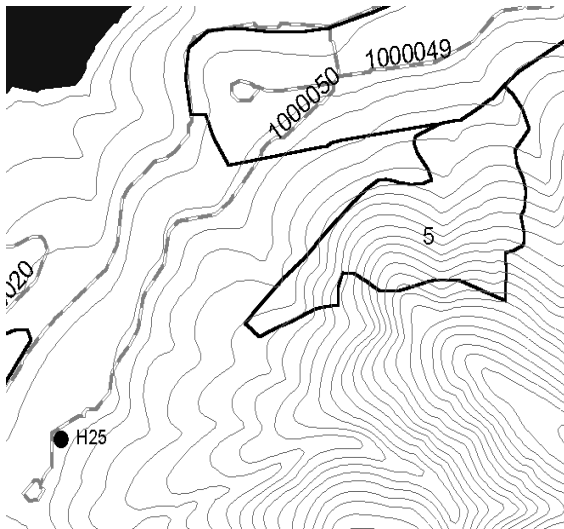
**Layout:** Coordinate with Recreation Specialist for layout of visual openings along the Stahlman trail.

**Marking:** Canopy closure range from 20-50% along the trail. 50-70% in the rest of the unit. Leave the best dominant and co-dominant trees to an average basal area of 140 square feet per acre. Leave all redcedar >12" dbh. In root rot pockets, remove all Douglas-fir and hemlock, leave all redcedar.

See Recreation specialist prior to layout and marking to identify visual openings. There are up to eight visual emphasis areas along approximately 1300 feet of the trail that have been identified. This segment along the trail was flagged with 3 pink/black stripped ribbons at each end of the visual emphasis area. This emphasis areas drops approximately 200-300 feet below the trail. Within the visual emphasis area, there are 8 flagged stations with a single pink/black ribbon where variable density thinnings will be applied to gain better views of the lake. Coordinate with visual quality specialist during cutting operations for individual tree removal to achieve desired visual objective.

**Landings:** Use landing H25. .

**Road Construction/ Reconstruction:** Use existing 10-050 rd.



Shore Nuf Unit 6	
Stand Numbers: 17022	
Location (Township, Range, Section): T. 10S., R. 5E., Sec. 14, SE1/4, WM	
LMP Allocations: 11d = 9 acres	
Average Slope = Range 30-70%	Elevation = 2000 ft.
Estimated Unit Size = 9 acres	Estimated Volume = 70 mbf
Silvicultural Prescription - HTH	Logging Method – 100% Helicopter

**Key Points:** Unit is mostly within riparian areas.

**Stand Conditions:** The stand is predominantly Douglas-fir 14.5 in diameter with a minor component of western hemlock and western redcedar. Total basal area is 240 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

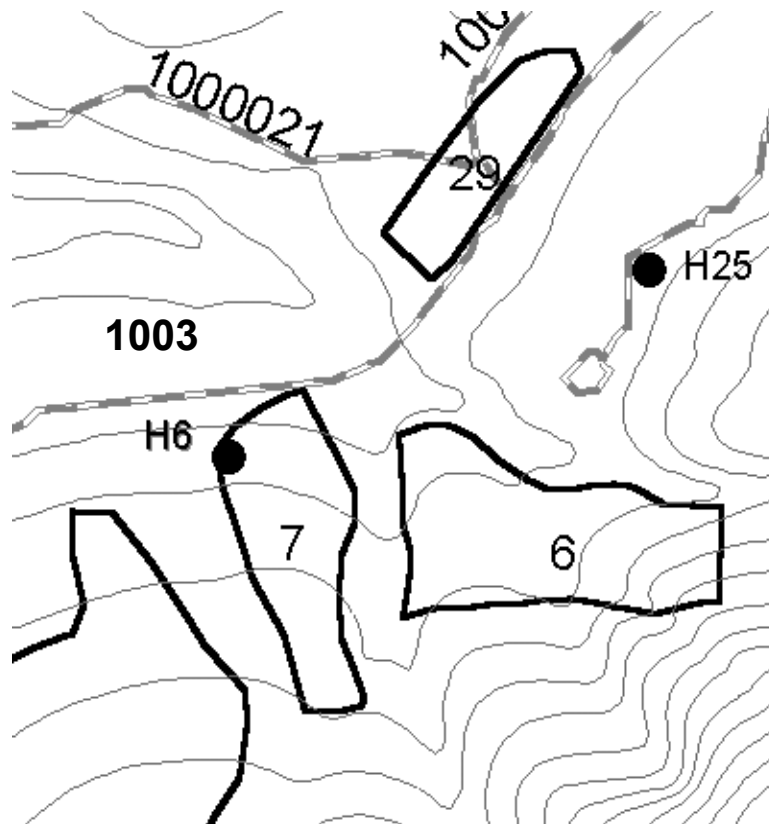
**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

A root rot pocket has been identified along the west boundary (approx. 3 acres).

**Marking:** Leave the best dominant and co-dominant trees to an average basal area of 140 square feet per acre. Leave all redcedar > 12" dbh. In root rot pockets, leave **only** redcedar and bigleaf maple.

**Landings:** Landing H25

**Road Construction/ Reconstruction:** Use existing road 10-050





Shore Nuf Unit 7	
Stand Number: 17037	
Location (Township, Range, Section): T. 10S., R. 5E., Sec. 14, SE1/4, WM	
LMP Allocations: 11d = 6 acres	
Average Slope = Range 10-30%	Elevation = 2000 ft.
Estimated Unit Size = 6 acres	Estimated Volume = 50 mbf
Silvicultural Prescription – HTH	Logging Method = 100% Tractor (Possible to use horse logging)

**Key Points:** Opportunity with this unit to use as a showcase for timber harvest. Possibly horse logging. Flat unit with easy access near Cove Creek C.G.

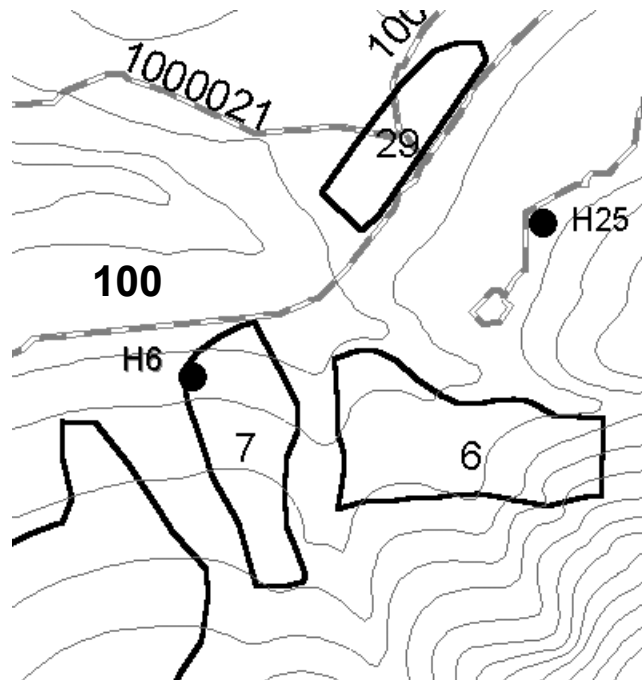
**Stand Conditions:** The stand is predominantly Douglas-fir 9 to 21" in diameter with a minor component of western hemlock and western redcedar. Total basal area is 240 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to an average basal area of 140 square feet per acre. Leave all redcedar >12".

**Landings:** Landing H6 Logs could be tractor yarded to the road and self loaded – no need for a landing.

**Road Construction/ Reconstruction:** Construct short temp. road (150 ft.) to landing H6 beyond the water system building for Cove Creek C.G.





<b>Shore Nuf Unit 9</b>	
<b>Stand Number: 17032</b>	
<b>Location (Township, Range, Section): T. 10S., R. 5E., Sec. 22, NE1/4, WM</b>	
<b>LMP Allocations: 11c = 29 acres, 11d = 3 acres</b>	
<b>Average Slope = 60%</b>	<b>Elevation = 2200</b>
<b>Estimated Unit Size = 32 acres</b>	<b>Estimated Volume = 300 mbf</b>
<b>Silvicultural Prescription – HTH</b>	<b>Logging Method – 100% Helicopter</b>

**Unit Access:** Unit is located uphill from the 10-084 road.

**Stand Conditions:** The stand is predominantly Douglas-fir 9-21" in diameter with a minor component of western hemlock and western redcedar. Total basal area is 220 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

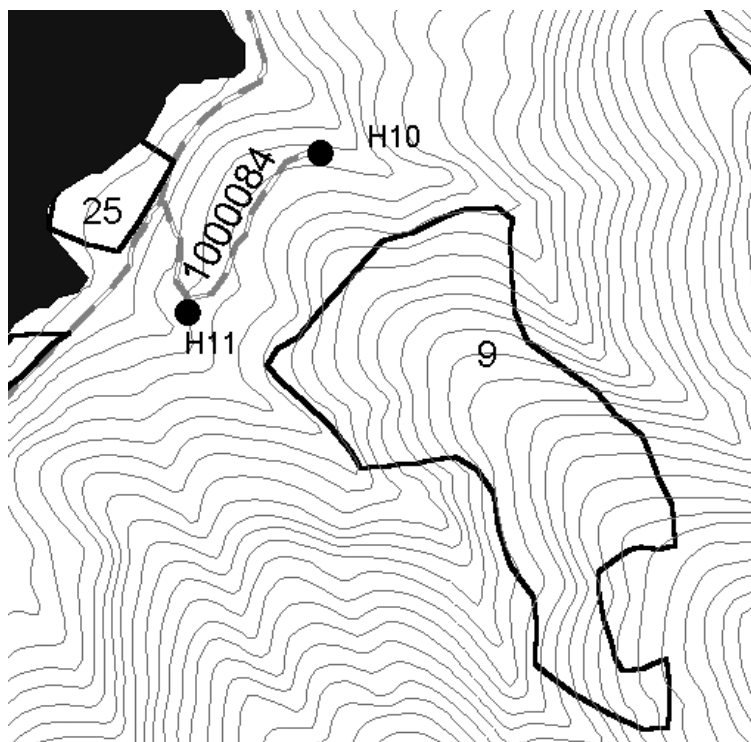
**Stand Health:** Patches of heavy snow breakage. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Layout:** Follow established flagging. Where riparian buffer falls outside the unit boundary, follow flagged unit boundary to avoid unstable soils & rocky areas.

**Marking:** Leave the best dominant and co-dominant trees to an average basal area of 140 square feet per acre. Leave all redcedar >12".

**Landings:** Use existing landings **H10** and **H11** along the 10-084 road. If only one landing can be used, recommended to increase size of the landing at the end of the road and obliterate the lower landing.

**Road Construction/ Reconstruction:** Reconstruct 0.2 miles 05 road 10-084



Shore Nuf Unit 10	
Stand Number: 7052	
Location (Township, Range, Section): T. 10S., R. 5E., Sec. 21, SW1/4, WM	
LMP Allocations: 11d = 49 acres (100% COE Lands)	
Average Slope = 70%	Elevation = 2000 ft.
Estimated Unit Size = 49 acres	Estimated Volume = 450 mbf
Silvicultural Prescription – HTH	Logging Method – 100% Helicopter

**Unit Access:** Unit is located adjacent to the reservoir at the point due east of the Blowout Arm.

**Stand Conditions:** The stand is predominantly Douglas-fir 11.3 in diameter with a minor component of western hemlock and western redcedar. There is a scattered old growth component of Douglas-fir, redcedar and hemlock. Total basal area is 260 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** Root rot pocket, approximately 3 acres, identified in unit. Douglas-fir bark beetle has been active in the stand. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

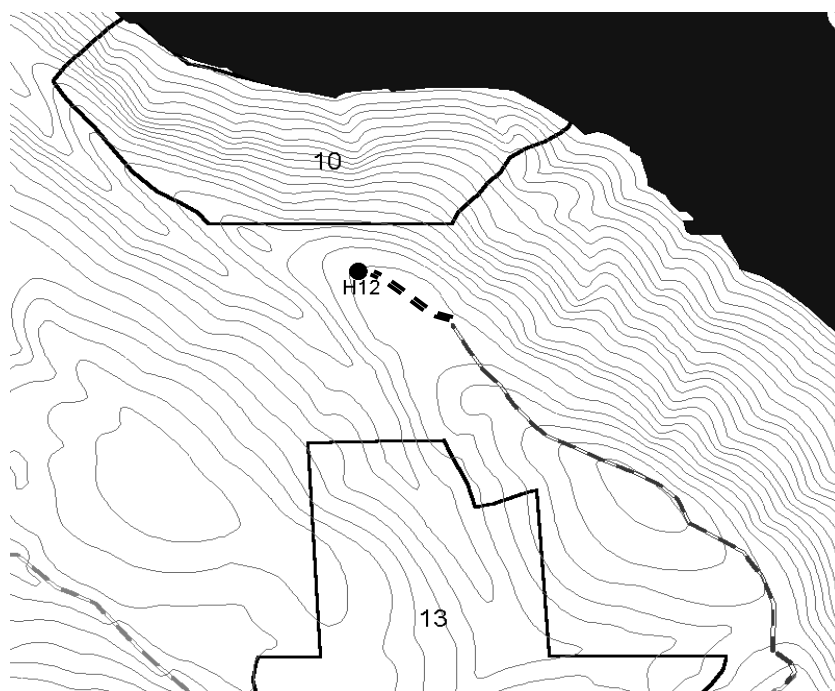
**Marking:** Leave the best dominant and co-dominant trees to a basal area of 140 square feet per acre. Leave all redcedar >12" dbh and all trees over 30" dbh. In root rot pockets mark all Douglas-fir and hemlock for removal and leave all redcedar.

**Landings:** Use landing H12 on private land.

**Road construction/Reconstruction:** Need approximately 350 feet of temporary road construction to connect the existing FS road to the private road. Need to obtain ROW to use private road.

This option avoids using the private road off the 530 road and avoids an approximate 19-21% adverse grade on native surface for 400-500 ft. Truck assist would also be required

Reconstruction is needed along the existing road through the unit to re-establish culverts and add surface rock.



<b>Shore Nuf Unit 11</b>	
<b>Stand Number: 6709, 6954</b>	
<b>Location (Township, Range, Section): T. 10S., R. 5E., Sec. 18, SE1/4 and, T. 10S., R. 5E., Sec. 19, NE1/4 and, T. 10S., R. 5E., Sec. 20, NW1/4, WM</b>	
<b>LMP Allocations: 11d = 119 acres (100% COE land)</b>	
<b>Average Slope = 60%</b>	<b>Elevation = 1900 ft.</b>
<b>Estimated Unit Size = 119 acres</b>	<b>Estimated Volume = 1200 mbf</b>
<b>Silvicultural Prescription – HTH</b>	<b>Logging Method = 34% Helicopter 66% Skyline</b>

**Stand Conditions:** The stand is predominantly Douglas-fir 9 to 21” in diameter with a minor component of western hemlock and western redcedar. There is a scattered old growth component of Douglas-fir. Total basal area is 260 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** Douglas-fir bark beetle has been active in this stand. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to a basal area of 180 square feet per acre in area M1( see map) and 140 square feet per acre in area M2. Leave all redcedar >12” dbh and all trees over 30” dbh. In root rot pockets mark all Douglas-fir and hemlock for removal and leave all redcedar. Leave larger trees and ones with blazes along the existing historic trail on the east side of the unit.

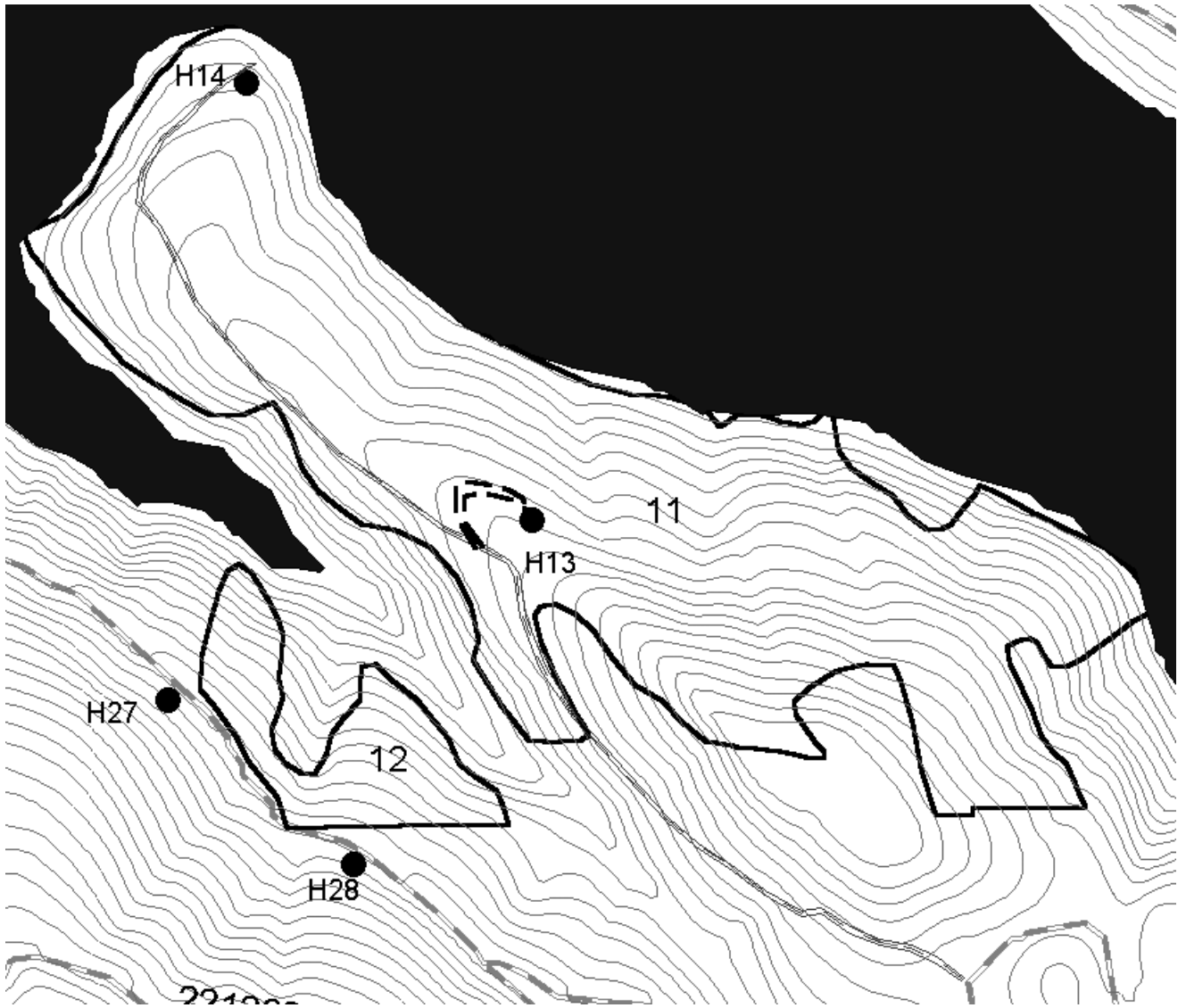
**Landings:** Use **H13 and 14** for helicopter landing, as designated on map. Skyline landings to be located along the access road throughout the unit. Minimize the number of skyline corridors to any one landing. Logger designated. Use trailhead site as a possible landing in order to create parking area when complete. Coordinate with land owner about trailhead site location and trail crossing private property.

**Heritage Resources:** Protect the integrity of the historic trail and lookout east of the unit. Brush out the trail – possibly use as logger access. Do not disturb existing telephone line or other historic items.

**Road construction/Reconstruction:** Need approximately 0.1 miles of temporary road construction along the non-system road off the 2212. This will accommodate several short spur roads to skyline landings.

Reconstruct the existing road 0.7 miles, through the unit to allow for winter haul. Decommission after harvest operations.

Install gate or construct barricade at jct. with 2212 road and again at private land boundary.



Shore Nuf Unit 12	
Stand Number: 6970	
Location (Township, Range, Section): T. 10S., R. 5E., Sec. 19, NE1/4, WM	
LMP Allocations: 11d = 13 acres (100% COE lands)	
Average Slope = 50%	Elevation = 1800
Estimated Unit Size = 13 acres	Estimated Volume = 130 mbf
Silvicultural Prescription – HTH	Logging Method – 100% Skyline

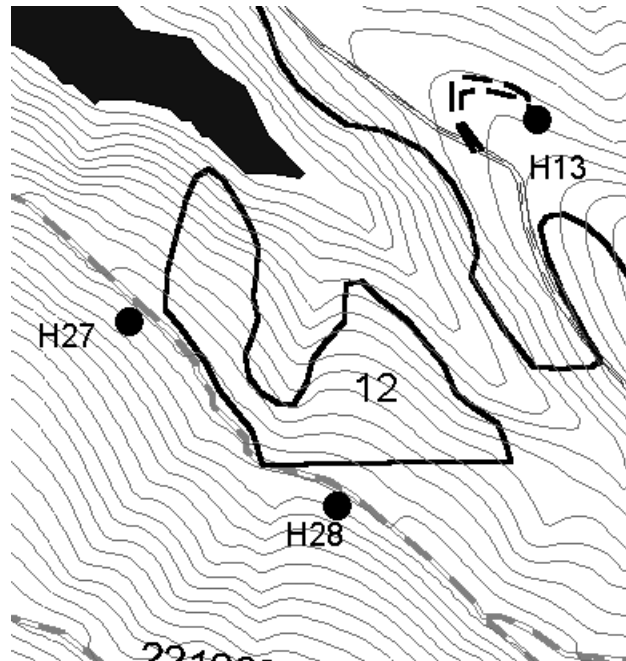
**Stand Conditions:** The stand is predominantly Douglas-fir and western hemlock 12.8” in diameter with a minor component of western redcedar. There is a scattered old growth component of Douglas-fir. Total basal area is 260 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** There is light dwarf mistletoe in the western hemlock. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to a basal area of 140 square feet per acre. Leave redcedar over 14” dbh. Leave all old growth.

**Landings:** Use existing landings, H27, H28. Landing on the eastern corner will need to have skyline ROW to access unit across private land.

**Road construction/Reconstruction:** Need to complete repairs on Kinney Creek road along the haul route. Asphalt patching & roadside brushing.



Shore Nuf Unit 13	
Stand Number: 7526	
Location (Township, Range, Section): T. 10S., R. 5E., Sec. 30, NE1/4, WM	
LMP Allocations: 11c = 74 acres, 11d = 2 acres	
Average Slope = Range 20-40%	Elevation = 2400 ft.
Estimated Unit Size = 76 acres	Estimated Volume = 500 mbf
Silvicultural Prescription – HTH	Logging Method – 25% Processor/Forwarder 75% Skyline

**Key Points:** Unit is bordered by private land N, E, & W.

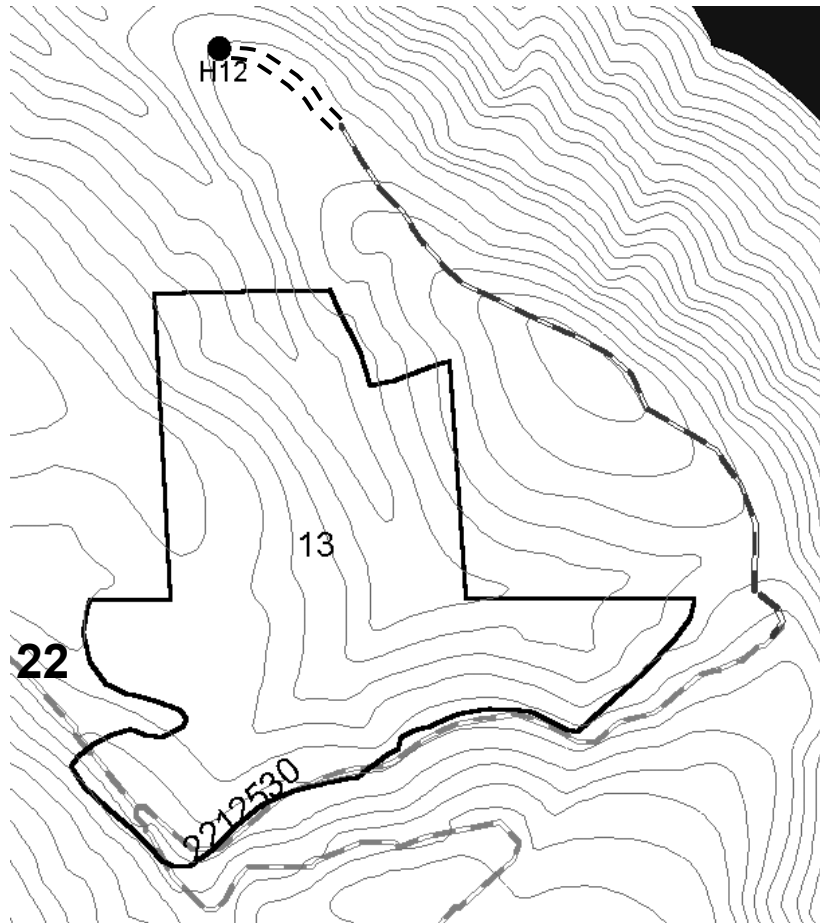
**Stand Conditions:** The stand is predominantly Douglas-fir and western hemlock 12.8” in diameter with a minor component of western redcedar. There is a scattered old growth component of Douglas-fir. Total basal area is 260 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** Heavy dwarf mistletoe in the hemlock. Patches of heavy snow breakage. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees at an average basal area of 140 square feet per acre. Leave all redcedar over 12”dbh. Favor pruned trees in leave tree selection.

**Landings:** Construct skyline landings along existing road within the unit and the 530 road.

Road construction/reconstruction: Same as Unit 10.





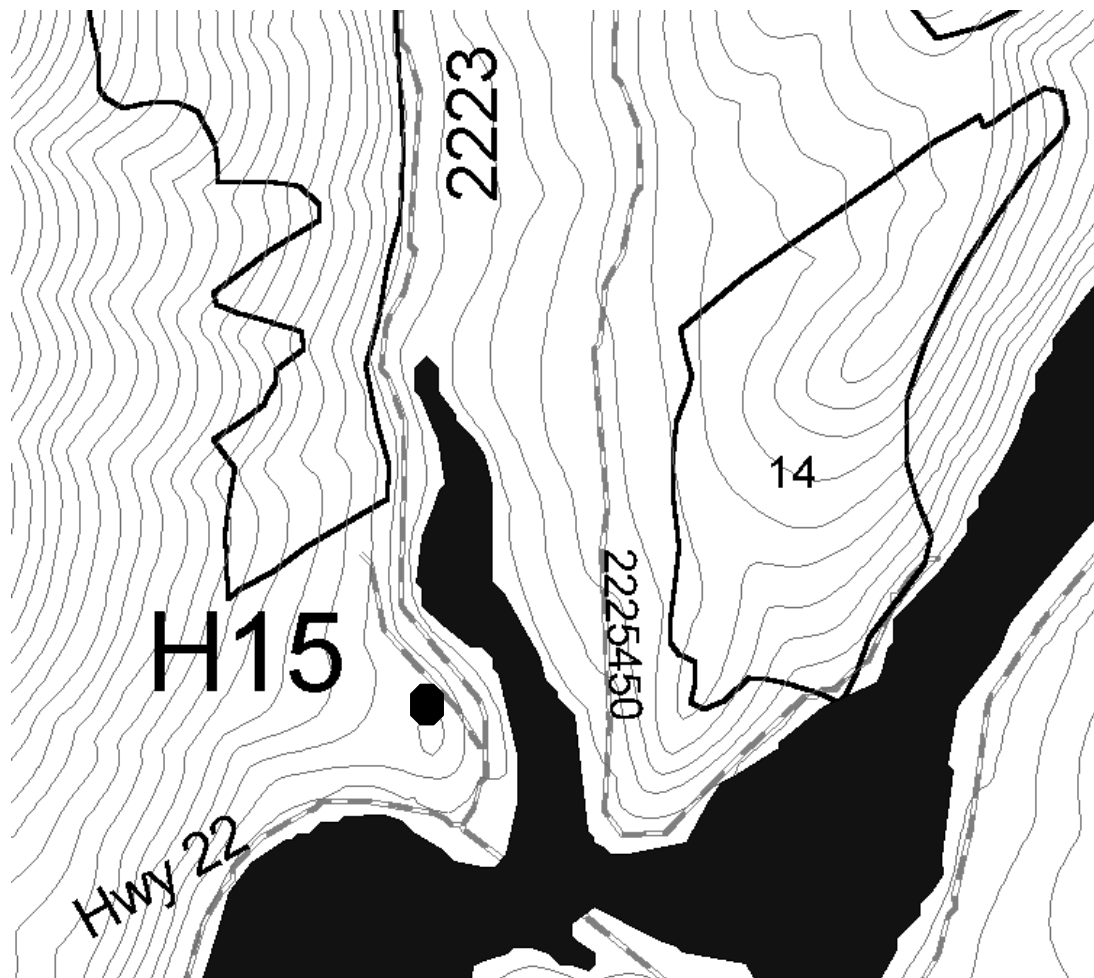
Shore Nuf Unit 14	
Stand Number: 4805	
Location (Township, Range, Section): T. 9S., R. 5E., Sec. 35, SE1/4 and, T. 9S., R. 5E., Sec. 36, SW1/4, WM	
LMP Allocations: 11f = 26 acres, 13a = 5 acres, 11d = 1 acres (COE Lands)	
Average Slope = 30%	Elevation = 2000 ft.
Estimated Unit Size = 32 acres	Estimated Volume = 320 mbf
Silvicultural Prescription – HTH	Proposed Logging Method – Helicopter

**Stand Conditions:** The stand is predominantly Douglas-fir 13” in diameter with a minor component of western hemlock golden chinquapin. Total basal area is 190 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The stand was pre-commercially thinned about 35 years ago. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** Minor snow damage. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to a basal area of 120 square feet per acre.

**Landings:** Use H15 located at the end of the 1<sup>st</sup> spur to the left on French Creek road. Landing is located adjacent to BPA and CPI powerlines. Landing is located immediately adjacent to Hwy. 22.



Shore Nuf Unit 15	
Stand Number: 3760	
Location (Township, Range, Section): T. 9S., R. 5E., Sec. 35, NW1/4 and, T. 9S., R. 5E., Sec. 36, NE1/4, WM	
LMP Allocations: 11a = 3 acres, 11c = 44 acres, 13a = 4 acres	
Average Slope = 50%	Elevation = 2400
Estimated Unit Size = 51 acres	Estimated Volume = 400 mbf
Silvicultural Prescription – HTH	Proposed Logging Method - Helicopter

**Stand Conditions:** The stand is predominantly Douglas-fir 17" in diameter with a minor component of golden chinquapin, bigleaf maple, and incense cedar. Total basal area is 215 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

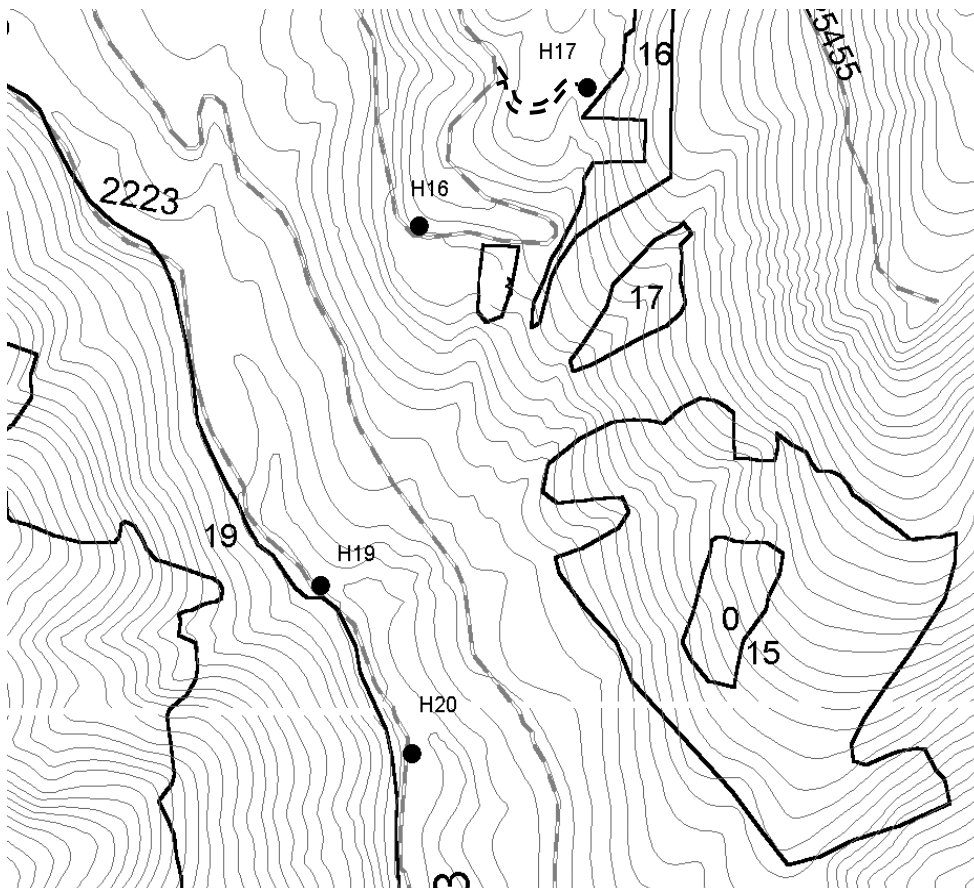
**Stand Health:** A *Phellinus* root rot pocket, < 3 acres, has been located in the stand. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to a basal area of 160 square feet per acre.

**Landings:** Use landing H16 located near the switchback along road 2225 approximately 1 mile from the junction of the 2223. May be able to fly all logs to H17 located 0.25 miles farther up the road (near Unit 16).

**Logging operations:** Provide flagger or other traffic control during helicopter operations.

**Road Construction/Reconstruction:** None



Shore Nuf Unit 16	
<b>Stand Number: 3892</b>	
<b>Location (Township, Range, Section): T. 9S., R. 5E., Sec. 26, SE1/4 and, T. 9S., R. 5E., Sec. 35, NE1/4, WM</b>	
<b>Average Slope = 40%</b>	<b>Elevation = 2700 ft.</b>
<b>Estimated Unit Size = 14 acres</b>	<b>Estimated Volume = 140</b>
<b>Silvicultural Prescription – HTH</b>	<b>Proposed Logging Method - Helicopter</b>

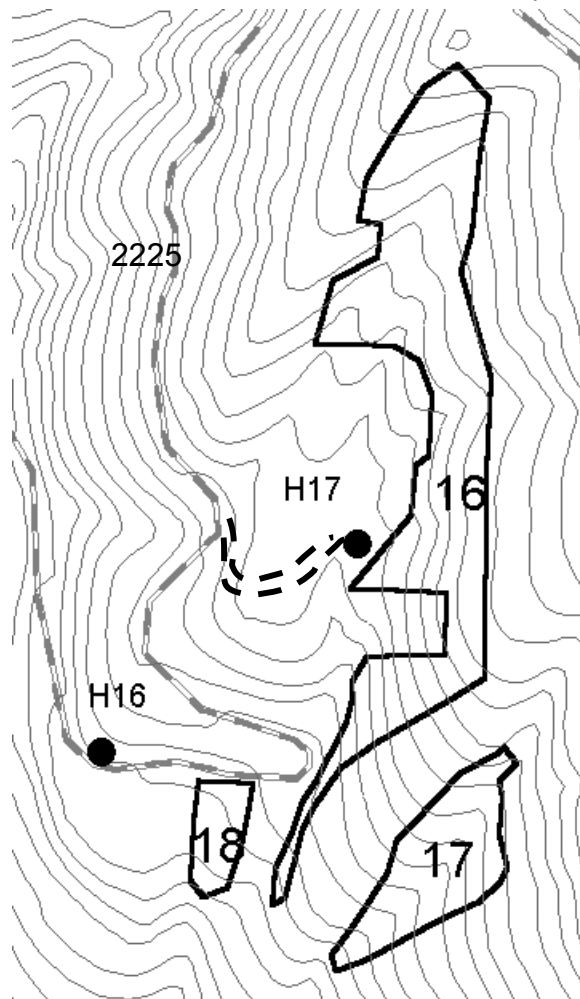
**Stand Conditions:** The stand is predominantly Douglas-fir and western hemlock 15” in diameter with a minor component of western redcedar, red alder, bigleaf maple, and golden chinquapin. Total basal area is 260 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Includes unit 16 and 18 as one unit. Layout boundary across riparian area along southern boundary. Leave the best dominant and co-dominant trees to a basal area of 160 square feet per acre. Leave all redcedar.

**Landings:** Use landing H17.

**Road Construction/Reconstruction:** Construct 0.1 miles of temporary road to H17.



<b>Shore Nuf Unit 17</b>	
<b>Stand Number (s)</b>	<b>3892</b>
<b>Location (Township, Range, Section): T. 9S., R. 5E., Sec. 26, SE1/4 and, T. 9S., R. 5E., Sec. 35, NE1/4, WM</b>	
<b>Average Slope = 40%</b>	<b>Elevation = 2700 ft.</b>
<b>Estimated Unit Size = 4 acres</b>	<b>Estimated Volume = 25 mbf</b>
<b>Silvicultural Prescription – HTH</b>	<b>Proposed Logging Method - Helicopter</b>

**Stand Conditions:** The stand is predominantly Douglas-fir and western hemlock 15” in diameter with a minor component of western redcedar, red alder, bigleaf maple, and golden chinquapin. Total basal area is 260 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

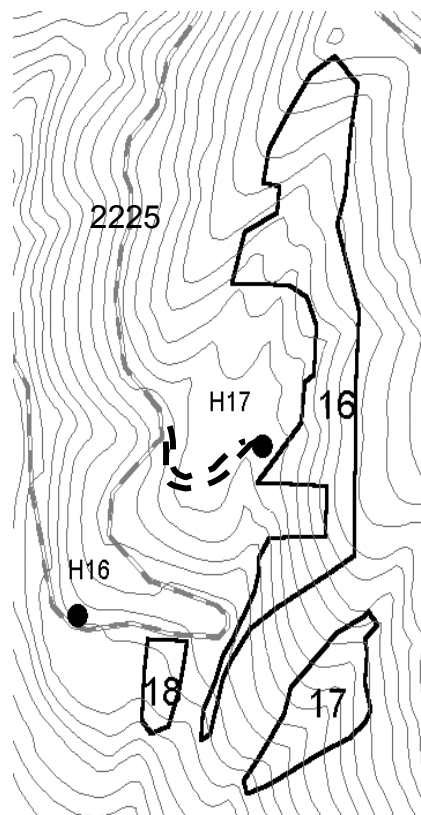
**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to a basal area of 160 square feet per acre. Leave all redcedar.

**Landings:** Use H16.

**Logging operations:** Provide flagger or other traffic control during helicopter operations.

**Road Construction/Reconstruction:** None



<b>Shore Nuf Unit 19</b>	
<b>Stand Number: 4156</b>	
<b>Location (Township, Range, Section): T. 9S., R. 5E., Sec. 26, SW1/4 and, T. 9S., R. 5E., Sec. 35, E1/2, WM</b>	
<b>LMP Allocations: 11a = 19 acres, 11c = 38 acres, 13a = 2 acres, 14a = 45 acres</b>	
<b>Average Slope = 60%</b>	<b>Elevation = 2200 ft.</b>
<b>Estimated Unit Size = 104 acres</b>	<b>Estimated volume = 750 mbf</b>
<b>Silvicultural Prescription – HTH</b>	<b>Proposed Logging Method - Helicopter</b>

**Key Points:** Recommend to log this unit during the winter months and close the French Creek road to public access. Landings can then be located along the road to minimize disturbance of creating additional landings, and future dispersed recreation sites.

**Stand Conditions:** The stand is predominantly Douglas-fir and western hemlock 12” in diameter with a minor component redcedar, red alder, bigleaf maple and golden chinquapin. There is a scattered remnant of Douglas-fir and hemlock old growth. Total basal area is 212 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

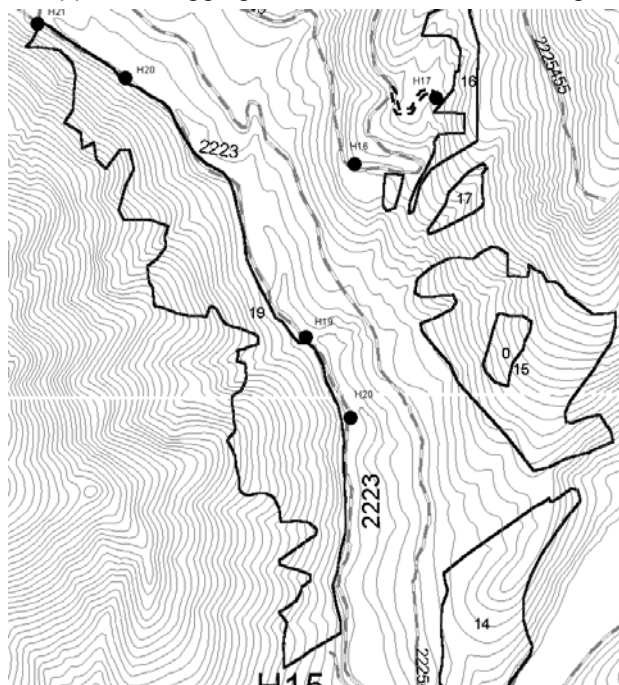
**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to a basal area of 140 square feet per acre. Leave redcedar over 14” dbh. Leave all redcedar and old growth. Mark take trees.

**Landings:** Develop existing pull-outs along French Creek road as Helicopter landings **H18, H19, H20, and H21** as designated on map. Coordinate final locations with Recreation. Hot deck logs to keep landings small if not using the road.

**Logging operations:** Provide flagger or other traffic control during helicopter operations.

**Road construction/Reconstruction:** One ERFO site exists at MP 0.7 that will need to be repaired prior to logging. Also need to coordinate logging of unit with construction of the French Creek road associated with the Detroit Sewer Project. Applies to logging in Units 14 and 19. Hauling of units 15, 16, 18, 20 and 21.



<b>Shore Nuf Unit 20</b>	
<b>Stand Number: 3870</b>	
<b>Location (Township, Range, Section): T. 9S., R. 5E., Sec. 26, SW1/4 and, T. 9S., R. 5E., Sec. 35, E1/2 and, T. 9S., R. 5E., Sec. 27, SE1/4, WM</b>	
<b>LMP Allocations: 14a = 13 acres</b>	
<b>Average Slope = 60%</b>	<b>Elevation = 2200 ft.</b>
<b>Estimated Unit Size = 13 acres</b>	<b>Estimated Volume = 104 mbf</b>
<b>Silvicultural Prescription – HTH</b>	<b>Proposed Logging Method = Helicopter</b>

**Key Points:** Recommend to log this unit during the winter months and close the French Creek road to public access. Landings can then be located along the road to minimize disturbance of creating additional landings, and future dispersed recreation sites.

**Stand Conditions:** : The stand is predominantly Douglas-fir and western hemlock 12” in diameter with a minor component redcedar, red alder, bigleaf maple and golden chinquapin. There is a scattered remnant of Douglas-fir and hemlock old growth. Total basal area is 212 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

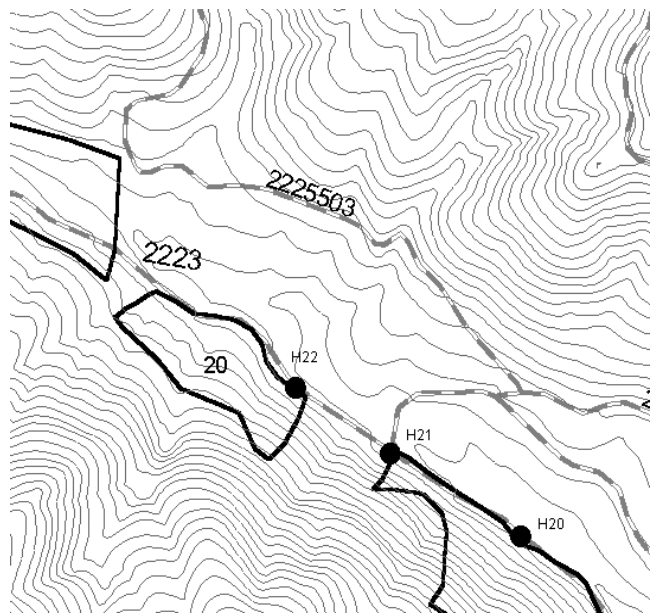
**Marking:** Leave the best dominant and co-dominant trees to a basal area of 140 square feet per acre. Leave redcedar and all old growth. Mark take trees.

**Marking within Riparian Reserves:** OK to thin through all riparian areas. Reserve all hardwood species.

**Landings:** Use existing pull-outs along the French Creek road for helicopter landing **H22**. Coordinate final locations with Recreation. Hot deck logs to keep landings small if not using the road.

**Logging operations:** Provide flagger or other traffic control during helicopter operations.

**Road Construction/Reconstruction:** None



<b>Shore Nuf Unit 21</b>	
<b>Stand Number: 3762</b>	
<b>Location (Township, Range, Section): T. 9S., R. 5E., Sec. 26 and, T. 9S., R. 5E., Sec. 35 and, T. 9S., R. 5E., Sec. 27, WM</b>	
<b>LMP Allocations: 13a = 26 acres, 14a = 71 acres</b>	
<b>Average Slope = 60%</b>	<b>Elevation = 2200 ft.</b>
<b>Estimated Unit Size = 97 acres</b>	<b>Estimated Volume = 500 mbf</b>
<b>Silvicultural Prescription - HTH</b>	<b>Proposed Logging Method - Skyline</b>

**Key Points:** This unit is located between the French Creek road and French Creek and stretches for approximately 1 mile along the French Creek road. The majority of volume is located along the ridge lines between riparian areas.

Recommend to log this unit during the winter months and close the French Creek road to public access. Landings can then be located along the road to minimize disturbance of creating additional landings, and future dispersed recreation sites.

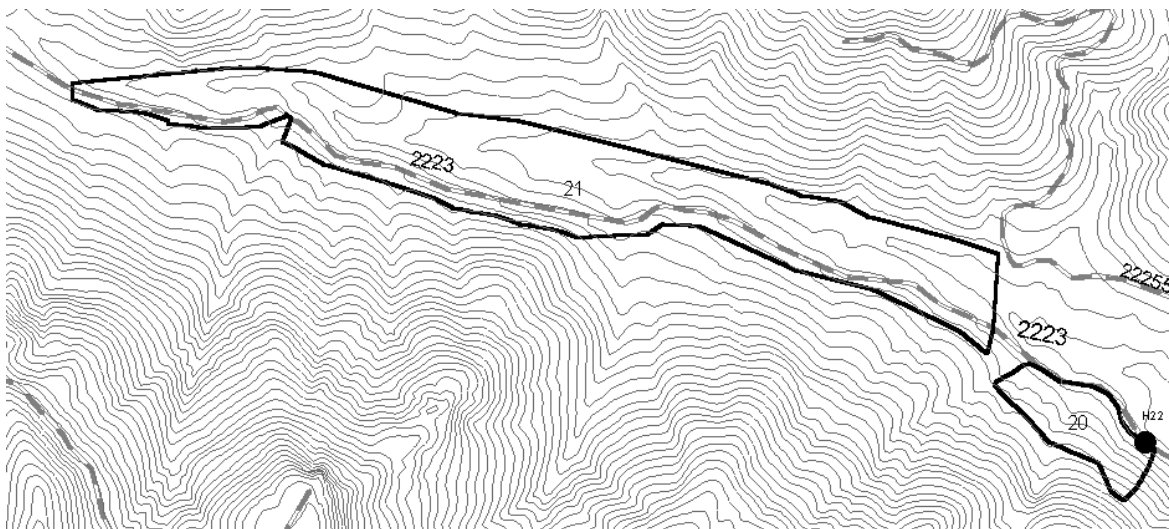
**Stand Conditions:** The stand is predominantly Douglas-fir and western hemlock 12" in diameter with a minor component redcedar, red alder, bigleaf maple and golden chinquapin. There is a scattered remnant of Douglas-fir and hemlock old growth. Total basal area is 212 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking: Individual tree marking of take trees.** Leave the best dominant and co-dominant trees to a basal area of 140 square feet per acre. Leave redcedar and all old growth.

**Landings:** Develop skyline landings along French Creek road at pull-outs, as needed. Coordinate final locations with Recreation. Hot deck logs to keep landings small if not using the road.

**Road Construction/Reconstruction:** None



<b>Shore Nuf Unit 22</b>	
<b>Stand Number (s): 5806, 16971, 16969, 17749</b>	
<b>Location (Township, Range, Section): T. 10S., R. 5E., Sec. 11, SW1/4 and T. 10S., R. 5E., Sec. 10, SE1/4, WM</b>	
<b>LMP Allocations: 11f = 64 acres, 11d = 31 acres (COE lands)</b>	
<b>Average Slope = 50%</b>	<b>Elevation = 1700 ft.</b>
<b>Estimated Unit Size = 95 acres</b>	<b>Estimated Volume =</b>
<b>Silvicultural Prescription – HTH</b>	<b>Proposed Logging Method – Helicopter</b>

**Key Points:** This unit is located on Piety Island. Includes Piety Island campground.

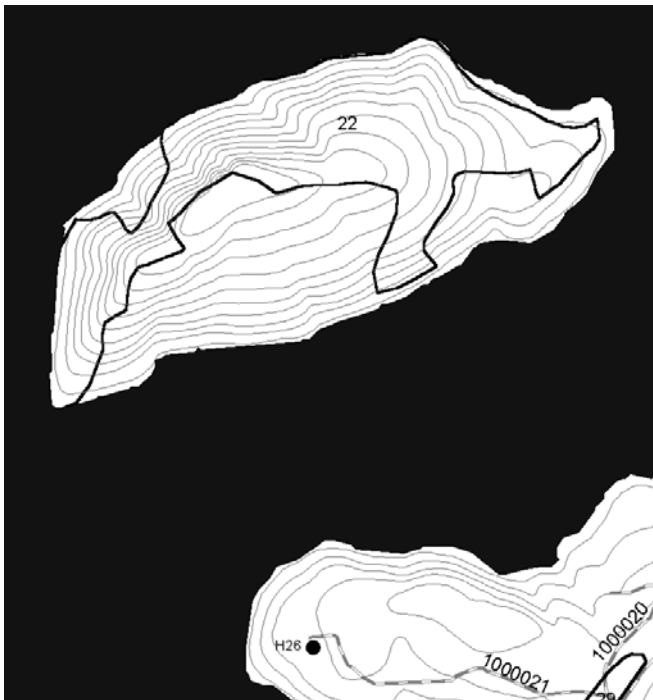
**Stand Conditions:** The stand is predominantly Douglas-fir 14” in diameter with a minor component of western hemlock and western redcedar. There is a very scattered remnant of old growth Douglas-fir. Total basal area is 257 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** There are scattered patches of snow breakage from January 2000 and windthrow from 1990.

**Marking:** Leave the best dominant and co-dominant trees to a basal area of 140 square feet per acre. Leave all redcedar and all old growth. Designate individual trees within the campground. Mark take trees within campground and within view of the trail.

**Landings:** Use landing H26

**Road construction/Reconstruction:** Reconstruct 0.5 miles of 1000-021 road.





<b>Shore Nuf Unit 23</b>	
<b>Stand Number (s): 5754, 16975</b>	
<b>Location (Township, Range, Section): T. 10S., R. 5E., Sec. 12, NW1/4, WM</b>	
<b>LMP Allocations: 11d = 115 acres (16 acres COE lands), 12b = 10 acres, 14a = 14 acres</b>	
<b>Average Slope = 20%</b>	<b>Elevation = 1600</b>
<b>Estimated Unit Size = 139 acres</b>	<b>Estimated Volume = 1500 mbf</b>
<b>Silvicultural Prescription – Visual/HTH</b>	<b>Proposed Logging Method:</b> Tractor = 75% (100 acres) Skyline = 25% (39 acres)

**Key Points:** Unit is located on the point across the reservoir from Detroit Flats. This unit has been subdivided into three smaller units. 23a is the eastern corner with tractor logging; 23b is the central portion with tractor logging and skyline along the shoreline; 23c is the area in and around the Sportsman's Club located in the SW portion of the unit.

**Stand Conditions:** The stand is predominantly Douglas-fir 15.9" in diameter with a minor component of western hemlock and western redcedar. Total basal area is 255 square feet per acre. The stand has been previously logged and burned and is about 70 years old. The plant association is western hemlock/dwarf Oregon grape-salal.

**Stand Health:** There is some old windthrow from 1990. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to a basal area of 140 square feet per acre. Leave redcedar over 12" dbh.

**Marking within Riparian Reserves:**

- #1 – east side 172 foot no cut buffer either side of creek. This is the boundary between 23a and 23b.
- #2 – west side 172 foot no cut buffer either side of creek. This is the boundary between 23b and 23c.

Lakeshore buffer = 100 foot on west facing boundary to avoid thinning in wind-prone areas. Northern boundary is OK to thin. Maintain trees that contribute to shoreline stability.

**Landings & Skid Trails:**

**Unit 23a:** Construct tractor landing across from temporary road to H5.

**Unit 23b:** Establish designated tractor & skyline landings along the temporary road through the unit.

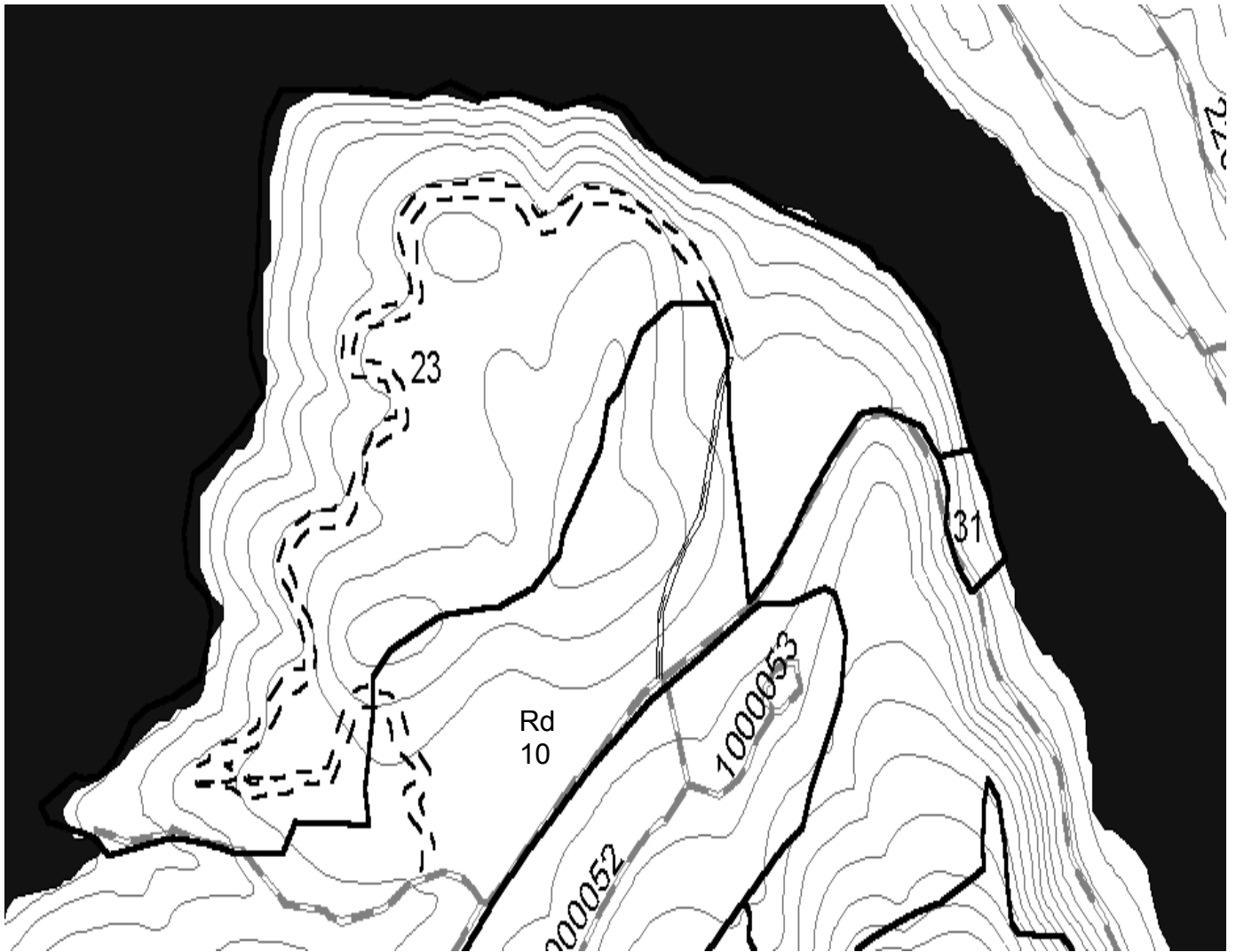
**Unit 23b:** Use existing roads within the Sportsman's Club area.

Tractor skid roads will be designated prior to construction.

**Heritage Resources:** Survey required before post sale sub-soiling.

**Hazard Trees:** As per the special use permit, hazard trees within the Sportsman's Club area are the responsibility of the permit holder.

**Road construction/Reconstruction:** Need to construct approximately 0.8 miles of temporary road through the unit to access skyline & tractor landings around the perimeter of the unit. Reconstruct approximately 0.2 miles of existing non-system road. Obliterate this road after the timber sale to prevent vehicle access.



Shore Nuf Unit 24	
Stand Number: 3762	
Location (Township, Range, Section) T. 10S., R. 5E., Sec. 21 and 22.	
LMP Allocations : 11d= 12 acres (8 acres COE lands)	
Average Slope = 50	Elevation = 1700
Estimated Unit Size = 12 acres	Estimated Volume = 24 mbf
Silvicultural Prescription – HTH	Proposed Logging Method - Skyline

**Key Points:** Visual thinning unit between the road and the reservoir near the Blowout arm of the reservoir. Objective is to create views of the lake through portions of the unit that will be thinned.

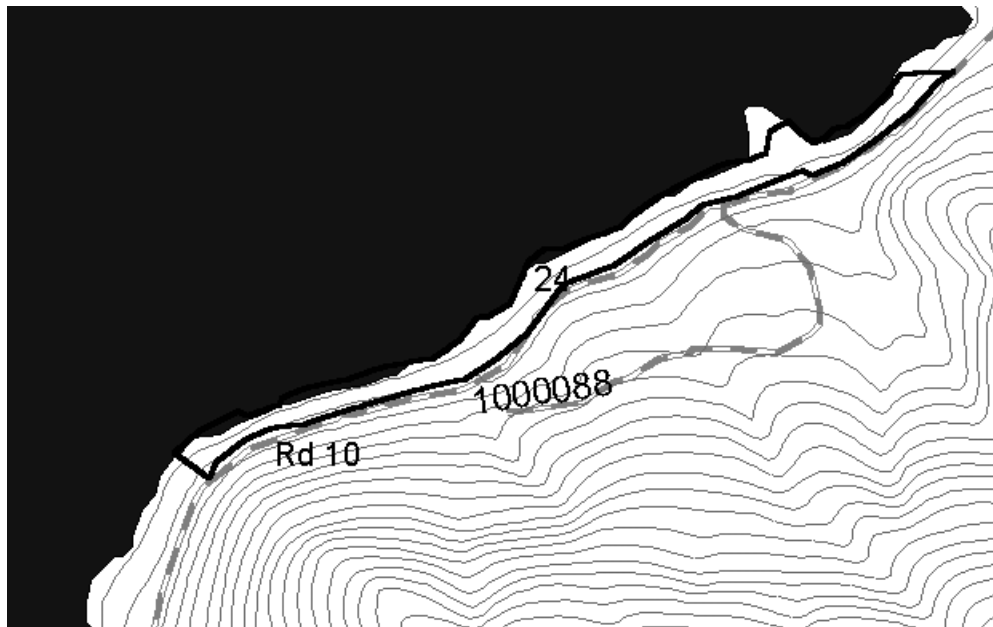
**Stand Conditions:** This stand is predominantly 70 year-old Douglas-fir 9” to 21” in diameter with a minor component of western hemlock and western redcedar. The stand was logged in the early 1900’s and burned in 1919.

**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to an average basal area of between 100 and 180 square feet per acre. Coordinate with visual quality specialist during marking and cutting operations for individual tree removal to achieve desired visual objective. Mark take trees.

**Landings:** Yard material to the Blowout Road with a single span yarder Hot deck logs to keep landings small if not using the road.

**Road Construction/Reconstruction:** Use existing road system.



<b>Shore Nuf Unit 25</b>	
<b>Stand Number:</b>	
<b>Location (Township, Range, Section): T. 10S., R. 5E., Sec. 15, WM</b>	
<b>LMP Allocations: 11d = 3 acres</b>	
<b>Average Slope = 50%</b>	<b>Elevation = 1700</b>
<b>Estimated Unit Size = 3 acres</b>	<b>Estimated Volume = 15 mbf</b>
<b>Silvicultural Prescription – Visual/HTH</b>	<b>Proposed Logging Method = Tractor</b>

**Key Points:** Thinning unit located across from the 10-084 road. Objective is to provide rehab opportunities, increase lighting and thin out suppressed trees in this popular dispersed camping area. A landing can be constructed near the entrance to this site to provide a parking area and blocking motorized access to the lower portion of the site.

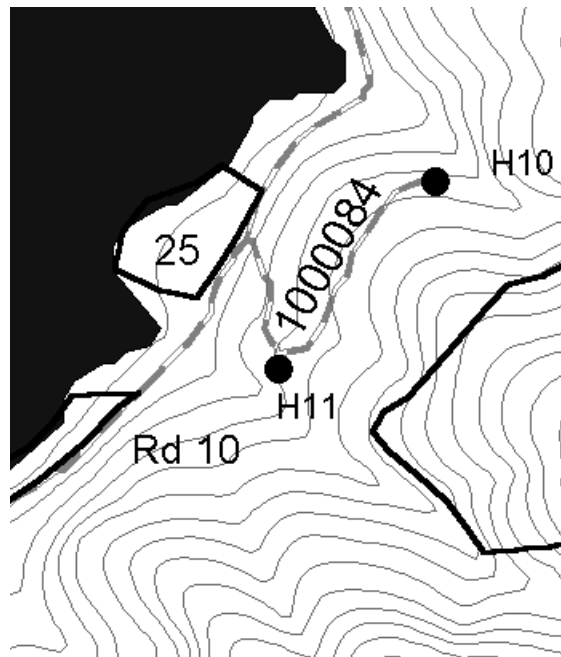
**Stand Conditions:** This stand is predominantly 70 year-old Douglas-fir 9” to 21” in diameter with a minor component of western hemlock and western redcedar. The stand was logged in the early 1900’s and burned in 1919.

**Stand Health:** Dispersed camping in this stand has created some compacted soils, which may affect tree health. Damage to tree boles has occurred due to human activity. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to an average basal area of between 100 and 180 square feet per acre. The stand will be marked under the supervision of the recreation planner to meet recreation objectives. Mark take trees.

**Landings:** Create tractor landing at the first pullout along the existing spur road. After completion of the unit, develop the landing into a parking for the dispersed area. Close off road to lower portion of the area.

**Road construction/Reconstruction:** Obliterate the road and sub-soil the area after sale along existing road and compacted campsites. Provide parking near the entrance. Coordinate with Recreation Planner.



Shore Nuf Unit 26	
Stand Number:	
Location (Township, Range, Section): T. 10S, R.5E, Sec. 16, WM	
Average Slope = 50%	Elevation = 1700 ft.
LMP Allocations: 11d = 6 acres (100% COE lands)	
Estimated Unit Size = 6 acres	Estimated Volume = 30 mbf
Silvicultural Prescription – Visual/HTH	Proposed Logging Method = Skyline

**Key Points:** Visual thinning unit between the road and the reservoir along the west edge of South Shore Campground. Objective is to create views of the lake through portions of the unit that will be thinned.

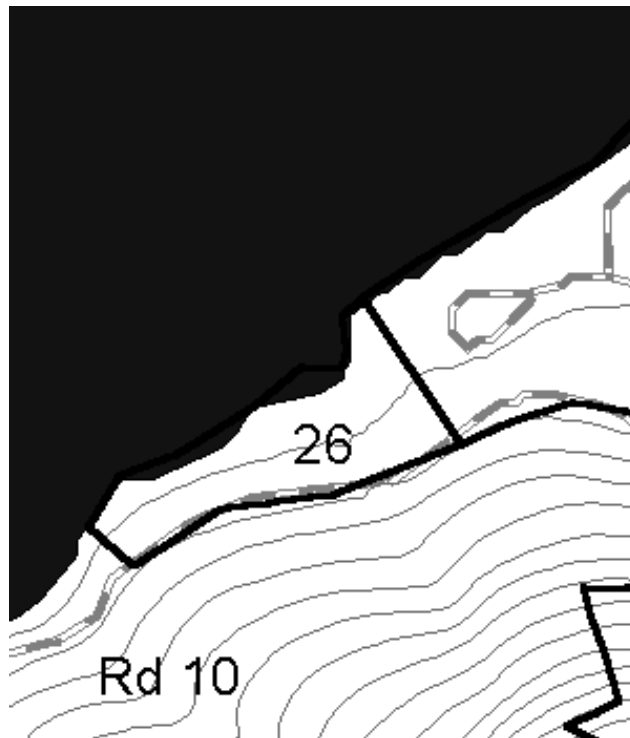
**Stand Conditions:** This stand is predominantly 70 year-old Douglas-fir 9” to 21” in diameter with a minor component of western hemlock and western redcedar. The stand was logged in the early 1900’s and burned in 1919.

**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to an average basal area of between 100 and 180 square feet per acre. Coordinate with visual quality specialist during marking and cutting operations for individual tree removal to achieve desired visual objective. Mark take trees.

**Landings:** Yard logs to the Blowout Road at various points along the unit . Hot deck logs to keep landings small if not using the road.

**Road construction/Reconstruction:** Use existing roads.



<b>Shore Nuf Unit 27</b>	
<b>Stand Number (s)</b>	
<b>Location (Township, Range, Section): T. 10S., R. 5E., Sec. 15, WM</b>	
<b>LMP Allocations: 11d = 28 acres (100% COE lands)</b>	
<b>Average Slope = 20%</b>	<b>Elevation = 1700 ft.</b>
<b>Estimated Unit Size = 28 acres</b>	<b>Estimated Volume = 100 mbf</b>
<b>Silvicultural Prescription: Visual/HTH</b>	<b>Proposed Logging Method = Tractor</b>

**Key Points:** Thinning unit located within South Shore Campground. Objective is to remove hazard trees, provide increased lighting to encourage understory development & screening, and thinned suppressed trees within the campground.

**Stand Conditions:** This stand is predominantly 70 year-old Douglas-fir 9” to 21” in diameter with a minor component of western hemlock and western redcedar. The stand was logged in the early 1900’s and burned in 1919. Thinning and hazard tree removal has occurred in this stand as part of managing the campground.

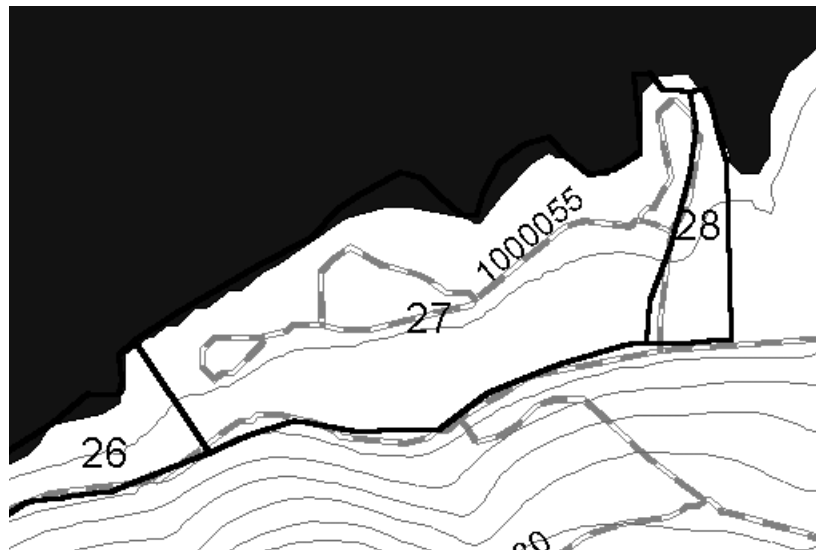
**Stand Health:** Soil compaction from campground facilities and use has adversely affected tree health. Damage to tree boles has occurred due to human use and may increase the incidence of decay organisms and insects. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Layout:** Mark boundary around the South Shore Campground Administrative boundary.

**Marking:** Mark to remove hazard trees in the campground and to reduce future mortality from competition. Leave the best dominant and co-dominant trees to an average of 140 square feet of basal area per acre except where hazard tree removal is necessary which might reduce basal area below that level. Mark take trees.

**Landings:** Yard logs to the existing road system through out the campground. Do not create any new skid roads or landings off the existing system. Skidder to remain on existing roads within the campground.

**Road construction/Reconstruction:** Use existing roads



Shore Nuf Unit 28	
<b>Stand Number (s):</b>	
<b>Location (Township, Range, Section): T. 10S., R. 5E., Sec. 15, WM</b>	
<b>LMP Allocations: 11a = 3 acres</b>	
<b>Average Slope = 50%</b>	<b>Elevation = 1700 ft.</b>
<b>Estimated Unit Size = 3 acres</b>	<b>Estimated Volume = 15 mbf</b>
<b>Silvicultural Prescription – Visual/HTH</b>	<b>Proposed Logging Method – Skyline</b>

**Key Points:** Visual thinning unit near the entrance to South Shore Campground and between the Blowout Road and the reservoir. Objective is to open stand to improve sight distance, and brighten campground entrance to give it a “sense of arrival or place.” Emphasis is on enhancing “large” scenic trees for visual variety.

**Stand Conditions:** This stand is predominantly 70 year-old Douglas-fir 9” to 21” in diameter with a minor component of western hemlock and western redcedar. The stand was logged in the early 1900’s and burned in 1919.

**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to an average basal area of between 100 and 180 square feet per acre. Emphasis is on leaving large “scenic” trees. Coordinate with visual quality specialist during marking and cutting operations for individual tree removal to achieve desired visual objective. Mark take trees.

**Landings:** Yard logs to the existing road system through out the campground. Do not create any new skid roads or landings off the existing system. Skidder to remain on existing roads within the campground.

**Road construction/Reconstruction:** Use existing roads



Shore Nuf Unit 29	
<b>Stand Number: 6204</b>	
<b>Location (Township, Range, Section): T. 10S., R. 5E., Sec. 14, WM</b>	
<b>LMP Allocations: 11d = 4 acres</b>	
<b>Average Slope = 10%</b>	<b>Elevation = 1800 ft.</b>
<b>Estimated Unit Size = 4 acres</b>	<b>Estimated Volume = 20 mbf</b>
<b>Silvicultural Prescription: Visual/HTH</b>	<b>Proposed Logging Method = Tractor or Processor/Forwarder</b>

**Key Points:** Visual thinning unit at the entrance to Cove Creek Campground. Objective is to open stand to improve sight distance from both directions, and brighten campground entrance to give it a “sense of arrival or place.”

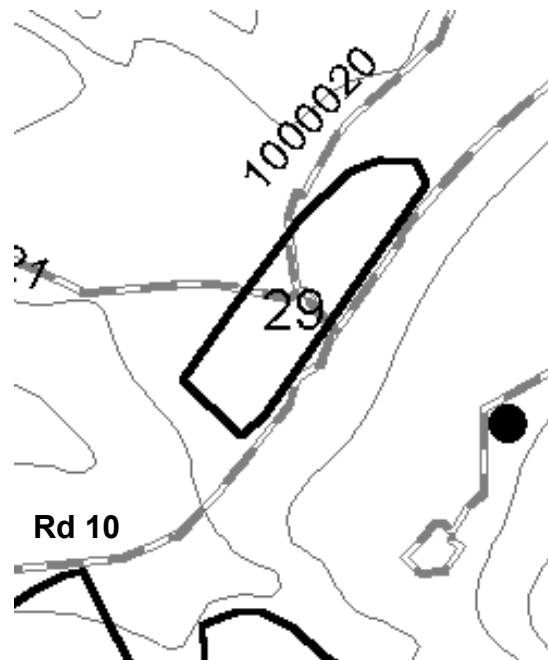
**Stand Conditions:** This stand is predominantly 70 year-old Douglas-fir 9” to 21” in diameter with a minor component of western hemlock and western redcedar. The stand was logged in the early 1900’s and burned in 1919.

**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to an average basal area of between 100 and 180 square feet per acre. Coordinate with visual quality specialist during marking and cutting operations for individual tree removal to achieve desired visual objective. Mark take trees.

**Landings:** Yard logs to the Blowout Road at various points along the unit . Hot deck logs to keep landings small if not using the road.

**Road construction/Reconstruction:** Use existing roads





<b>Shore Nuf Unit 30</b>	
<b>Stand Number (s): 17113</b>	
<b>Location (Township, Range, Section): T. 10S., R. 5E., Sec. 12</b>	
<b>LMP Allocations: 12b = 67 acres, 11d = 23 acres (COE lands)</b>	
<b>Average Slope = 15%</b>	<b>Elevation = 1900</b>
<b>Estimated Unit Size = 90 Acres</b>	<b>Estimated Volume – 180 mbf</b>
<b>Silvicultural Prescription - HTH</b>	<b>Proposed Logging Method – Helicopter Tractor or Horse Logging</b>

**Key Points:** Unit is located within the Stahlman Summer home area. Objectives within this unit are to remove hazard trees, provide increased lighting to encourage understory development & screening and promote visual variety, reduce fuel loading and remove suppressed trees. See the description under the alternatives section of the EIS for additional information.

**Stand Conditions:** This stand is predominantly 70 year-old Douglas-fir 9” to 21” in diameter with a minor component of western hemlock and western redcedar. The stand was logged in the early 1900’s and burned in 1919. Portions of the stand have been thinned within the past 10 years.

**Stand Health:** Soil compaction from summer home developments and use has adversely affected tree health. Damage to tree boles has occurred due to human use and may increase the incidence of decay organisms and insects. Some portions of the stand exceed recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** For areas of the stand not part of summer home lots, leave the best dominant and co-dominant trees to an average basal area of 140 square feet per acre. Leave all western redcedar. For areas within the lot boundaries of individual summer homes, remove hazard trees and intermediate and suppressed crown class trees where long-term stand health can be improved and/or increased sunlight to the ground is desired. A Silviculturist and the District special-use administrator should be present when marking begins. Individual tree marking to remove hazard trees and increase long-term vigor of the stand. Coordinate with Special Uses administrator for individual tree marking within summer home tract. Mark take trees only.

**Landings:** Yard logs to existing roads within the unit, H5 and H25. Avoid storing logs on driveways if possible. Hot deck logs to keep landings small. Discourage any new landings along Blowout road so not to create new dispersed sites, when possible.

**Logging Operations:** Protect improvements within the summer home tract.

**Road construction/Reconstruction:** Use existing roads



Shore Nuf Unit 31	
Stand Number (s):	
Location (Township, Range, Section): T. 10S., R. 5E., Sec. 12, WM	
LMP Allocations: 11f = 2 acres	
Average Slope = 50%	Elevation = 1700
Estimated Unit Size = 2 acres	Estimated Volume = 10 mbf
Silvicultural Prescription – Visual/HTH	Proposed Logging Method = Skyline

**Key Points:** Visual thinning unit located at the eastern edge of Unit 23 between the road and the reservoir. Objective is to create views of the lake through portions of the unit that will be thinned.

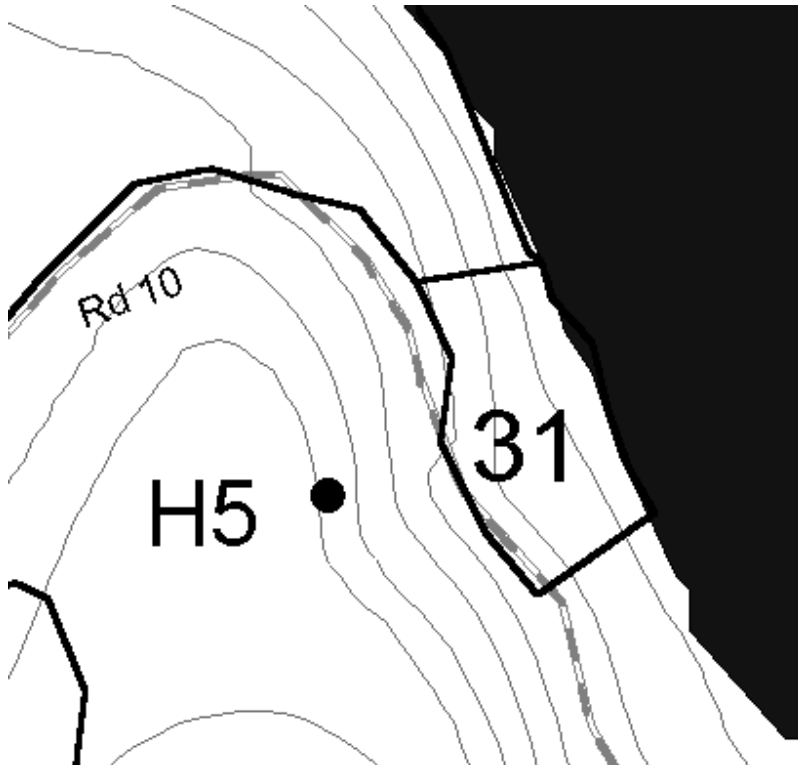
**Stand Conditions:** This stand is predominantly 70 year-old Douglas-fir 9” to 21” in diameter with a minor component of western hemlock and western redcedar. The stand was logged in the early 1900’s and burned in 1919.

**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees to an average basal area of between 100 and 180 square feet per acre. Coordinate with visual quality specialist during marking and cutting operations for individual tree removal to achieve desired visual objective. Mark take trees.

**Landings:** Small skyline landing on Road 10.

**Road construction/Reconstruction:** Use existing roads



Shore Nuf Unit 32	
Stand Number (s)	
Location (Township, Range, Section): T. 10S., R.5E., Sec. 13, WM	
LMP Allocations: 11d = 1 acre	
Average Slope = 20%	Elevation = 3000 ft
Estimated Unit Size = 1 acre	Estimated Volume = 4 mbf
Silvicultural Prescription – Select Cut	Proposed Logging Method - Helicopter

**Key Points:** Unit is located at the end of the trail at the top of Stahlman Point. Objective is to remove up to 12 trees to provide better views of the lake from this viewpoint. Some of these trees within the unit boundary will be retained and/or pruned.

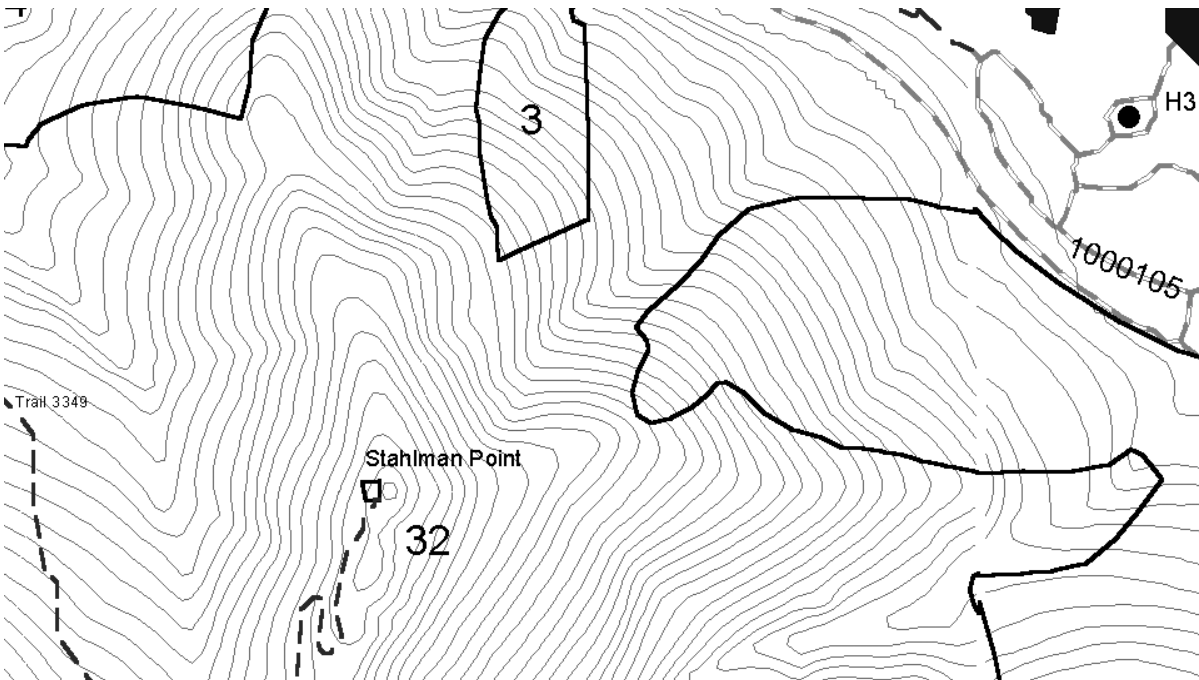
**Stand Conditions:** This stand is predominantly 70 year-old Douglas-fir 9” to 21” in diameter. The stand was logged in the early 1900’s and burned in 1919.

**Stand Health:** This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Remove up to 12 trees flagged around the perimeter of Stahlman point lookout. The stand will be marked under the supervision of the District scenic resources coordinator to meet visual objectives.

**Landings:** Use landing H3.

**Road construction/Reconstruction:** Use existing roads



<b>Shore Nuf Unit 33</b>	
<b>Stand Number: 6552</b>	
<b>Location (Township, Range, Section): T. 10S., R.5E., Sec. 17, WM</b>	
<b>LMP Allocations: 11d = 19 acres</b>	
<b>Average Slope = 40%</b>	<b>Elevation = 1900</b>
<b>Estimated Unit Size = 19 acres</b>	<b>Estimated Volume = 190 mbf</b>
<b>Silvicultural Prescription - HTH</b>	<b>Proposed Logging Method – Helicopter</b>

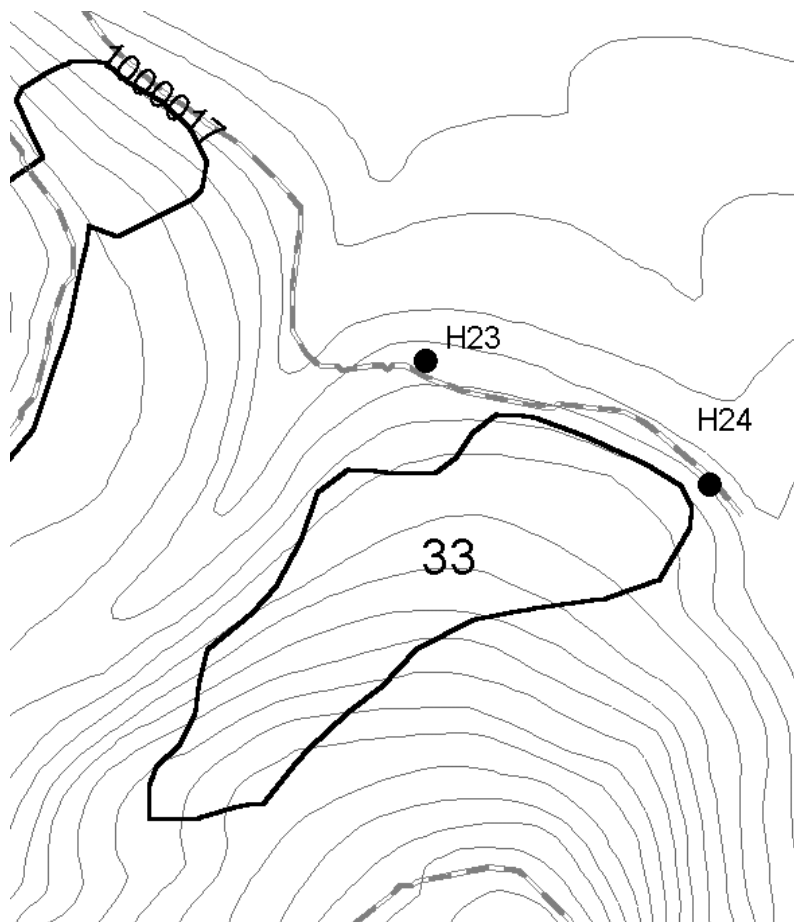
**Stand Conditions:** This stand is predominantly 70 year-old Douglas-fir and western hemlock 9” to 21” in diameter with a minor component of western redcedar, western white pine and bigleaf maple. Total basal area for this stand is 200 square feet per acre. The predominant plant association is Western hemlock/Oregon grape-salal. The stand was logged in the early 1900’s and burned in 1919.

**Stand Health:** There are light levels of dwarf mistletoe in the western hemlock. This stand exceeds recommended densities for Willamette National Forest Plan growth and yield objectives. Competition induced mortality is occurring in the stand.

**Marking:** Leave the best dominant and co-dominant trees at 140 square feet per acre of basal area. Leave all redcedar > 12 inches in diameter.

**Landings:** Use landings H23 and H24

**Road construction/Reconstruction:** Use existing road, 10-017.



## **Appendix B**

### **Aquatic Conservation Strategy Objectives and Best Management Practices**

#### **Aquatic Conservation Strategy Objectives (ACSO's) Analysis**

The objectives surrounding the attainment of the Aquatic Conservation strategy are discussed below. This discussion is related to the proposed action alternative.

***ACSO 1*** *Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to insure protection of the aquatic systems to which species, populations and communities are uniquely adapted.*

Under alternative two, this project will commercially thin within approximately 205 acres of riparian reserve land allocation. The project will involve 1.2 percent of the riparian reserves found within the Detroit Tribes watershed analysis area. This project's focus is; to restore and maintain through time, diversity and complexity of the watershed and the aquatic systems to which species, populations, and communities have adapted. Detroit Tribes Watershed Analysis (DTWA; pages: v-23 through v-47), recommends various management techniques or processes to accomplish long range, (>50 yrs.), landscape level conditions. The proposed project was developed from these recommendations (e.g. grow larger diameter trees in the riparian areas).

***ACSO 2*** *Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, Longitudinal, and drainage network connections including floodplains wetlands, up slope areas, headwater tributaries and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.*

Spatial and temporal connectivity within and between watersheds will be maintained through the implementation of Forest Plan riparian reserve widths (DTWA pg. V-27). All streams were identified and one standard tree height width, 172 feet, buffer was placed on either side of the channel. These areas allow for connectivity between ridge tops and valley bottoms when ephemeral and perennial stream are considered part of the riparian network.

Treated acres within these riparian reserves will retain an average 70 percent canopy closure after harvest. Chemically and physically unobstructed routes critical to life history requirements will remain intact as a result of this prescription. Spatial connectivity may be restored for some plant and animal species that cannot survive under dense canopy. An increase in insects and arthropods is expected to result from a development of a under story. This prey base increase is expected to benefit animal species.

Proposed removal of material through thinning would be expected to reduce the fuel loading of the site and assist in maintaining connectivity through time. Lower risk of fire would result from this activity (DTWA; pg. V-29). Excessive amount of slash material would not be generated by this project. Slash accumulations would be treated by

lopping, scattering and/or piling dependent on the risk associated to each action. Where this occurs material would be pulled away from ponds, seeps, or other standing or slow moving water. This would allow for the maintenance of water chemistry of the area.

***ACSO 3 Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.***

Physical integrity of the aquatic system is anticipated to be maintained through the utilization of Best Management Practices (BMP's). Specific BMP's utilized for physical integrity are T-2 (Timber Harvest Unit Design); T-7 (Stream side Management Unit Designation); T-8 (Stream course Protection); and T-12 (Suspended Log Yarding in Timber Harvesting). These practices maintain the physical integrity of the aquatic system through designation of parameters in the prescriptions (e.g. maintenance of; root strength, shade canopy, and large woody material).

Harvest systems are designed to yard away from all streams in accordance with BMP's T-8 and T-12 (helicopter and other yarding). Decision to remove riparian leave trees may occur with interdisciplinary team consultation on occasion. Material may not meet the long term objectives or pose a health and safety risk to those on the site. Retention of riparian reserve widths (DTWA pg. v-26) would maintain channel bank stability. Management within these reserves further aid long-term stability by reducing fire effects (DTWA pg. V-26).

***ACSO 4 Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the systems and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.***

Water quality parameters of interest for this objective relate to this projects affect on temperature, chemistry and suspended loads. All action alternatives within the riparian reserves are expected with riparian reserve management prescriptions (Average 70% canopy after post treatment), to provide adequate shading and maintain stream temperatures within state standards (Compliance with Forest Plan MA-15-06). There are isolated cases within this project that will take canopy closure within the riparian reserves below the 70 percent level. Unit 6 exemplifies this due to a root rot pocket (*Phellinus weirii*) that is killing the trees within the reserve area. Doug fir trees will be removed and a species that is resistant to *Phellinus* planted.

Biological, physical, and chemical integrity of water quality will be maintained through utilization of BMP's. Avoid cutting trees contributing to bank stability, pulling slash away from slow moving water and buffering of live streams during post treatment activities (e.g. fertilization), are examples of the recommendation utilized to protect biological, physical, and chemical integrity.

**ACSO 5** *Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transportation.*

The aquatic ecosystems that occur in the proposed harvest units were heavily influenced by fire and early management. The diversity of historic locations of large down wood and large diameter standing trees, (North facing slopes) are the result of isolated pockets fire missed. Sediment input into the stream would be episodic following fire activities. Vegetative slopes have reduced sediment input and reduced effects of peak flows on channel bank erosion, by reducing the snow accumulation typically found on hillsides following fire. The aquatic ecosystems have evolved under this scenario and would be maintained through the maintenance of the riparian reserves.

The episodic pattern of sediment pulses that would of occurred due to the frequency of fire, would retard slightly (10-40 yrs.), due to maintenance of riparian reserves. This would eventually be reestablished when a catastrophic fire occurs. Until such time prudent measures would be taken to reduce the effect of fire through maintenance and management of the components of the riparian reserve (fuel loading; tree density).

**ACSO 6** *Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.*

In stream flows are addressed in the Forest Plan and the Detroit Tribs watershed analysis for this area (DTWA pg. II-8). Documentation within the watershed analysis limited it's discussion to Hydrology of the area and doesn't respond directly to the in-stream flow portions of this question. The Willamette National Forest Plan bridges this limitation through; FW-113; FW-111; FW-093; FW-089. These forest-wide standards and guidelines are required (shall's), in the plan. Upon implementing these Standards it is anticipated that the In stream flows would be maintained and restored sufficiently to create and sustain riparian, aquatic and wetland habitats, and to retain patterns of sediment, nutrient, and wood routing.

**ACSO 7** *Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.*

There are minor wetlands in or adjacent to the proposed stands. This projects effect on downstream flood plains or wetlands is negligible due to the prescriptions proposed. The wetlands are associated to the riparian network and will be buffered and protected. No flood plains are found within the project area.

There are several small (less than 1/4 acre) wetlands within the proposed project area. Topography of the area that allows these are associated to colluvial deposits adjacent to stream channels. Short-term impacts may occur to the water-table elevation of these wetlands. These impacts are anticipated to be negligible due to the increase in transpiration that follows increase stand growth.

**ACSO 8** *Maintain and restore species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability*

Selective thinning will help shift the tree species composition and create a diverse plant community. Western red cedar and hardwoods will be retained and will benefit from the removal of surrounding fir. Thinning the under story fir stands will also create better conditions for the establishment of shade tolerant trees, like Western Red Cedar, Western Hemlock, and Pacific Yew.

Plant diversity and abundance should generally increase along thinned riparian areas. Thinning dense stands of Fir is expected to result in suitable conditions for a number of under story species. The abundance of existing herbs and shrubs is expected to increase, and the increased light and nutrients may lead to establishment of additional species. Species adapted to survival under a dense over story, however, may be displaced.

Thinning in the riparian reserves will increase structural diversity as individual riparian trees increase in size at a faster rate due to increased light and available nutrients. These larger trees will eventually (>50 yrs.), provide snags and down wood of larger diameter than would not otherwise have been available. In the interim snags resulting from logging damage will provide needed material.

**ACSO 9** *Maintain and restore habitat to support well distributed populations of native plant, invertebrate and vertebrate riparian dependent species.*

BMP's and mitigation measures designed to address In stream and riparian habitats (for example seasonal restrictions, canopy closures requirements, and soil protection requirements), should help minimize impacts to riparian-dependent invertebrate and vertebrate species. Individual species may experience short term impacts through canopy opening and yarding of material from riparian reserves. These short term affects are not anticipated to effect the distribution of populations of these riparian dependent species. This anticipation is based on past disturbances (natural), within the area and the plant, invertebrate, vertebrate, and riparian dependent species populations' response.

Thinning is expected to increase the abundance of native herbs and shrubs because more light and nutrients will be available for growth. The increase in plant biomass is expected to lead to increased prey base (insects and arthropods) for animals associated with riparian areas.

Epiphytic lichens and mosses will benefit from the retention of hardwoods and Pacific yew, as well as the larger trees that will result from the thinning. Species requiring down wood, including fungi, lichens, mosses, and a variety of mollusks, bryophytes and animals, may suffer a short term (1-50 years) loss of habitat as trees are removed that otherwise would have eventually fallen to the ground and provided habitat.



## Best Management Practices (BMP's)

The Pacific Northwest Region entered into an agreement with the State of Oregon adopting "General Water Quality Best Management Practices" in November 1988. Best Management Practices are practices or combinations of practices determined by the State after problem assessment, examination of alternative practices and appropriate public participation. To be effective, these BMP's should provide a practicable means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals. (Federal Register, Volume 40, No.230 dated 11/28/75). Utilizing BMP's for this project specifically address direction and guidance in the protection of water quality. Shore 'Nuf project objectives and mitigation for water quality are:

**Objective:** Continual recovery of downstream riparian and channel conditions.

**Mitigation:** Design units to insure channel bank stability, and provide adequate buffers to reduce sediment inputs and minimize peak flow effects (BMP T-2; T-7; T-8; T-12). Boundaries are placed in such a manner to avoid compromising stability of the channel banks. No trees are cut which attribute to bank stability.

**Objective:** Maintain or improve the quality of water for domestic and fisheries users.

**Mitigation:** Designate riparian management units and specific prescriptions for each individual unit adjacent to stream courses requiring protection (BMP; T-7).

**Objective:** Maintain natural filtration of surface, overland flow, through post sale activities.

**Mitigation:** Establish appropriate riparian management units and establish fire lines to ensure maintenance of established buffers, filter strips (BMP T-7; T-8; F-2; F-3).

**Objective:** Maintain or improve existing temperature regime along perennial streams in relation to water quality.

**Mitigation:** Designation of riparian management units to maintain and improve shade canopies over stream channels (BMP T-2; T-7; T-8).

**Objective:** Maintain or improve channel bank stability.

**Mitigation:** Establish riparian management units that include channel bank areas and or establish marking prescriptions that prevent any tree attributing to bank stability from being marked (BMP T-2; T-6; T-7; T-8).

**Objective:** Control the amount of sediment leaving the road system.

**Mitigation:** Utilize appropriate B and C clauses within the contract to insure that winter haul occurs on roads with adequate surface rock and that erosion control techniques such as mulching of bare soils associated to the road system occur.

## Appendix C

### Proposed KV Projects

#### **KV Prioritization**

Projects will be prioritized in the following order:

- 1) Project activities required by law (NFMA);
- 2) Mitigation required as part of this decision;
- 3) Enhancement opportunities associated with this decision.

Priority	Project
<b>1</b>	<b>Regeneration of Root Rot Pockets</b>
<b>2*</b>	<b>Noxious Weed Control &amp; Monitoring</b>
	<b>Sub-soiling of designated skid trails</b>
	<b>Additional Slash Cleanup</b>
	<b>Visual cleanup of landings</b>
	<b>Developed Rec. Site improvements – Units 27, 28, 29</b>
<b>3</b>	<b>Hoover Campground Parking Improvements – Unit 2 &amp; 3</b>
	<b>Parking Lot Improvement for Dispersed Recreation Use – Unit 22</b>
	<b>Dispersed Recreation Site Improvement &amp; Repair – Unit 25</b>
	<b>Kinney Ridge historic trail clean-up, reconstruction, and improvements</b>
	<b>Dispersed campsite improvements along the lakeshore</b>
	<b>Increase visual diversity planting hardwood species.</b>
	<b>Information and Interpretive Signing</b>
	<b>Fisheries Projects</b>

\* In the event the project does not generate enough KV funding for the above projects, activities would be completed by appropriated funds.

## Silviculture

### Regeneration of Root Rot Pockets: Units 2, 5, 6, and 10

Harvest prescriptions within these units where *Phellinus* root rot pockets exist will require reforestation following harvest. Units will be planted with hardwood species, native fruit bearing trees, and non-susceptible conifer species.

Units with Root Rot		
Unit	Size of Affected Area *	Comments
2	6 acres	Three pockets located along the west portion of the unit.
	3 acres	
	2 acres	
5	3 acres or less	
6	3 acres	Located along the west boundary.
10	3 acres or less	

\* Actual size & location of the root rot pockets would be determined during final layout and marking. Estimates are based on initial reconnaissance.

## Botany

Noxious Weed: Removal of noxious weeds along existing roads and recreation areas

- Post-sale monitoring of disturbed areas for new infestations.

Unit 12: Blackberry removal

## Soils

### Sub-soiling of designated skid trails: Units 7, 11, 13, 23, 30

All skid trails would be sub-soiled following harvest activities. Skid trails would be seeded and mulched with approved seed and weed-free mulch.

## Fire/Fuels

### Additional Slash cleanup:

#### Units 2, 5, 7, 12, 13, 19, 20, 21, 23, 24, 25, 26, 28, 29, 30, 31, 32

Handpiles will be completely burned in units adjacent to roads during prescribed burning operations.

## Scenic Improvements

### Visual cleanup of landings: Units 1, 2, 6, 7, 8, 9, 11, 12, 13, 15, 17, 19, 20, 21, 23, 24, 25, 26, 28, 29, 30, 31

At the conclusion of logging operations, landings would be revegetated to restore visual quality. Logging debris would be disposed of so the area no longer resembles a landing.

### Developed Rec. Site improvements: Units 27, 28 and 29

Additional slash cleanup may be required in camping sites and along roads within the campgrounds. Stumps would be flush cut and hand piles completely burned during prescribed burning operations.

## **Recreation/Scenic KV**

### **Hoover Campground Parking Improvements: Unit 2 & 3**

The parking area for the boat launch at Hoover Campground would serve as helicopter landing H3 for logs removed during the thinning of Unit #2 and #3. To facilitate that use, the small median strip between the two halves of the parking area would be removed. After its use as helicopter landing, the median strip would be paved and the parking lot re-striped, to allow the parking of longer vehicles and trailers than can currently park there.

### **Parking Lot Improvement for Dispersed Recreation Use: Unit 22**

At the conclusion of its use as helicopter landing H26 at the end of the 1000-021 road, the graveled area would be converted to a public parking area. This would allow the public to park their vehicles when they use dispersed recreation sites around the peninsula. Vehicular access beyond the parking area would be blocked using boulders and other barriers.

### **Dispersed Recreation Site Improvement & Repair: Unit 25**

During thinning, the small parking area within the unit just below the Blowout road would be used as a landing for logs skidded out of the unit. The landing would be leveled and graveled to allow for continued use as a parking area following the thinning. After thinning, the road leading to the shoreline would be obliterated and blocked at the edge of the parking area. Cultivate soil and revegetate to encourage understory development and improve setting. Designate campsites and install fire rings to keep use confined to specific areas.

### **Kinney Ridge historic trail clean-up, reconstruction and improvements: Unit 11**

- Reconstruct historic trail, and provide information and interpretive signing.
- Improve parking at Kinney lookout trailhead

### **Dispersed campsite improvements along the lakeshore:**

#### **Units 10, 11, 14, 19, 20, 21, 24, 25, 26, 28, 29, 31**

- Dispersed site rehab, designate campsites along shoreline.
- After harvest, assess unit for pruning shoreline trees to improve view of the lake.

### **Increase visual diversity planting hardwood species: Unit 2, 30**

Interplant to create visual diversity in areas visible from the Blowout Road e.g. dogwood, elder berry, maples, etc.

### **Information and Interpretive Signing**

- Unit 5: Trail reconstruction, and information and interpretive signing.
- Unit 23: Detroit Flats:
  - Reconstruct trail,
  - Informational and interpretive signing,
  - Wildlife habitat improvements,
  - Vegetation restoration and bank stabilization.

### **Fisheries**

- Unit 21: Add Large Woody Material to the stream to create fish habitat.
- Treatment of alder component within the stand will be evaluated following completion of the unit.

## Appendix D

### Survey & Manage Species Species Inventory Lists & Findings

**Results of Prefield Review and Field Reconnaissance  
for  
Protection Buffer and Survey and Manage Plant Species  
Willamette National Forest: FY 2001**

**Project Name:** Shore Nuf Timber Sale **Unit #(s):** All  
 Township: 10S Range: 5E Section(s): 1-15, 19-22, and 28  
                   9S           6E                           17, 18  
                   9S           5E                           26, 27, 35, and 36  
 Is the project habitat disturbing? Yes  (if yes, then conduct survey)  
   No  (if no, then document in project file)

Species	Habitat Present? (Y/N)	Date Surveyed	Surveyor(s) Name(s)	Species Located? (Y/N)	Additional Survey Needs? When and Where?
<i>Allotropia virgata</i>	Yes	6/22-10/29/99	Roantree	Yes	No
* <i>Aster vialis</i>	No				
<i>Bondarzewia mesenterica</i>	*				
* <i>Botrychium minganense</i>	No				
* <i>Botrychium montanum</i>	No				
<i>Bridgeoporus nobilissimus</i>	No				
<i>Buxbaumia viridis</i>	No				
* <i>Coptis trifolia</i>	No				
* <i>Corydalis aqua-gelidae</i>	Yes	6/22-10/29/99	Roantree	No	
<i>Hypogymnia duplicata</i>	No				
<i>Kurzia mackinoana</i>	No				
<i>Lobaria linita</i>	No				
<i>Marsupella emarginata</i> var. <i>aquatica</i>	No				
<i>Otidea leporina</i>	*				
<i>Otidea smithii</i>	*				
<i>Otidea onotica</i>	*				
<i>Polyozellus multiplex</i>	*				
<i>Pseudocyphellaria rainierensis</i>	No				
<i>Rhizomnium nudum</i>	No				
<i>Sarcosoma mexicana</i>	*				
<i>Schistostega pennata</i>	No				
<i>Sowerbyella rhenana</i>	*				
<i>Tetraphis geniculata</i>	Possible	6/22-10/29/99	Roantree	No	
<i>Tritomeria exsectiformis</i>	No				
<i>Ulota megalospora</i>	Yes	6/22-10/29/99	Roantree	Yes	No

\* Starred species are also on the Willamette NF Sensitive Species List

/s/ Michael Roantree      February 9, 2001

District Botanist      Date



# **Appendix E: Public Involvement / Response to Comments From the Draft EIS**

## **Public Involvement Process**

The Detroit Ranger District Interdisciplinary Planning Team (ID Team) first initiated the Shore 'Nuf Timber Sale project in Spring 1997. The project was described in the Willamette National Forest planning newsletter "*Forest Focus*" which is mailed to approximately 250 people quarterly. Between the Spring of 1997 to the Summer of 2000, the ID Team conducted several internal meetings to review the proposed action and further develop the project. On September 15, 2000, a Notice of Intent (NOI) to complete the Shore 'Nuf Timber Sale EIS was published in the Federal Register (Vol. 65, No. 180). The 45-day scoping period for the NOI ended on October 29, 2000.

In addition to the NOI, a public scoping notice, describing the purpose and need and proposed action, was mailed on November 8, 2000 to individuals and groups that have expressed an interest in current projects on the Detroit Ranger District. The USDA Forest Service received 26 comment letters during the public scoping period and written comments concerning the Shore 'Nuf Timber Sale are included in the Project Record.

On December 5, 2000, a field trip was conducted with members of the ID Team (Jim Romero, Rodney Stewart, Dave Leach, and Dani Rosetti), George Sexton (American Lands Alliance) and Jeremy Hall (Oregon Natural Resource Council, ONRC) to visit several proposed units in the sale area and address preliminary concerns and issues. Meeting notes are located in the project record.

On July 4, 2001, Stephanie Phillips (District Ranger), Penny Keen (Special Uses Coordinator), and Rodney Stewart (Public Services & Planning Supervisor) met with members of the Stahlman Summer Home Association to discuss the project and hear issues and concerns from the homeowners. The Stahlman Summer Homes are located within the project area and one proposed unit, Unit 31, will thin several trees adjacent to the summer homes and open the stand to allow additional sunlight in the area.

On October 10, 2001, a field trip was conducted with members of the ID Team (Jim Romero, Rodney Stewart, Dave Leach, and Dave Halemeier) and members of the City of Salem (Hank Wujick and James Hands) to discuss the City of Salem concerns and review the proposed project.

## **Comment Analysis Process:**

The Draft Environmental Impact Statement was mailed to those individuals who commented during the scoping period in August 2001. The 45-day public scoping period ended on October 25, 2001. A total of 9 comment letters were received. Copies of the comment letters are available in the project record located at the Detroit Ranger District office.

Comments from each letter were added to the tables on the following pages according to resource concern. References have been made to the Shore 'Nuf FEIS and Appendices where appropriate.



## Comments Received on the Draft EIS and Forest Service Response to those Comments

### Aquatic Conservation Strategy Objectives (ACSOs) & Best Management Practices (BMPs)

Name	Public Comments	Forest Service Response
Karen Sjogren	"0" cut buffer and all trees cut in the RR will be removed. These aspects detract from the attainment of ACSO 8 & 9, and do not prevent or reduce the amount of non-point source pollution. These operations do not contribute toward meeting B-6 and B-7.	Through the cutting and removal of trees within this area, it is felt that we will be able to restore the species composition and structural diversity of the riparian areas. These areas currently exhibit monotypic type environs and will benefit from prescribed activities. Under B-6 and B7, the long-term goal is to provide riparian areas that are diverse and stable. The activities will be carried out in such a way as to insure that these qualities are not infringed upon. (Limiting Ground Disturbing activities, 70 percent canopy maintenance, reduction of fuels for reduced fire risks
James Johnston	The ACSO appendix does not address the different effects that the alternatives would have on aquatic conservation. It does not take into account the effect of road building and reconstruction on the aquatic	All of the alternatives were developed to promote Riparian health. The alternatives which have road building and road reconstruction within them will follow Best management Practices which will maintain the quality of the riparian areas and water quality. These will include design of all crossings over running water; control of Sidecast; erosion control plan during operation; and obliteration of temporary roads upon sale completion. The percentage of the riparian area disturbed for roads will be small. <1%, so the affect is anticipated to be negligible.
Eric Wilborn	The details that are discussed refer to "Best Management Practices" (BMP) to mitigate environmental impacts. However, the Appendix to the EIS merely outlines the BMP's without providing a scientific basis for them. This violates NEPA's mandate that agencies must conduct site-specific analysis and collect current scientific data.	The Best Management Practices Outlined in the DEIS are taken from the Memorandum of Agreement, MOA, established with the State of Oregon. Peer review and scientific validation occurred during the creation of this MOA. Site-specific analysis occurs during the implementation of these BMP's on the ground during the course of the project. Evaluations of these effects are similar due to the premise for the BMP's being to protect water quality. NEPA requirements are therefore met.
Eric Wilborn	The BMP's set forth in the EIS do not adequately address impaired water quality, soil damage, or wildlife habitat.  The BMP's do not suggest any adequate means of mitigation.	Impaired waters are defined by the State of Oregon. Impaired waters do not exist within the project area. Thank you for bringing to our attention the need to include by reference the other BMP associated to damage. Wildlife habitat is evaluated with other standards than BMP's. This is done through the silvicultural prescriptions. It is imperative to understand that BMP's were established for the protection of Water Quality. They pertain to meeting the Clean water act and so are not intended to address wildlife, or botanical issues.

## Corrections to Maps

Name	Public Comments	Forest Service Response
Karen Sjogren	The DEIS is inadequate in failing to provide a map which clearly shows the location of proposed new and reconstructed roads. The environmental impact of roads depends on their route as well as other factors. These should be shown on Figures 2.2. – 2.5.	Modifications made to Figure 2.2 – 2.5, unit maps.
Karen Sjogren	Figure 2.7: This map should show the helicopter pads (new vs. existing), temporary new roads, roads to be constructed, and existing logging roads.	The scale of this map makes it difficult to show temporary roads due to the short distances proposed. Modifications have been made to Figures 2.2 – 2.5 as well as individual unit maps have been included in the Integrated Prescriptions – Appendix A.
Karen Sjogren	Figure 2.2: Needs to break down unit 23 into subpartsand show where the roads will be constructed or reconstructed.	Correction made to Figure 2.2 to show how unit is divided to correspond with Table 2.3.
Karen Sjogren	Figure 2.8: The map should mark and label hiking trails.	Modifications made Figure 2.8 to include hiking trails specific to this project. The purpose of this map is only to show those facilities and recreation areas that may be affected by the proposed actions.
Karen Sjogren	Figure 2.9: Should be relabeled "Adjacent to, and Distant From High Public Use" and the legend modified to include both of these categories. Tables 2.10 and 2.13 should be labeled to indicate they apply to Alt. 3.	Legend corrected on Figure 2.9 to distinguish units Distant vs. Adjacent to High Public Use to correspond with Tables 2.10 – 2-14. Text added to Tables 2.10 and 2.13 to indicate Alternative 3.
Karen Sjogren	Alternative 4 should include a map which shows the information in Table 2.15. For Unit 10 - What is the location of the roads which will not be reconstructed and where is the steep road which will be left open?	Table 2.15 describes the location of roads that will not be reconstructed. Tables 2.2 – 2.5 have been modified to show temporary and reconstructed roads. The steep portion of private road that may not be reconstructed is located in Section 34 near Unit 10.
Jeremy Hall	Road 10-081 does not appear to be 0.6 miles long on the timber sale maps or on the transportation map, yet the EIS calls for reconstructing 0.6 miles of this road. On the maps, this road does not appear to access H-9. Does this road continue to H-9?	On the ground, the 10-081 road goes all the way to the landing H9. The 0.6 miles of reconstruction includes portions of the 10-080 road as well.

## Corrections to Tables

Name	Public Comments	Forest Service Response
Karen Sjogren	Table 2.3: Unable to locate roads 10-050, 10-081, 10-084, 1000-021, and 10-017.	Roads referenced in the text or tables will be identified on the corresponding maps.
Karen Sjogren	There are discrepancies between the text on page 2-21 and Table 2.6 and 2.7. Seasonal restrictions for bald eagle need to be checked on the tables and per unit.	The tables were created to give a visual description, as closely as possible, to the restrictions described in the text. The Units were broken down by geographic area, as shown on the unit maps Fig. 2-2, 2-3, 2-4, and 2-5. However, the seasonal restrictions do not necessarily coincide with these geographic boundaries, therefore some discrepancies may exist. It would be difficult to show each of the restrictions in a separate table as this may be more confusing than what is already presented.
Karen Sjogren	<p>1) It would be helpful to explain why Units 10 &amp; 11 are distinguished from Units 12 &amp; 13 in Tables 2.8 and 2.9, since they are not in Table 2.6 and 2.7.</p> <p>2) It would also be helpful to explain the categories, since they don't otherwise coincide with wildlife.</p>	<p>1) Clarification has been added to Tables 2.8 and 2.9.</p> <p>2) Portions of units 10 &amp; 11 are within a Bald Eagle Habitat Reserve (BEHR). Three potential or existing BEHR's are located within the Detroit Bald Eagle Management Area (BEMA). Restrictions for helicopter operations (Units 10 and 11) are more restrictive than ground based logging operations (Units 12 and 13) within BEHR's, than within the BEMA as a whole.</p>
Karen Sjogren	Table 2.17: Should include mitigation measures in riparian reserves as an additional category, including leaving DWD as required by forest plans/law and trees which contribute to bank stability, etc.	The Shore Nuf DEIS tiers to the EIS for the Willamette National Forest Land and Resource Management Plan and Northwest Forest Plan which includes mitigation measures for riparian reserves, including channel bank stability. Down Woody Debris requirements are also identified in the Forest Plan. It is not necessary to repeat these mitigation measures in this document.
Karen Sjogren	Table 2.18: Helicopter Operations - the information provided for Alt. 2, 3, and 4 is confusing. The proposed operating season of Sept. 1 to Nov. 30 is inconsistent with Tables 2.6 - 2.9.	Because the operation season for helicopters varies by unit, the reference in Table 2.18 has been removed. The clumping of units was based on geographic location, not seasonal restrictions.

### Corrections to Tables (continued)

Karen Sjogren	Table 2:18: Are helicopter operations to be more seasonally restricted than other aspects of operations?	<p>Seasonal restrictions for wildlife are established by the U.S. Dept. of Fish &amp; Wildlife and are not dependent on the type of noise being generated. The main reason for the restrictions is to minimize disturbance within close proximity to nesting birds.</p> <p>For recreation, the main reason for seasonal restrictions is to reduce disturbance to recreationists from noise that is outside of the normal recreational forest setting (i.e. RV's, radio's, generators, etc.). Because helicopters generate a noise level that is carried longer distances, helicopter operations are generally more restricted than other harvest operations, such as chainsaws, skyline systems, and ground based logging operations.</p>
Karen Sjogren	Table 2.18: For "Harvest Operations" and "Hauling", seasonal restrictions need to be indicated for these activities.	<p>Seasonal restrictions on Harvest Operations varies by unit and type of activity. Because of the complexity of these restrictions, it would be difficult to display in table form.</p> <p>No seasonal restrictions exist for hauling, except for during weekends. Hauling is permitted year-round.</p>
Karen Sjogren	Table 2.18: Under "Operational Periods due To Wildlife Restrictions", for Units 14--, Alternative 2, the text should read "from Aug. 15..." to be consistent with Table 2.6.	Table 2.18 corrected to be consistent with Table 2.6.
Karen Sjogren	The unit descriptions of root-rot occurrence are greater than those described in Table 2.4; the table needs to be revised to reflect the information in the unit prescriptions.	<p>Estimates for acres of Root Rot have been updated in the document and the integrated prescription following additional field recon. Unit 5 = 3 acres; Unit 10 = 3 acres;</p> <p>The integrated prescription indicated that a root rot pocket was discovered in Unit 11. No root rot was found.</p> <p>Unit 15: A root rot pocket approximately 3 acres was discovered in this unit.</p>

## Cumulative Effects

Name	Public Comments	Forest Service Response
Ann Cavanagh	You name three other sales in the area that are to be revived. If they were unacceptable in 1997-98, then why are they acceptable now? When will we have a chance to comment?	<p>No determination was made that the 3 sales – High &amp; Dry, Boulder Puppy, and Windy Canyon, were unacceptable. As per a court injunction by Judge Dwyer, surveys for Survey &amp; Manage Species were required prior to these sales being logged. All surveys have been completed and the sales are in the process of logging now, or will soon be offered for sale.</p> <p>All three timber sales went through the complete NEPA analysis process and a Decision indicating a Finding of No Significant Impact was made in 1998. Following the surveys, no additional effects were discovered, therefore no new decision was necessary. No additional comment period is required for these sales.</p>
Eric Wilborn	There are significant cumulative direct and indirect environmental impacts from this sale, especially when viewed in conjunction with other proposed actions on the Detroit Ranger District.	Although the Shore 'Nuf Timber sale may overlap in time and space with other sales in the area, there were no significant effects to the human environment discovered during the analysis. Seasonal and daily restrictions will be included in the Timber Sale contract to reduce any noise impacts to area residents and recreation users.

## Editorial Comments

Name	Public Comments	Forest Service Response
Karen Sjogren	Under "Spotted Owls" "1/4" should be followed by "mile". Page 2-22, bottom: "indicated" should read "indicates".	Thank you for your editorial comments. Correction made.
Karen Sjogren	Bottom of page 3-10: "this alternative" should read "these alternatives". At the bottom of page 3-11, "are widely" should read "is widely".	Thank you for your editorial comments. Correction made.
Karen Sjogren	Bottom of page 3-16: "communities" should be followed by a semi-colon, rather than a comma.	Thank you for your editorial comments. Correction made.

## Economic Impacts

Name	Public Comments	Forest Service Response
Bryan Bird	<p>1) The EIS and project record fail to place any economic value on existing uses and functions of the sale area, including recreation, flood control, pest control, carbon sequestering, and many other "ecosystem services".</p> <p>2) The economic analysis fails to consider a wide range of costs... through loss of these "ecosystem services" such as increased flooding, increased risk of death, injury, and property damage from logging operations, and increased fire risk.</p> <p>3) The \$ value of undisturbed forest or standing timber should have been calculated and used in the analysis of economic costs associated with the Shore Nuf Timber</p> <p>4) The value of "ecosystem services" provided by standing forests has never been evaluated and compared with their value as lumber. Clean air and water, balance of global geochemical cycles, and buffering of carbon emissions resulting from fossil fuels.</p>	<p>Forest Plans establish goals and objectives identifying the mix of activities and uses that maximizes net public benefits. The determination of net benefits includes assessment of market and non-market resource uses and values both quantitatively and qualitatively. This analysis is done at the forest planning scale, where the mix of activities across a large landscape can be assessed and measured. Forest plans include standards guidelines intended to prevent or mitigate adverse effects to both the socioeconomic and physical environments. These standards and guidelines are requirements for subsequent projects.</p> <p>Project-level environmental analysis is used to assure that projects are consistent with forest plan goals and objectives and standards and guidelines, as well as to disclose environmental effects and assure informed decision making. Economic analysis is used in project planning when needed to assess the costs and benefits of different alternatives. However, in the absence of new information, decisions made at the forest plan level, including the mix of activities found to maximize net public benefits, are not reconsidered. Your letter does not identify any specific adverse economic effects directly associated with this project. In this situation, therefore, reconsideration of forest plan decisions at the project level is inappropriate.</p>
Eric Wilborn	<p>The KV Act states that funds cannot be used to construct roads unless the sale will operate above cost. Nowhere in the EIS does it discuss whether or not this sale will be operated above cost.</p>	<p>Road construction costs will be covered under the timber sale contract and the responsibility of the timber purchaser. KV funds will be used for additional reclamation costs as funds are available following the timber sale.</p>

## Fire & Fuels

Name	Public Comments	Forest Service Response
Bryan Bird	The EIS fails to examine how both increased access and increased slash in the short term will create a window of time where fire risk will be increased above what currently exists now.	<p>In the short term, activity generated slash will increase hazard for fire (fuel loadings) until fine fuels have degenerated after approximately 3-5 years. Generally, ground fuel loadings in the sale area are low due to logging and large fires of 1910-1920 in the area. Analysis of historical fire, fire protection, slopes, aspects, and fuel loadings put this area in a low risk and hazard for fire. In the long run, improving stand health will reduce tree mortality while creating stands with large diameter well-spaced trees.</p> <p>Any increased access incurred by the logging of this sale will be temporary `spur' roads and will be obliterated and restored to original condition by the contractor immediately post harvest. This should not increase the risk(ignition source) for fire in the long run. In the short term while logger uses the spur roads, access is attainable should fire suppression efforts be needed. During high fire danger, harvest operations are shut down or the purchaser is required to provide water and suppression tools on site.</p>

## Glossary Suggestions

Name	Public Comments	Forest Service Response
Karen Sjogren	What are "live tree crown ratios"?	Definition added to the Glossary
Karen Sjogren	Each logging method should be described in the an appendix glossary	Definition added to the Glossary
Karen Sjogren	Page 3-19: "KV funds" needs to be defined in the glossary	Definition added to the Glossary
Karen Sjogren	The terms "LMP", and "HTH" and "DBH" need to be defined in the glossary. What are "COE" lands? Explain different logging methods in the glossary.	Definition added to the Glossary

## Hazard Trees / Safety

Name	Public Comments	Forest Service Response
Karen Sjogren	Unit 32: Any tree removal should be accompanied by safety improvements to Stahlman Point and access thereto.	Stahlman Point is on an existing National Forest system trail and provides hikers a panoramic view of Detroit Lake and the Cascade Range. The former lookout provided a vantage point of the lake area that was not seen from other lookout points. Improving views is not expected to change the way the trail is currently used but would provide less obstruction of views to those who hike the trail. There is always some inherent risk and challenge when hiking on the National Forest outside of more developed facilities such as campgrounds. Trail improvements can be made through collection of KV dollars generated from the timber sale, and could be funded based on priorities with mitigation projects and available funding.
Ann Cavanagh	Who judges what is a hazard trees in a campground? Many campers prefer heavily wooded sites.	Forest Service personnel will identify and remove hazard trees based on the criteria found in the Technical Handbook developed by the Region 6 – Pacific Northwest Region, <u>Long-Range Planning for Developed Sites in the Pacific Northwest: The Context of Hazard Tree Management (FPM-TP039-92) (1992).</u>

## Helicopter Operations & Landings

Name	Public Comments	Forest Service Response
Karen Sjogren	Why will Unit 16 make use of H17, rather than H16, which is closer.	Thank you for finding an error on Table 2.3. Units 15, 16, and 17 will utilize both landings H16 and H17. Proposed landing locations are identified during the analysis so that resource specialists can identify any potential effects to the environment. Final determination as to which landings will be used during the timber sale contract.
Jeremy Hall	Concerned with the potential impacts to the ACSO values of riparian reserves from constructing helicopter pads in riparian reserves. Landings H11 and H10 need not be constructed. The landings from previous skyline yarding on the 084 are significant.	The proposed landings appear on the map to be located off the 084 road when in fact they are already existing on the roadway. Landing H10 is within a riparian area and it was felt that disturbing additional ground for construction of the landing would not be warranted. Restoration of the site will occur upon completion of the project.



## Impacts to Tourism

Name	Public Comments	Forest Service Response
Ann Cavanagh	Some Detroit business owners think the government is out to "get" them. This perception will be reinforced if logging drives the tourists away again.	Business owners have generally supported projects, specifically helicopter-based logging that have directly benefited the local economy in addition to the seasonal summer tourism. They generally recognize the value of continuing forest management practices. The local community would like to see the scenic integrity of the area protected because it is a part of the valued landscape that draw people to the lake. The design and implementation of the timber sale incorporates maintaining and improving these important values. Restrictions to harvest operations are intended to reduce the amount of noise disturbance in order to have the least impact on tourists and residents during sensitive times.

## KV Projects

Name	Public Comments	Forest Service Response
Ann Cavanagh	Appendix C: This discussion is vague. Put priority chart at the beginning. Define categories like 1) Will be funded as part of the timber sale, 2) May be funded if KV funding available, 3) Not part of KV funding. Must await other appropriations. Put the list of projects in same order as the chart.	Appendix C – KV Projects have been restructured for easier readability.
Eric Wilborn	The funding source for the restocking of the sale area is not discussed at all. If funding is not secured, there are no "necessary assurances" to meet the (requirement of NFMA)	<p>The majority of the timber sale is prescribed as a commercial thinning that does not require re-stocking of the sale area. The harvest prescription of a 70% canopy retention is considered a fully stocked stand. Natural regeneration will also occur.</p> <p>Root rot pockets will be planted with hardwood trees, fruit bearing shrubs, and non-susceptible conifers. Specific, operational details of planting are part of the silvicultural report. Funding will be secured through KV.</p>

## Integrated Prescription

Name	Public Comments	Forest Service Response
Karen Sjogren	<p>The description (of the Proposed Action) does not state how the project will proceed over 5 years. Information is not provided on which units will be cut in one specific year, how many acres will be thinned each year, and so on.</p> <p>What factors will determine which units will be cut each year?</p>	<p>The Effects Analysis assumed the case that all units are harvested in the same year even though that is unlikely to happen. A timber sale the size of the proposed action would likely have a contract term of 3 years or more. This is to allow the purchaser to complete all contractual requirements while allowing for operating seasons that are often limited by such things as adverse weather conditions and varying seasonal fire prevention restrictions. Unless there is a specific reason why particular units need to be thinned in a specific year or specific order, year and order are not specified in the contract. It is up to the purchaser to determine, subject to the required seasonal, weekly, and daily operating restrictions, the order, as called for in the Environmental Impact Statement and Record of Decision.</p>
Karen Sjogren	<p>Under "Riparian Reserves" there should be a prescription to leave fallen trees which meet DWD requirements, as required by law and/or forest plan.</p>	<p>Based on stand exam information the stands there would be few trees of adequate size that meet the definition of down woody debris, except for old growth remnants. Possibly trees of this size will be found in riparian areas. Trees meeting DWD standards will be left as required in the Forest Plan Standards.</p>
Karen Sjogren	<p>The integrated prescriptions need to be proof-read, and for many the information provided is incomplete with respect to access, landings, etc.</p>	<p>The integrated prescriptions were edited to remain consistent with the text in the main document. Information with respect to access, landings, etc. can be found in Table 2.3. This alleviates the need to repeat this information in the Integrated Prescriptions.</p> <p>A map for each unit has been added in Appendix A.</p>
Karen Sjogren	<p>Unit 1: "of basal area" needs to be added. Description should include additional information as provided in Unit 2.</p> <p>Unit 5: Dominant &amp; Co-Dominant trees should not be removed to create visual openings.</p>	<p>Most co-dominant and dominant trees will remain within Unit 5 except in the lower 1/3 of 6 smaller (¼ - ½ acre) visual "units." The canopy of the trees in the lower 1/3 of these smaller units block views and are generally located 150-300 feet below the trail. Some dominant and co-dominant trees in the lower third of these units will also be left. Co-dominant and dominant trees between the trail and these heavier thinned areas would be maintained.</p>

## Noise Impacts

Name	Public Comments	Forest Service Response
Ann Cavanagh	Most logging will take place during the week, when there are fewer noisy boats. The high noise level will last 7 days a week instead of 2.	Based on past operations, most logging will likely take place outside of the high recreation use season when the majority of tourists are not present. There will be times when additional noise will be generated in the area and would be distributed throughout the week. Concerns raised by the public were primarily focused on curbing noise during “peak use” periods and early morning/late evening hours during the week. The window of time that allows harvesting to be feasibly done while balancing minimum noise disturbance and reducing impact to tourists, could best be achieved during the week and off-season. Protecting the scenic integrity of the forest can best be achieved by employing non-ground disturbing activity as in the case of helicopter methods. There are short term tradeoffs associated with noise but provide long-term benefits to scenery and nature-based tourism that depends on scenic landscapes.
Eric Wilborn	The presumption that noise disturbance is not quantifiable but must be considered qualitatively is baseless. There is an obvious difference between the current sources of noise in the area and the noise that will result from a commercial logging operation.	Quantitative information is not available as to the various decibel levels associated with different noise types around the lake. Noise disturbance is social issue that stems from the type of noise and when they occur as opposed to decibel levels, and what is acceptable to the public. There is some expectation there will be noise associated with managing forests and has been a traditional part of the area’s history. There are differences between the types of noise and when they occur, which is described in Chapter 3 of the EIS. The interest from the public lies in that helicopter noise least conflict with the timing when people are trying to enjoy their leisure time.

## Noxious Weeds

Name	Public Comments	Forest Service Response
Eric Wilborn	Road construction and reconstruction encourage the spread of noxious weeds.	It was disclosed in the DEIS that there is a risk of noxious weed spread as a result of soil disturbance and gap creation as a result of road construction, road reconstruction, helicopter landing construction/improvement, and root rot treatment. Required mitigation measures (surveys and weed removal) are proposed for each action alternative that substantially reduces this risk, and may in fact result in a net decrease of noxious weed occurrence in the Shore ‘Nuf project area compared with the existing condition in the no action alternative.

## Old Growth

Name	Public Comments	Forest Service Response
Jeremy Hall	<p>Old growth trees in Units 2, 4, 10-13, 19-22 and 16. Scattered yew in several units, such as 19. Hemlock &amp; DF snags and DWD. Mid-story hardwood species such as chinquapin and maple. All of these OG structural components must be retained.</p> <p>Further precautions to protect the health of trees and retain the structural component of the forest. Adjacent trees &amp; snags should be retained. Ground based yarding in U 11-13 should not disturb soil around OG trees. Protect hardwood root structure.</p>	<p>Old growth trees are not designated for cutting and snags will be retained except for those that must be cut for safety reasons during harvest operations. Trees adjacent to old growth trees will be removed to meet thinning objectives. Since these trees are much smaller than the old growth trees there is little likelihood of significant damage to old growth. Overall, the effects of removing competing trees that have grown around old growth should outweigh potential damage to these components. Soil disturbance from ground-based logging is primarily restricted to designated skid trails. Logs are pulled to the skid trails so that equipment mobility is limited to the skid trails.</p> <p>Hardwoods are also not designated for cutting but may be damaged during logging. All of the hardwoods present in the units are vigorous resprouters. Damage to root systems is not likely except in skid roads and landings. Hardwoods should benefit from release after thinning of the conifers.</p>

## Osprey

Name	Public Comments	Forest Service Response
Karen Sjogren	The text needs to rectify the statements 1) "that seasonal restrictions for Osprey will be lifted" and 2) "that nest sites for Osprey will be protected". 3) How much of an area around the nest sites will constitute a buffer?	<p>"Seasonal restrictions may be lifted", means that restrictions on harvest activities would no longer be required. This only occurs if it is determined that a species is not nesting within proximity of a specific unit. Seasonal restrictions are enforced on a unit-by-unit bases, specifically for Osprey due to the large number of nests around the reservoir.</p> <p>Wording changed from "nest sites" to "nest trees" No trees with Osprey nests will be removed.</p> <p>For Osprey, only the nest tree is protected. No additional buffer distance is required.</p>
Karen Sjogren	Page 3-9: The direct and indirect effects of Alt. 3 & 4 on Osprey conflict with the text on page 2-23. If activities are likely to cause nest abandonment, the nest site in non-functional and not protected.	The term "nest sites" will be replaced with "nest trees" on page 2-23. Individual Osprey nest trees remain protected from harvest operations.
Karen Sjogren	The statement that "the disturbance would only occur for one year" for cumulative effects on osprey conflicts with the fact that this is a 5-year project, and osprey nest occur throughout the project area.	Wording modified to clarify that disturbance activities are expected to last for only one year for harvest activities in each unit. These activities may occur for more than one year for the sale as a whole.

## Recreation

Name	Public Comments	Forest Service Response
Eric Wilborn	Construction of any type of road, temporary or otherwise, invariably encourages ORV use in previously inaccessible areas.	New roads create areas that encourage motorized use as well as dispersed camping along the road, which can create a host of issues including law enforcement, sanitation and user conflicts. All temporary roads will be closed once the sale is done so no public access would be maintained. Existing roads that are open will remain open for public use.

## Range of Alternatives

Name	Public Comments	Forest Service Response
Bryan Bird	A restoration-only alternative is clearly reasonable for the Shore 'Nuf Timber Sale Area and should have been analyzed.	The range of alternatives considered in an EA or EIS is largely dependent on the purpose and need for the project. The purpose and need for the Shore 'Nuf Timber Sale includes reducing current stocking levels to enhance the growth and vigor of the remaining trees and to reduce future losses from fire, insects and disease. Meeting the needs of the forest plan and the specific needs for which this project was developed cannot be achieved without the commercial thinning component of the proposal. Consequently, undertaking ecological restoration without commercial thinning is not considered to be a reasonable alternative given the purpose of the project.
James Johnston	There is almost no discussion as to why Alternative 3 was favored by the agency over alternative 4.	Justification for the selection of alternatives is not required for the Draft EIS. Identification of the preferred alternative does not guarantee that it will be selected in the Final EIS. Rational for the decision will be disclosed in the Record of Decision.
James Johnston	The agency should explain further why the "No Ground Based Logging Systems" option was eliminated from detailed study. The only reason given is that detrimental soils effects "are not expected to exceed..."	This alternative was generated from two issues raised by the public – potential detrimental soil effects and water quality. Based on mitigation measures proposed for this project, ground based logging systems are not expected to have any significant effects to the environment.
Eric Wilborn	The EIS is inadequate for failing to take into account the sheer size of the proposed sale in its analysis. At best, the Shore 'Nuf EIS constitutes no more than a general overview of the possible impacts to the environment, and does not assess environmental impacts in enough detail to satisfy the rigorous requirements of NEPA. Development of a single EIS to cover all 33 disparate units cannot significantly address all of the potential detrimental environmental impacts.	All units in the proposed action are similar harvest prescriptions as described in Appendix A. NEPA requires that the analysis be "site specific, therefore, each unit was individually surveyed by various specialists including a Silviculturist, Hydrologist, Geologist, Wildlife and Fisheries Biologists, Botanist, Archaeologist, and Recreation Planner. All units will be commercially thinned to leave an average canopy closure of 70%, except for a few visual units where variable canopy closures will be utilized. Effects for these actions are adequately described in the environmental consequences in Chapter 3 of the FEIS.

### Range of Alternatives (continued)

Eric Wilborn	The Shore 'Nuf EIS fails to give any meaningful evaluation of the alternatives to the proposed action. The alternatives considered, are unreasonably narrow and not meaningful in regards to the purpose of NEPA. The highly restricted range of alternatives evaluated and considered violates the very purpose of NEPA's alternative analysis requirement, which is to foster informed decision making and full public involvement.	The three action alternatives were developed from issues identified by the public and the interdisciplinary planning team. Each alternative is specific to a particular issue and site specific to the project area.
Eric Wilborn	Alternatives 3 and 4 are so similar to the Proposed Action (Alternative 2) that in practical terms that do not amount to the alternatives. The action alternatives developed for the Shore 'Nuf sale do not constitute a range of alternatives, nor are they different enough from each other to be considered alternatives at all. The alternatives discussed do not provide the decision maker with enough variability to make an informed decision, but rather present three virtually identical extraction opportunities and one no action alternative that is not discussed with any thoroughness.	<p>Alternative 3 and 4 were developed based on the issues for this analysis. All Alternatives considered in detail must meet the purpose and need to action.</p> <p>Alternative 3 addresses the issue of noise disturbance and identifies mitigation measures to reduce the effects of the project on noise.</p> <p>Alternative 4 addresses the issue of roads and eliminates new temporary roads from the proposed action.</p>

### Riparian Reserves

Name	Public Comments	Forest Service Response
Karen Sjogren	Do the new and reconstructed roads cross riparian reserves?	Due to the width of the riparian reserves in the project area, some minor road building and reconstruction will take place within the reserves. Temporary roads within this area will be obliterated and restored upon completion of the project.
Karen Sjogren	The "0" no-cut buffer widths require justification and explanation for units which are not "lakeshore".	The justification for entering these riparian areas is stated in # 1 and #2 under the Purpose and Need for Action, DEIS page 1–5; Reducing current stocking levels to enhance growth and to enhance biological diversity of the area.
Karen Sjogren	The DEIS needs to state that thinned trees will be removed, rather than left to provide habitat and stream structure as DWD.	Thank you for your point. On page 3-15 and 3-16 there is a discussion of the effects on soil, stream channels, water quality, and water quantity. It was felt with this discussion that the reader would understand that some of the material felled within the riparian would be harvested. Emphasis will be added in the final EIS.

## Riparian Reserves - Continued

<p>Karen Sjogren</p>	<p>1) To what degree will thinned trees be removed (within Riparian Reserves), by what method, and during which months? 2) What is the rationale for removing thinned trees at all?</p>	<p>1) Depending upon the prescription for each unit the response to this question changes. Specific silvicultural prescriptions are developed that determine which trees will be removed. Timing of removal is dependent upon the other resource concerns and the timber sale contract. Depending upon which alternative is chosen, one can look at the seasonal restrictions found on pages 2-22 through page 2-28 to determine the time of year operations can occur. 2) The rationale for removing thinned trees can be found under the statement of need for action, page 1-5. #1 and #3 are the critical elements for removal. By reducing the long-term fuel build-up there is a reduction in future losses due to fire.</p>
<p>Karen Sjogren</p>	<p>Concerned about thinning operations in non-lake riparian reserves which do not provide a no-cut buffer, and object to this aspect of the proposed action. Unit 6 and 8: A "0" buffer in riparian reserves should only be allowed if necessary to eliminate root rot; Units 15-20: I object to the "0" no-cut buffer in riparian reserves, unless necessary to remove root-rot infested trees.</p>	<p>Through the cutting and removal of trees within riparian reserves, it is felt that we will be able to restore the species composition and structural diversity of the riparian areas. Riparian areas currently selected for treatment exhibit monotypic type environments and will benefit from prescribed activities. A no-cut buffer means that these areas will protect bank stability, water quality, and aquatic resources. A zero no-cut buffer means that treatment will occur through the area. Table 2.2, footnote 3, page 2-12.</p>
<p>Karen Sjogren</p>	<p>Logging should be limited to dry months.</p>	<p>Because of seasonal restrictions for Threatened, Endangered, and Sensitive species, harvest operations during the dry months is limited. In addition, because of the noise issues raised during scoping, additional restrictions have been imposed to minimize disturbance to recreation users and area residents. Logging operations can be expected to start immediately after the restrictions are lifted, beginning in August.</p>
<p>Karen Sjogren</p>	<p>Riparian thinning should be limited to trees, which, if they fall, would not qualify as DWD.</p>	<p>Harvested trees that meet the definition of Down Woody Debris under the Forest Plan will be retained as required by the Standard.</p>

## Riparian Reserves - Continued

Ann Cavanagh	In riparian reserves, who judges which trees are essential to stream bank stability?	The District Silviculturist determines the harvest level for a particular stand of timber, including the riparian reserves. A Forest Service marking crew designates the trees to be retained and those to be removed according to the marking guides. The District Hydrologist, Fisheries Biologist, and/or Wildlife Biologist then check the trees designated for removal within the riparian reserves to assure that the prescription has been met and fits the stated goals. In addition, the leave trees (those that are to be retained) are checked to determine if they meet the criteria for maintaining stream bank stability; if not, additional trees are designated as leave trees to assure that stream bank stability is maintained.
Jeremy Hall	Alarmed that many of the reserves around class III and IV streams have not be given a no cut buffer. Although mitigation measures may protect short term increase in risk, concern that such discretion may result in degraded riparian reserves.	Through the cutting and removal of trees within this riparian reserve, it is felt that we will be able to restore the species composition and structural diversity of the riparian areas. Riparian areas selected for treatment currently exhibit monotypic type environments and will benefit from prescribed activities in the long term.
Jeremy Hall	Leaving a subjective criteria for sale admin, marking crew, and logging contractor, increases the chances for inadvertent damage to stream sides by felling trees that should be left, damaging leave trees, or disturbing sensitive soils.	Subjectivity is limited through the use of silvicultural prescriptions. Certain basal areas are determined for each stand with the prescribed outcome being determined. (Appendix A) Contact provisions are utilized to control the damage of standing trees and Best Management practices are utilized to insure the protection of sensitive soils. Soils review has occurred within this area and the mapping shows where the sensitive soils are located.
Jeremy Hall	All riparian areas should receive a no-cut buffer, regardless of stream size. This is especially the case in units with ground based logging systems, which increase the risk of lost soil productivity through compaction as well as erosion.	General broad-brush concepts are not applicable to diverse landscapes. Within Appendix A , site specific directions are prescribed to insure the attainment of resource objectives.
Sofia Hobet	<p>1) The City of Salem is interested in reviewing the results of the thinning in riparian habitat as they become available. This is to confirm that a 70% canopy closure allows a watershed to hydrologically sustain a rain-on-snow event.</p> <p>2) The City of Salem is interested in observing the road decommissioning process, as an educational exercise.</p>	Thank you for your comment and we look forward to working with you through the implementation and monitoring phase of this project.



## Riparian Reserves - Continued

Sofia Hobet	1) The construction of new roads in the North Santiam watershed is not beneficial to water quality.	1) Roads constructed or reconstructed for this project are required to meet Best Management Practices and the objectives as stated on B-7. By meeting these requirement they meet the Clean Water Act. In meeting the Act the downstream users are protected. Effects on soils, water quality and quantity are disclosed in Chapter 3 of the EIS.
Eric Wilborn	Removal of trees not directly in a riparian area, but outside a buffer still causes an increase in erosion and sedimentation of the creek. If slopes are steep, this affect is more exaggerated then on gentle slopes. It also will likely cause an increase of temperature within the remaining riparian area.	Stream sedimentation and water temperature increases involve a balancing of various resource components, steepness of slope being one. Other elements considered in the prescriptions found in Appendix A are: aspect, ground disturbance, fuel prescription, absence or presence of water and timing of activity. Utilizing Best management practices these elements are considered along with others. The result becomes the discussion on pages 3-14 through 3-16.
Eric Wilborn	The sale is inconsistent with the Northwest Forest Plan because the preferred Alternative plans to harvest timber from the riparian reserve (ROD B-11). There is no indication in the DEIS that the proposed action will increase health of the riparian reserves.	The Northwest Forest Plan States: "Apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic conservation Strategy objectives" page C-32 #c under Standard and Guidelines Timber management. Appendix A shows the specific prescriptions to increase health of the stands.

## Road Density of the Sale

Name	Public Comments	Forest Service Response
Eric Wilborn	The proposed sale will increase the average road density within the planning area. The EIS does not discuss the current road density of the planning area. Increasing the road densities could violate the maximum road density requirements of the Willamette National Forest Plan; however the EIS lacks the baseline data necessary to know whether this will occur. There is no analysis in the EIS regarding the impacts of adding temporary roads to an already over-roaded area.	All temporary roads proposed for the sale will be obliterated following harvest operations, therefore there will be a zero net increase in the road density for the area.

## Root Rot

Name	Public Comments	Forest Service Response
Karen Sjogren	In root-rot pockets, will any old-growth Douglas Fir have to be eradicated?	No old growth trees are known to be present in any of the root rot pockets. If any are discovered during sale layout, they will be left uncut.
Eric Wilborn	Fungus in 5% of the stands included in the proposed sale does not justify the thinning of the remaining 95% of the 1136 acre area. None of the action alternatives discussed proposed any alternatives for controlling the fungus, other than logging and resource extraction.	Treating root rot pockets has not been asserted in the EIS as a justification for thinning. Root rot pockets are inclusions in stands that would be prescribed for thinning whether there was root rot present or not. Thinning is not prescribed in root rot areas because visible signs of the disease are not always detectable. All susceptible species within a root rot pocket are assumed to be infected and treatments which would leave these trees, subject them to future mortality and blowdown, and perpetuate a source of infection for regenerating trees when their root systems come into contact with the infected trees. Although susceptible trees conceivably could be cut and left, this would create an unacceptable fuel buildup and would likely be an attractant to Douglas-fir bark beetle and result in additional tree mortality. Since the surrounding stands are proposed for logging, it is not apparent why trees cut in the root rot pockets would not be removed. It was stated in the comments that there are alternatives to logging to stop the spread of Phellinus root rot but no specific treatment was provided.
Eric Wilborn	There is not information in the EIS that suggests that silviculturalists have been consulted and have confirmed the fact that the natural progression of Phellinus Root Rot is detrimental to the balance of the forest ecosystem.	A Certified Silviculturist prescribed the treatment for all unit treatments and is listed under Chapter 4 - List of Preparers.

## Roads

Name	Public Comments	Forest Service Response
Ann Cavanagh	If roads are used for landings, they will be dangerous for tourists	The proposed action indicates that the Blowout Road (Road 10) and the French Creek Road (Road 2223) would be used for short term landings to reduce the number of newly constructed helicopter landings. Operations on these roads is expected to occur during the winter months when road use is limited. Logs skidded to the roads will also be “hot” loaded immediately onto trucks and hauled to the mill. Road landings may require short term closures to the roads, as required by the Timber Sale contract. The use of flaggers and additional signage may be used as needed.
James Johnston	Address the impacts of a bloated road system in the project area and minimized impacts to soils and aquatic resources. The project should reduce road densities and repair and maintain eroding roads.	All temporary roads proposed for the sale will be obliterated following harvest operations, therefore will generate a zero net increase in the road density for the area. Reconstruction and maintenance are proposed for existing roads in the project area.  With the implementation of Best Management Practices used during road construction and maintenance, no impacts to soil or aquatic resources are expected.
Jeremy Hall	FS should focus road obliteration efforts on under-maintained road system that currently exists. Building new road systems, while decreasing the cost of logging, increases the risk of channelization, erosion, and lost soil productivity.	The temporary road construction proposed for this project will not increase the risk of channelization, erosion, and lost soil productivity so long as Best Management Practices are followed in the location, construction, maintenance during use, and obliteration or decommissioning of the road following use. A description of techniques that constitute Best Management Practices can be found in the <u><a href="#">Willamette National Forest Best Management Practices</a></u> . The action alternatives do in fact also propose to obliterate some existing roads associated with the project area that cannot be maintained because of their nature and location.

**Roads (continued)**

<p>Jeremy Hall</p>	<p>Many of the non-system roads were not designed to be long-term haul routes or access routes. These roads should be obliterated in a separate project, and not part of a timber sale in which they will be reconstructed before being obliterated.</p>	<p>It is true that many of the non-system roads in the project area were not built to sustain continuous use as long-term haul routes. However, using certain existing roads in the project area before obliterated or decommissioning them will make the proposal more fuel and cost efficient by reducing long yarding distances and in some cases eliminating the need to switch to more costly and less fuel efficient logging systems. It will also help limit helicopter noise an issue in this analysis, caused by longer helicopter flight paths than necessary. These existing non-system roads to be used in this proposal, will have the minimum work done to them to comply with Best Management Practices and make them suitable for haul and they will be obliterated or decommissioned and closed following use. Obliterating or decommissioning these roads before they can be used this way only a short time before they would be obliterated or decommissioned anyway would be wasteful, like cutting off your nose to spite your face.</p>
<p>Eric Wilborn</p>	<p>Construction of roads will cause the following environmental impacts: 1) An increase of sedimentation into rivers and creeks; 2) Exposure of bare soil, which is often easily eroded and washed into creeks; 3) The effects of (1) and (2) are even more significant in the transient snow zone... the Shore 'Nuf sale falls within the transient snow zone; 4) Landslides often result from road washout causing significant impacts to streams by adding major amounts of sediments to creeks; and 5) Sedimentation will degrade water quality in nearby streams and the Detroit Reservoir, a significant impact when considered in light of the number of downstream users of the water.</p>	<p>Roads constructed or reconstructed for this project are required to meet best management practices and the objective as stated on B-7. By meeting these requirement they meet the Clean Water Act. In meeting the Act the downstream users are protected. Effects on soils, water quality and quantity are disclosed in Chapter 3 of the EIS.</p>

## Scenic Resources

Name	Public Comments	Forest Service Response
Karen Sjogren	The removal of trees at Stahlman Point Lookout cannot be justified without also making safety improvements to the lookout site and access thereto. These improvements should be listed under "Recreation Improvements" page 2-19.	Stahlman Point is on an existing National Forest system trail and provides hikers a panoramic view of Detroit Lake and the Cascade Range. The former lookout provided a vantage point of the lake area that was not seen from other lookout points. Improving views is not expected to change the way the trail is currently used but would provide less obstruction of views to those who hike the trail. There is always some inherent risk and challenge when hiking on the National Forest outside of more developed facilities such as campgrounds. Trail improvements can be made through collection of KV dollars generated from the timber sale, and could be funded based on priorities with mitigation projects and available funding.
Ann Cavanagh	Tourists will not come to watch trees being cut, especially along the lake shore.	Tourists will benefit from the end result of cutting trees, which include views of special scenic features and maintaining a healthy aesthetic forest for future generations.
Jeremy Hall	Logging the canopy down to as little as 30% seems to be a very heavy thin, especially since there are no diameter limits on take trees. ... localized heavy thins may result in short-term risk to water quantity and quality as well as encourage hemlock.	There would be a heavier thin in small areas. Most dominant and co-dominant "scenic" trees will be maintained and would be emphasized such as those along Blowout Road. Most co-dominant and dominant trees will remain within Unit 5 except in the lower 1/3 of 6 smaller (1/4 - 1/2 acre) visual "units." The canopy of the trees in the lower 1/3 of these smaller units block views and are generally located 150-300 feet below the trail. Some dominant and co-dominant trees in the lower third of these units will also be left. Co-dominant and dominant trees between the trail and these heavier thinned areas would be maintained. Small pockets of heavier thins would create understory diversity and add to the scenic attractiveness of the area.

Eric Wilborn	We argue that cutting trees does not enhance visual quality, nor can it serve to hide the unattractiveness caused by clear-cut areas. On the contrary, additional tree-cutting and logging operations only serve to diminish the scenic values of these lands.	Visual quality is different to each individual. Our Forest Plan and Scenery Management Handbook guide our practices to manage scenic resources within each management area. This project was developed to meet the visual quality objectives of these plans as well as enhance and sustain the scenery/forest health many decades. No clearcuts are proposed within this project. Only varied thins are proposed in small pockets to create views of special features that people value in the area. These would appear "natural" similar to many natural openings or various densities that occur in a naturally evolving forest environment. Protecting the scenic integrity of the forest can best be achieved by employing non-ground disturbing activity as in the case of helicopter methods. In visible areas, stumps would be cut near flush to the ground to reduce the appearance of visible 2-foot stumps.
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### Seasonal Restrictions

Name	Public Comments	Forest Service Response
Karen Sjogren	Page 3-4: This statement is not correct: "the only difference between Alternatives 2 and 3 is a lack of wildlife restrictions during December" based on a comparison of Tables 2.6-2.7 and Tables 2.8 - 2.9.	<p>You are correct in that this statement is not entirely true.</p> <p>The differences between Alternative 2 and 3 include elimination of the seasonal restrictions for Osprey and Big Game, and a modification of the restriction for Harlequin Ducks. Wildlife restrictions are difference, depending on unit, for August, December, and January. For both alternatives, seasonal restrictions remain in place from January 15<sup>th</sup> to July 31<sup>st</sup>, unless non-nesting is determined by occupational surveys.</p> <p>In addition, operational restrictions are included to reduce the amount of noise disturbance from helicopter and logging operations in the proximity of high use recreation sites and area residents.</p>
Karen Sjogren	Page 3-7: In Units 10, 11, and 12 are all within the BEHR, the delineation in Table 2.8 is incorrect. Delete the word "and" after BEMA in the second to last sentence in this paragraph.	The information on page 3-7 is incorrect. Only units 10 and 11 are within the BEHR. Unit 12 is within the BEMA, but not the BEHR. Table 2.8 is correct and additional text has been added for clarification.
Jeremy Hall	We do not agree with lifting restrictions on harvest activities that were designed to protect spring and summer nesting of ospreys and the winter range of big game.	<p>By eliminating the seasonal restrictions for Osprey and Big Game, and modifying the season restriction for Harlequin Ducks, the operating season can be extended up to 6 weeks, depending on which units are harvested. This additional time, during the latter part of the summer, and into December and January, allows the operator to complete the unit in one operating season, thus reducing mobilization costs.</p> <p>Individual nest trees remain protected with Alternative 3, plus the species are protected during the majority of the nesting period due to restrictions for other Threatened and Endangered species.</p>

## Silvicultural Prescription

Name	Public Comments	Forest Service Response
Karen Sjogren	Dominant and co-dominant trees should not be removed for this purpose (Scenic Improvements) from any of the units.	Most co-dominant and dominant trees will remain within Unit 5 except in the lower 1/3 of 6 smaller (¼ - ½ acre) visual “units.” The canopy of the trees in the lower 1/3 of these smaller units block views and are generally located 150-300 feet below the trail. Some dominant and co-dominant trees in the lower third of these units will also be left. Co-dominant and dominant trees between the trail and these heavier thinned areas would be maintained.
Ann Cavanagh	Who selects leave trees to maintain 70% canopy closure?	The District Silviculturist determines the basal area necessary to achieve goals prepared through the interdisciplinary process for canopy retention, vegetative response, etc. for a particular forest stand, including the associated riparian reserves. From that information and other stand characteristics, the Silviculturist then develops a prescription for the stand and a set of marking guides. A Forest Service marking crew designates the trees to be retained and those to be removed according to the marking guides. During cutting operations, the logger must follow specific contract specifications and is inspected for compliance by the Forest Service Timber Sale Officer.
Eric Wilborn	Although the EIS does discuss replanting and restocking of harvested areas, it does not give any information on the specifics of doing so.	Appendix “C” describes the regeneration of the root rot pockets. Root rot pockets will be planted with hardwood trees, fruit bearing shrubs, and non-susceptible conifers. Specific, operational details of planting are also part of the silvicultural report.

### Smoke Impacts/Air Quality

Name	Public Comments	Forest Service Response
Ann Cavanagh	Temp. effects to Detroit Tourism: It is currently fashionable to burn slash when damp to minimize damage to soil. Some of these piles will smolder for weeks.	<p>The burning of slash piles will take place in late fall / early winter when summer and fall tourism is back to school and work. Optimal burning takes place when fuel moistures are relatively low to allow consumption by fire and the external relative humidity is high to minimize fire escape and retain soil quality.</p> <p>Piles in the Shore Nuf visual areas will be monitored and `chunked` by staff to expedite burning and ensure complete consumption for visual purposes.</p> <p>Smoke emissions are quantified from calculated fuel loadings of the piles to be burned. Oregon Smoke Management regulates the quantity of smoke emissions according to time of year, area designation, air and transport (wind) conditions to minimize the impact to public and environment. All burning will be done in compliance and accordance with Oregon Smoke Management.</p>
Val Varney	<p>The EIS needs to expand the smoke discussion regarding residual smoke that is expected to affect some downwind communities, such as Detroit. EIS should explain how these communities will be informed and how burning will be monitored.</p> <p>EIS should discuss the Interim Air Quality Practice on Wildland and Prescribed Fires. The EIS should also describe the smoke management plan that will be followed during the burn.</p>	<p>The Willamette National Forest Burn Plan looks at smoke loading and residual smoke within the air basin. All burning activities fall under this plan.</p> <p>All burning on the Detroit Ranger District is conducted under the guidance of the Oregon Smoke Management Plan which has been incorporated by reference.</p>
Val Varney	Describe any contingency plans should particulate matter (PM) concentration reach a threshold of concern or an action level of some kind. This action level or how one will be determined should be determined before the burn takes place.	Burn plans for prescribe burning operations are required for each unit following harvest operations. Contingency plans are described in these burn plans.



## Soil Compaction

Name	Public Comments	Forest Service Response
James Johnston	The DEIS does not explain how the alternatives differ in terms of effect on soil compaction... There is no quantitative information based on this issue in the DEIS to compare the alternatives...	<p>Soil compaction was not raised as a significant issues to be addressed in the EIS. However, the issue of roads was discussed in depth. As described in Table 2.18, page 2-35 of the DEIS, Alternative 4 would have 1.4 miles less temporary road construction, and 1.6 miles less road reconstruction than Alternative 2 or 3.</p> <p>Roads constructed and reconstructed for this project are required to meet best management practices and the objective as stated in Appendix B – page B-7. Erosion control plans will be part of the sale contract. Temporary roads will be treated in such a way to maintain or enhance current permeability.</p>
Jeremy Hall	Any unit with slopes of 50% or greater (units 7, 25 and 27) should not use tractor yarding methods. Skyline or helicopter should be used... resulting in fewer losses to soil productivity and less risk of erosion and	<p>Units 7, 25, and 27 are described in the integrated prescription as having slopes over 50%. Unit 7 is in error in that it has slopes less than 30%. Unit 7 was originally part of a larger stand which does have steeper slopes but the area included in Unit 7 does not. The integrated prescription will be corrected. Unit 25 is a dispersed campsite with an existing non-system road. Although it does have some areas of steeper slopes that break away from the main ridge, all skidding can be done from the existing road by pulling line. The integrated prescription will be corrected to show the range of existing slopes. Unit 27 is in Southshore Campground and logging equipment will operate off of existing roads and campsite pull-ins. Although there may be steeper slopes breaking into Detroit Lake, the average slope is less that 20% not the 50% stated in the integrated prescription. This will be corrected.</p> <p>For clarification, 50% slopes is not the standard for slopes too steep for tractor logging.</p> <p>The Willamette National Forest Plan standard FW-083 specifies 30% as the limit for tractors. Other ground-based equipment with lower ground pressure than tractors could be used on steeper slopes with the concurrence of a soil scientist. The City of Salem did express its concern over regeneration harvest on slopes over 50% but as we recall that was not tied to a particular logging system.</p>

### Soil Erosion, Stability, and Compaction

Name	Public Comments	Forest Service Response
Eric Wilborn	Failure to make express findings regarding the certainty of significant soil erosion and the corresponding decrease in forest health violates NEPA's requirement of accurate scientific data. Clearly, the EIS does not adequately consider the affect of the proposed activities on soil erosion, stability and sedimentation.	The EIS and supporting documents discuss the potential for off site soil erosion and slope instability. Logging systems were specifically designated to reduce or eliminate the risk of soil loss. Unit layout was in part determined by the avoidance of potentially unstable areas. Extensive monitoring of similar projects on similar terrain in previous years has not shown significant productivity loss or soil erosion. Potential impacts to soils and productivity from this project are anticipated to be well within the standards and guidelines established by the Willamette National Forest in its Land and Resource Management Plan.

### Steep Slopes

Name	Public Comments	Forest Service Response
Eric Wilborn	Environmental impacts are compounded in areas with steep slopes. The EIS does not meet the requirements of NEPA in that it does not disclose the actual slope	See Appendix A - Integrated Prescriptions that identify the average slope percentages for each unit.

## Survey & Manage

Name	Public Comments	Forest Service Response
Karen Sjogren	I question the statement that the sale is not within habitat for Canada Lynx and Great Grey Owl.	<p>Canada Lynx habitat as currently defined does not occur within the project area. Surveys have been conducted in Oregon and the Detroit Ranger District to attempt to determine their presence. Canada Lynx have not been located in Oregon as a result of these surveys.</p> <p>Great Gray owls have been documented at higher elevations and in a different habitat type than the Shore 'Nuf sale units. Great Gray owls feed primarily on ground dwelling voles and pocket gophers. These animals are found in more open conditions than found in the Shore 'Nuf units. This species may occur at lower elevations if winter conditions, such as deep snow, prevent them from foraging in their preferred habitat. Great Gray owls may use meadow areas, clearcuts and shelterwood harvest areas if voles and gophers are present. Their ranges have been increased west of the cascade crest by harvesting activities. Great Gray owl surveys are planned when their preferred habitat type is located in a proposed project area. Unthinned stands at lower elevations such as the Shore 'Nuf sale area are not the habitat types preferred by Great Gray owls.</p> <p>Great Gray owls are a Northwest Forest Plan, Survey and Protection Buffer species. Their habitat preferences and survey requirements are defined in the Effects of Implementation for Wildlife Species portion of the wildlife input for the sale.</p>
Jeremy Hall	Concern that fungi is not mentioned in the Survey and Manage Section of the DEIS on page 3-13 and 3-14. Pre-disturbance surveys must be completed, with all known sites protected.	<p>S &amp; M fungi were discussed in the Shore Nuf Botanical Attachment, which was referenced in the DEIS. In that report, it noted that only 2 fungi occurrences were documented in the Shore Nuf area, and none within project boundaries. As a result of the Survey and Manage FSEIS ROD (January 2001) one of these two species, <i>Sarcosoma mexicana</i>, has been placed in Category F, which has no protective provisions. The historic record of the other species, <i>Boletus pulcherrimus</i>, has been removed from the known sites database because the location could not be determined within a 1.5 mile radius. Fall and Spring fungal surveys were not conducted on Shore Nuf because the requirement for fungal pre-disturbance surveys were removed by the S &amp; M FSEIS ROD for all fungal species except <i>Bridgeoporous nobilissimus</i>, the habitat of which does not occur in the Shore Nuf project area. This development will be reflected in a newly issued "Results of Prefield Review and Field Reconnaissance for Survey and Manage Plant Species" for FY 2001, which will appear in the Shore Nuf FEIS appendix.</p>

**Survey & Manage (continued)**

Jeremy Hall	Survey & Manage surveys have not yet been completed - results need to be disclosed in the FEIS.	Field surveys for all required Survey and Manage species have been completed and the results disclosed in Appendix D of the Final EIS and in the findings section of the Record of Decision.
Val Varney	Surveys for mollusks and red tree voles should be completed and results included in the EIS.	Surveys for mollusks and red tree voles have been completed and the results are included in Appendix D of the Final EIS. One inactive red tree vole nest was located in Unit 21, however, protection is not required for inactive nest sites.
Eric Wilborn	<p>The sale should not go forward because the USFS has not yet completed the surveys as required by law for management indicator species (MIS). Additionally, the USFS has not adequately considered the impact of the sale on MIS and threatened, endangered, sensitive and rare species.</p> <p>The DEIS fails to adequately address the issue of survey and management species. A DEIS should fully address the presence and relative populations of these species. The public must be able to review these surveys in order to effectively comment on the DEIS.</p>	Field surveys for all required Survey and Manage species have been completed and the results disclosed in Appendix D of the Final EIS and in the findings section of the Record of Decision.

**Threatened, Endangered, and Sensitive Species (T, E, and S)**

Name	Public Comments	Forest Service Response
Eric Wilborn	<p>The DEIS fails to present mitigation for Bald Eagles, Northern Spotted Owl, Peregrine Falcon, Osprey and Big Game found within the planning area. The sale fails to protect the habitat essential to these animals' survival, as the Riparian Reserve and the Forest habitat in general would be effected by the proposed sale. The sale is also unlawful because it decreases the amount of habitat essential for the mentioned threatened animals, which are federally and locally threatened and endangered.</p>	<p>Mitigation measures are described within the description of Alternatives. Seasonal restrictions will be enforced to prevent disturbance to nesting species.</p> <p>The Shore 'Nuf Timber Sale was submitted to the USFWS for consultation where the project would have a potential effect on habitat for threatened or endangered species. Mitigation measures are described in the biological evaluation for threatened, endangered and regionally sensitive species. These mitigation measures are in compliance with USFWS recommendations resulting from consultation.</p> <p>Bald Eagle habitat is being positively affected and is supportive of recommendations made in the Detroit Lake Bald Eagle Management Plan. This plan was developed in cooperation with the USFWS, Oregon Department of Fish and Wildlife and the US Forest Service. The plan is also developed as part of implementation of the Pacific Bald Eagle recovery plan and Bald Eagle Management Guidelines for Oregon-Washington. Willamette forest plan guidelines for management of active and potential nesting habitat areas for bald eagles was developed to be supportive of the recovery plan.</p> <p>In 2000 the Willamette Basin Recovery Zone goal of 25 nesting pairs of Bald Eagles was attained and 51 occupied territories are above the recovery level for this zone.</p> <p>Northern Spotted Owl habitat is not being downgraded. Approximately 10 acres of foraging habitat is being lightly thinned in unit 21 which will not change it's status as foraging habitat. Light thinning which maintains above 40% canopy closure and maintains potential nesting trees is not likely to affect spotted owls. Canopy closure recommendations are above 40% and potential nesting trees are being maintained in foraging habitat in unit 21. All other units are dispersal habitat. Dispersal habitat has a minimum diameter requirement of 11" dbh with 40% canopy closure which is maintained in all harvest units. Mitigation measures are described in the biological evaluation for threatened, endangered and regionally sensitive species.</p> <p>Peregrine falcons were taken off the federal list of threatened and endangered species. They are now listed as regionally sensitive. Mitigation measures are described in the biological evaluation for threatened, endangered and regionally sensitive species.</p> <p>Osprey and Big game management is described in the Effects of Implementation for wildlife species portion of wildlife input for the sale.</p>

## Traffic

Name	Public Comments	Forest Service Response
Ann Cavanagh	On weekdays, tourist cars, some pulling trailers or boats, will have to do battle with log trucks.	While there will be logging traffic on Forest Roads, it would not create traffic congestion. Roads would be properly signed to warn visitors of entering log truck traffic. Hauling is restricted to weekdays when there is less tourist traffic in order to minimize impacts to visitors.

## Violates NEPA or NFMA

Name	Public Comments	Forest Service Response
Eric Wilborn	With regard to watershed analysis, the EIS discusses watershed analysis conducted for past timber sales in the area, but does not identify any "site-specific analysis" performed, nor collection of "current" scientific data for this proposed sale.	Site specific analysis and data was conducted by the Interdisciplinary Planning team identified in Chapter 4 – List of Preparers.
Eric Wilborn	The analysis compiled in preparation for past timber sales in the area that is referenced is not based on scientific investigation, but rather upon speculation and inference.	Documentation of past timber sales in the area is available for review in the applicable project file for each sale. Members of the District Interdisciplinary planning team conducted site-specific analysis and data collection to disclose any possible effects to their specific resource area.

## Water Quality

Name	Public Comments	Forest Service Response
Ann Cavanagh	You need to expand upon the effects of logging on domestic water supply. Two problems of great concern are water temp and sedimentation.	General Water Quality Best Management Practices as adopted by the Pacific Northwest Region, November 1988 discusses the measures used for the protection of domestic waters in the state. This document is referred to in the DEIS.
James Johnston	The DEIS does not explain how the alternatives differ in terms of effect on water quality. There is no quantitative information based on this issue in the DEIS to compare the alternatives...	Water Quality was not identified in the DEIS as a significant issue (DEIS page 1-13). For all action alternatives, by applying Best Management Practices and following Forest Plan Standards & Guidelines, water quality is not expected to be impacted.
Eric Wilborn	The sale will cause irreversible damage to soil, slope, and other watershed conditions.	Irreversible damage to soil involves altering the soils characteristics in such a manner that it cannot be classed as soil. It is not anticipated that any of the proposed actions will alter soil in this manner. The Willamette Nation Forest Land and Resource Management Plan establishes the standards that shall be met.
Sofia Hobet	City of Salem staff would like the opportunity to visit and possibly sample the site during winter months to see how sediment is controlled leaving road systems as described in Appendix B.	Thank you for your comment and we look forward to working with you through the implementation and monitoring phase of this project.
Val Varney	SWAP - Source Water Assessment and Protection: The EIS should discuss the SWAP provision of the Safe Drinking Water Act (SDWA), and how we plan to meet the obligations under SWAP, and if there are any issues pertaining to SWAP.	The Shore 'Nuf project area falls within the Lyons Source water assessment report (#4100493). Under this assessment no specific protection is required. Utilization of Best Management Practices and meeting of the Clean Water Act protects those downstream users.
Eric Wilborn	Water quality is impacted by the removal of trees in the following ways: 1) an increase in water temperature often above temperatures tolerable by salmon and trout; 2) increase in the temperature of riparian area which affects reptiles, amphibians and other species which rely on a cool riparian environment to survive; 3) Loss of woody material which would eventually enter the creek; 4) Major increases in the amount of sediment, which enters the stream; 5) Increases in wind speeds, which will decrease the relative humidity in the area; 6) Removal of standing deadwood will cause a decrease in the boundary layer, which will in turn cause a decrease in the soil moisture and soil nutrients, adversely affecting seedlings.	Effects on water quality and quantity are disclosed in Chapter 3 of the EIS.  Furthermore, General Water Quality Best Management Practices as adopted by the Pacific Northwest Region, November 1988 discusses the measures used for the protection of domestic waters in the state. This document is referred to in the DEIS.  Irreversible damage to soil involves altering the soils characteristics in such a manner that it cannot be classed as soil. It is not anticipated that any of the proposed actions will alter soil in this manner. The Willamette Nation Forest Land and Resource Management Plan establishes the standards that shall be met.

**Wildlife**

<b>Name</b>	<b>Public Comments</b>	<b>Forest Service Response</b>
Karen Sjogren	If the FS does adopt Alt.3, I hope it can be modified to protect osprey, ducks, and other species.	<p>Alternative 3 was developed to address the issue of noise disturbance. By eliminating the seasonal restrictions for Osprey and Big Game, and modifying the season restriction for Harlequin Ducks, the operating season can be extended up to 6 weeks, depending on which units are harvested. This additional time, during the latter part of the summer, and into December and January, allows the operator to complete the unit in one operating season, thus reducing mobilization costs.</p> <p>Individual nest trees remain protected with Alternative 3, plus the species are protected during the majority of the nesting period due to restrictions for other Threatened and Endangered species.</p>
Jeremy Hall	Big Game: As functioning Big Game Winter Range is critical to maintaining healthy populations of elk and deer, USFS must not allow this habitat to be degraded by logging operations between Nov. 31 and Apr. 15. Big Game support the local economy.	The proposed project is not habitat degrading. Habitat is expected to be slightly improved by thinning. Disturbance may negatively impact animals wintering in or adjacent to thinning units. Seasonal restrictions are recommended by the district wildlife biologist. A decision to log during the Nov. 31 – April 15 time period is within the discretionary range of choices for the District Ranger.
Eric Wilborn	All of the alternatives would significantly reduce and degrade the amount of suitable habitat for these species. The DEIS does not require the implementation of effective mitigation measures to counteract this effect. Thus, the destruction and degradation of habitat violates the ESA .	The proposed project is not habitat degrading. Habitat is expected to be slightly improved by thinning. Disturbance may negatively impact animals wintering in or adjacent to thinning units. Seasonal restrictions are recommended by the district wildlife biologist. A decision to log during the Nov. 31 – April 15 time period is within the discretionary range of choices for the District Ranger.



## Wildlife Populations

Name	Public Comments	Forest Service Response
Bryan Bird	<p>Timber sale activities are likely to jeopardize the viability of species that find optimal habitat in forest with well-developed structures, and forests naturally disturbed by fire, disease and insect pathogens.</p>	<p>Species that have been identified in the Northwest Forest Plan as Survey and Manage species have will be surveyed prior to completion of the Shore 'Nuf EIS and when necessary units will modified to comply with recommendations for protection of those species.</p> <p>Your comments describe the stands in Shore 'Nuf as having "well developed structures". As has been described in the EIS, all of the stands proposed for treatment are 70 year-old even-aged stands that have regenerated following logging and burning. They are overwhelmingly single canopy stands and dominated by Douglas-fir. Thinning these stands will provide more light, water, and nutrients to the remaining trees and other vegetation which will provide more diversity to these stands that currently exists. Although a certain group of species might benefit from the current dense, single canopy stands, others will benefit from the conditions that will result from the proposed treatments.</p>
Bryan Bird	<p>For many wildlife species, the FS has no up-to-date population date describing population numbers, locations, and trends, nor monitoring data... to determine that the actions proposed will maintain numbers &amp; distribution insuring long term viability.</p> <p>The FS has not determined the "minimum number" of reproductive individuals that would constitute a viable population. The FS is required by law to determine this number before implementing activities that might impact individuals or populations.</p> <p>Until such information is provided, the FS cannot know whether it is providing sufficient habitat to support the minimum number of reproductive individuals nor that habitat is disturbed in such a manner as to permit</p>	<p>Effects on long term viability and whole populations of wildlife species are generally addressed at the Forest Planning stage and not with site-specific analysis. The Shore 'Nuf Timber Sale is located within a small portion of the Detroit Tributaries Watershed and is a site specific analysis for this area. Therefore, these comments are considered to be outside the scope of this analysis for the Shore 'Nuf Timber Sale.</p>

### Wildlife Populations (continued)

<p>Eric Wilborn</p>	<p>The DEIS fails to discuss how these sales, which would remove a significant amount of habitat can be consistent with the NFMA regulatory requirement that the USFS preserve viable populations of vertebrate species in light of the minute percentage of such remaining habitat.</p>	<p>Significant amounts of habitat would not be removed by these sales. A few acres of Douglas fir habitat would be removed in root rot pockets and replanted with native species resistant to root rot. Possibly light thinning as proposed by this sale is being confused with clear cutting of old growth forests. Reviewing the Management Indicator Species discussion in the Effects of Implementation for Wildlife Species portion of the project file may be of assistance with this question. Also reviewing the Northwest Forest Plan and it's approach to management of habitat for late-successional and old-growth forest related species may help. This review may assist in clarifying the USFS strategy in this region to preserving viable populations of vertebrate species. An ecosystem rather than species specific approach is used for maintaining viable vertebrate species populations. Species which are listed as Federally threatened or endangered are addressed in the Biological Evaluation for this project. Species which are regionally sensitive and may have limiting habitat types are also listed in the Biological Evaluation.</p>
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